



Economic Analysis of Broiler Production on On-farm Formulated and Commercial Feeds: A Case Study of Igabi Local Government Area of Kaduna State, Nigeria

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INTRODUCTION

Broiler birds are those kept and reared for meat production from day-old to about eight weeks of age for good quality tender meat as source of protein in human diet. However, the profit levels in poultry enterprises have been constrained by a number of factors critical among which is feed quality and cost. Feed is the major component of input cost accounting for up to 70% (The poultry site, 2007) and 86-87% (Hassan *et al.*, 2006) of the total variable cost of production. The high feed cost has largely been attributed to competition between man and animals for limited grains. The situation has been further exacerbated by high cost of operation of feed mills. Input costs and profitability of broiler production require a critical review of feed cost as a primary component. In recent years, farmers have increasingly been formulating feeds for poultry using locally available feed stuffs. Records on the performance of farms using locally formulated feeds in the study area are scanty. This study was carried out to compare profitability of broiler production using on-farm prepared and commercial feeds.

KEYWORDS: broiler production, high feed cost, on- farm formulation, commercial feed.

MATERIALS AND METHODS

Study Area

The study was carried out in Igabi Local Government Area (LGA) of Kaduna State, Nigeria. It is one of the 23 LGAs of the State. It has a population of 430,229 people (NPC, 2006). It lies between 11°N and 7°E of the Equator and possesses a tropical climate (which is favorable for livestock keeping) with marked periods of rainfall and dry seasons. Agriculture is the major occupation of the people in the area. Farming is mainly traditional in nature and small-scale

farmers constitute most of the labour force who undertake bulk of the agricultural production in the area. Livestock kept in the area include: cattle, sheep, goat and poultry.

Poultry farming in the area is mainly traditional and the birds are generally local breeds kept on free range. The chickens are allowed to scavenge for feed in the back yard and are occasionally supplied with household food wastes and some grains as supplements. There are however, a number of commercial poultry farms in the area that keep exotic breeds of broilers as well as layers mostly on deep litter system.

Research design and farm selection

Sixty (60) poultry farms that kept broiler birds in year 2009 were purposively selected (thirty poultry farms each from farmers who compound their poultry feeds on-farm and those who purchased finished feeds from the market). The nutrient compositions of the diets were analyzed as described by A.O.A.C (1990) and are shown in table I.

Data Collection

The selected poultry farms were visited and questionnaires were administered with a view to obtain data on their production activities. The parameters measured were feed consumption, weight gain, type of feed used (on-farm formulated feed or commercial feed) feed prices, quantity of feed used.

In order to ensure that the result of the data analysis was not lop-sided, only poultry farms that purchased their birds from Obasanjo farms ltd were purposively selected. This was to take care of the problem of diet-breed interaction that could affect the validity of the results.

Table I: Nutrient composition of the commercial and on-farm prepared feeds used by the farms in the study area

	On farm feed		Commercial feed	
	Br. starter	Br. finisher	Br. starter	Br. finisher
ME Kcal/kg	2843.28	3030.78	2800.00	2900.00
Crude Protein	24.00	20.00	21.00	19.00
Crude fibre	4.34	5.35	5.00	5.40
Ether Extract	4.42	4.38	8.50	8.60
Calcium	1.38	1.31	1.20	1.20
Available Phosphorus	0.78	1.61	0.45	0.41
Lysine	1.15	1.11	1.20	0.90
Methionine	0.59	0.58	0.50	0.50

Source: Laboratory analysis. Br. stands for broiler.

Data Analysis

Data collected were analyzed using descriptive statistics such as mean and standard error. T-test statistics was used to determine if there was any statistical difference in weight gain between the two groups. Gross margin analysis was used to determine the level of profitability of the two groups as described by Olukosi and Erhabor (1988). The unit of measurement is Naira (N)/Kg feed or live weight gain. $GM = GI - TVC$ where $GM =$ Gross margin, $GI =$ Gross income/Kg live weight while $TVC =$ Total variable cost which is the total cost of production/Kg live weight of broiler.

RESULTS AND DISCUSSION

The results of the body weight determination are presented in Table II. There was no significant difference ($p > 0.05$) in the mean weight gain in the first two weeks of age for both groups (on-farm formulated feed and commercial feed user groups) henceforth referred to as units A and B respectively. However, from week 3-8, the mean weight gain was significantly higher ($p < 0.05$) in unit A, and this agrees with the findings of Ayorinde, (1994) and Jackson *et al.* (1982). This may probably be due to higher energy, crude protein and mineral contents of the on-farm feeds compared to that of the commercial feeds. Researchers have recorded increased growth rate, higher weight gain and better performance in broilers fed feeds containing high energy, crude protein and mineral levels (Slaughter and Waldroup, 1990; Leeson *et al.*, 1996; Catwright, 2004).

Table III shows the cost structure of broiler production in the two groups of producers. Unit A has an average lower feed cost (N62.13/Kg) compared to unit B (N83.84/Kg). The analysis

shows that there was a difference of N83.25 in feed cost per Kg live weight gain in favor of on-farm feed users. It is obvious that in farms with larger stock population, the difference in feed cost will be more as a result of economics of scale. The effect of the high feed cost in unit B is reflected in the gross margin made per Kg live weight of broiler sold which was N91.46 as against N177.25 made by unit A. The results imply that the invested fund for farms utilizing on-farm feed yielded profit that is about twice generated by commercial feed users. The financial viability of broiler production using on-farm compounded feed is higher.

Table II: Mean body weight (Kg) of broilers fed on-farm compounded feed and commercial feed

Age (weeks)	Commercial feed	On-farm compounded feed
1	0.089±0.001 ^a	0.092±0.001 ^a
2	0.124±0.001 ^a	0.129±0.001 ^a
3	0.228±0.003 ^a	0.269±0.002 ^b
4	0.684±0.006 ^a	0.765±0.006 ^b
5	0.795±0.004 ^a	0.897±0.007 ^b
6	1.115±0.006 ^a	1.270±0.013 ^b
7	1.415±0.011 ^a	1.652±0.002 ^b
8	1.920±0.015 ^a	2.350±0.016 ^b

Different superscripts placed on rows indicates significant difference between the means of the group ($p < 0.005$)

Table III: Cost structure of broiler farms compounding poultry feed on-farm and those that purchased commercial feed.

Items	On-farm Feed (N)	Commercial Feed (N)
Feed cost /kg (Broiler starter and finisher)	62.13	83.84
Feed cost/bird	327.43	487.95
Average cost of feed/ Kg weight gain	226.29	309.54
TVC/Kg live weight of broiler	422.75	508.54
Gross income/ Kg live weight of broiler	600.00	600.00
Gross margin /Kg of broiler meat	177.25	91.46

Source: Computed from field survey data, 2009.

CONCLUSION

The study has shown that on-farm feed formulation for broiler production is financially profitable in terms of body weight gain and cost of feeding. Therefore to improve on the level of profits of these farms and reduce feed cost, efforts should be made to train farmers on how to

source locally and utilize poultry feed stuffs to compound feeds.

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