

Economic Analysis of Small Scale Egg Production in Gombe Local Government Area, Gombe State, Nigeria

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Target Audience: Farm Manager, Agro-Consultant, Researchers, Academics

Abstract

This study was conducted to determine the economic profitability of small-scale egg production in Gombe L.G.A. Gombe State. Data were collected from 36 farmers using simple random sampling technique. The data collected were analysed using descriptive statistics, gross margin and farm financial ratio analysis. The study found out that the mean flock size was 103 layers and about 90% of the farmers used intensive system of poultry management. Feed costs accounted for 90% of the total variable cost of input used. The study also revealed that the gross margin per farmer was N9770.19, average cost per tray/farmer was N56.90; average revenue/tray/farmer was N72.62 and the average profit was close to N16 per tray of eggs. The farmers received a return of N1.28 on every Naira invested. Gross and operating ratio were 0.7836 and 0.7788 respectively. The major limiting factors to higher return were high cost of feed and mortality. Profitability could be enhanced through efficient flock management especially on feed and keeping mortality at a minimum.

Keywords: Egg; Poultry; Profitability; Management; Farmers

Description of Problem

Poultry is the name given to the species of birds which are of economic value to man and consequently are maintained and managed by him. The most important of such birds are the domestic fowls, guinea fowls, turkey and geese. Of all these, the domestic fowls is by far the most important and common poultry bird (7). The birds are kept in practically every household in scattered flocks scavenging for food with little management. The evolution of high level management for these birds resulting to the mass production of broilers and layers has changed

the scenario, leading to increase in poultry products, profit and number of commercial farmers.

Modern poultry production is only four decades old in Nigeria. Within this short span, the industry has undergone many phases of galloping development and problem. The history of the industry can be summarised as that of rapid expansion to rapid collapse (2).

The commercialization of poultry keeping is a recent development in Gombe L.G.A. The industry is less capitalized, consisting of small units and dependent largely on personal savings.

The performance of the birds are low, partly on account of high cost of production inputs and partly on management. This limitation reduces profitability in the enterprise, especially the production of eggs in commercial quantity. Hence farmers' production costs revenue and factors limiting production were investigated, with the aim of increasing the level of egg output in the study area. To achieve this goal the following objectives were set:

- (a) to describe the socio-economic characteristics of poultry farmers in the area,
- (b) to determine the cost and returns of small scale egg production,
- (c) to examine the major factors limiting returns and profits level of the egg enterprise,
- (d) to suggest ways of enhancing profitability in small scale egg production in the study area.

Materials and Methods

Area of Study

Gombe L.G.A. covers an estimated land area of 1838 square kilometers. It is situated between longitude 10°15' and 10°30' East and latitude 11°00' and 11°15' North. It has a population of 283189 (census 1991). The study area experience distinct wet and dry seasons influenced by south west and north east trade winds respectively. The temperature ranges from 31.6°C to 13.9°C in January and 28.5°C and 19.0°C in August. The annual rainfall in the area is between 800mm and 900mm with a duration of four to five months.

Method of Data Collection

Data were collected from thirty six (36) small scale egg farmers using simple random sampling. Farm input/output data were collected through the administration of structured questionnaires to the selected farmer. The questionnaires were designed into sections and each section was aimed at achieving the stated objective of the study. The information sought were farmers' socio-economic characteristics, cost, returns and production constraints.

Method of Data Analysis

Frequency distribution, percentages, arithmetic means, gross margin and farm financial ratios were used to analyse the data collected.

The gross margin analysis (3,8,4) was used to analyse the profit level of the egg enterprise in the study area. The mathematical model of gross margin analysis was formulated as:

$$GM = GI - TVC \quad (1)$$

Where GM = Gross margin
GI = Gross income represented as total Revenue
TVC = Total variable cost of production

The farm financial ratios used in the study were gross and operating ratios. These tools were used to measure profitability of the enterprise and how the variable cost inputs are being utilized in production, (5).

A ratio of less than one (1) implies the enterprises is making profit, a ratio one (1) indicates a breakeven, while a ratio greater than one (1) indicates the enterprises is not making profit.

The gross and operating ratios were mathematically expressed as:

$$GR = \frac{TFE}{GI} \quad (2)$$

$$OR = \frac{TOC}{G} \quad (3)$$

Where GR = Gross Ratio
OR = Operating Ratio
TFE = Total farm expenses represented as total cost of production
TOC = Total operating cost represented as total variable cost.

Results and Discussion

Socioeconomic characteristics

The age distribution of poultry farmers indicated in table 1, showed that, majority of respondents (77.78%) were within the range of 26-40 years. The mean age of the farmers was found to be 32 years. Almost all the farmers (94.44%) were formally educated. Education is not only an important determinant of adoption of an innovation but also a tool for successful implementation of innovation for profitability (6,8). Thus a certain level of literacy is required for management and production of poultry enterprise.

The distribution of farmers according to management system revealed that 99.89% of the farmers used intensive (deep litter) system. The

farmers indicated that deep litters system of intensive poultry management is more efficient and cheaper than battery cage system.

Most of the respondents (75%) have a household size of 8 or less. The mean household of the farmers was 6. All the respondents indicated

using family labour in the enterprise, this could be because the scale of production is not large enough to warrant hiring labour outside the family (Table 1)

The study also revealed that the mean flock size of the respondents was 103 birds. Laying an average of 50 eggs per day for a period of one (1) year.

Table 1: Socio-economic Characteristics of Small scale Egg Production in Gombe L.G.A., Gombe State.

Socio-economic Characteristics	Egg Production	Percentage
1	Age (years)	
	21-25	16.67
	26-30	37.78
	31-35	22.22
	36-40	27.78
	41-45	5.55
	Total	100.00
	Mean	32
2	Household size	
	1-4	55.56
	5-8	19.44
	9-12	16.67
	13-16	5.56
	17-20	2.79
	Total	100.00
	Mean	6
3	Management system	
	Intensive	88.89
	Semi-intensive	8.33
	Extensive	2.78
	Total	100.00
4	Flock size	
	1-30	5.56
	31-60	8.33
	61-90	11.11
	91-120	38.89
	121-150	36.11
	Total	100.00
	Mean	130
5	Educational level	
	Quranic only	5.56
	Primary only	25.00
	Secondary	33.33
	Tertiary	36.11
	Total	100.00

Cost and Returns Analysis

Table 2 revealed that, the total cost of production per farmer was ₦34617.06. The total variable cost accounted for 99.39% of the total cost. The average cost per tray was ₦56.90. The cost of feed accounted for 91.49% of the total cost

of production. This figure is higher than 74%-80% quoted by Adegbola (1989). The cost of day old chicks ranked second after feed, representing 5.42% of the total cost of production.

Table 2: Cost Component Egg Production in Gombe L.G.A. Gombe State

Cost Component	Cost per Farmer ₦	Percentage
a) Variable		
Feed	31672.10	91.49
Day-old chicks	1876.66	5.42
Medication	397.74	1.15
Labour	461.74	1.33
Total variable cost	34,408.24	99.39
b) Fixed cost		
Housing	162.00	0.48
Electricity	30.00	0.08
Depreciation on equipment	16.82	0.05
Total fixed cost	208.82	0.61
Total cost	34,617.06	100.00
Average cost/tray	56.90	

The analyses of revenue realized from poultry egg production as presented in table 3, revealed

that, the total revenue per farmer was ₦44178.43 with the sale of egg accounting for 80.38%. The average revenue/tray was ₦72.62

Table 3: Revenue Component of Egg production in Gombe L.G.A; Gombe State.

Revenue Component	Cost per Farmer N	Percentage
Egg sales	33,512.43	80.38
Spent Hens	6840.00	15.48
Litter Droppings	1826.00	4.14
Total Revenue	44178.43	100.00
Average Revenue/Tray	72.62	

The gross margin per farmer was ₦9770.19 and the Net farm income was ₦9561.37 with an average profit of ₦15.72 per tray. The return on every naira invested was ₦1.28, (table 4). This implies that for every one (1) Naira the poultry farmer in the area invested in the enterprise a return of 28 kobo was made as profit.

The farm financial ratios measuring the financial position of the farmer, showed the gross

and operating ratios were 0.7836 and 0.7788 respectively. This implied that 78.36% and 77.88% of the total revenue of the enterprises goes to cover for the total cost and total variable cost of production respectively (table 4). The ratios also indicated the farmers were making profit in the enterprise. This is not at variance with the result of other earlier profitability indicators in the analysis.

Table 4: Profitability Analysis of Egg Production in Gombe L.G.A. Gombe State.

Profitability Component	Value
Gross Margin/Farmer (₦)	9770.19
Net Farm Income/Farmer (₦)	9561.37
Average profit/farmer tray (₦)	15.72
Return per naira invested (₦)	1.28
Gross ratio	0.7836
Operating ratio	0.7788

Farmers expressed concern about high mortality of the day old chicks, high feed cost, problems of ventilation and housing, and disease outbreak, in the area as shown in table 5. The high diseases outbreak and the housing problems might be the

contributing factors for the high day old mortality. Other problems enumerated by the egg producers include inadequate veterinary services, availability of day old chicks and marketing.

Table 5: Problems of Egg production in Gombe L.G.A. Gombe State.

Problems	Number of Egg Producers (n=36)	Percentage	Ranking of Percentage
High Feed cost	31	86.11	2 nd
Labour	14	38.89	6 th
Veterinary services	22	61.11	5 th
Housing/Ventilation	28	77.79	3 rd
Diseases outbreak	26	72.22	4 th
Mortality of day old	34	94.44	1 st
Availability of day old chicks	13	36.11	7 th
Marketing of Eggs	8	22.22	8 th

Summary and Conclusion

The broad objectives of the study was the economic analysis of egg production in Gombe L.G.A. Gombe State. It examined the profitability and factors militating returns and possible ways of improving small-scale egg production in the area.

The data for study was collected using questionnaire from thirty six (36) farmers selected, using simple random sampling method. The data were analysed using descriptive statistics, gross margin and farm financial ratio analysis.

The study revealed that, the mean age of the farmers was 32 years with a household size of 6 people. It was also found, that, majority of the farmers were formally educated and 88.89% were using intensive (deep litter) system of poultry management.

The total cost of production per farmer was found to be ₦34617.06. The variable cost was estimated at ₦34408.24 per farmer, which accounted for 99.39% of the total cost of production. The fixed cost per farmer was 0.61% (₦208.82) of the total cost of production.

The total revenue per farmer was ₦44178.43, the sale of eggs was ₦35512.43, from spent hen was ₦6840.00; this accounted for 80.38% and 15.48% respectively or the total revenue. Return on every Naira invested was ₦1.28.

The farm financial ratios revealed a high but less than one (1) value of 0.7836 and 0.7788 for gross and operating ratios respectively. The factors limiting return for the enterprise were found to be high day old mortality, feed cost and housing.

From the result of the study, majority of farmers were using deep litter system of poultry management, feed and chick cost were the most important variable inputs increasing cost of production. However, gross margin and farm financial ratios showed that, egg production was profitable in the area, and there is a need for an efficient flock size management especially in terms of feed, housing and ventilation so as to reduce disease outbreak in order to keep mortality at minimum.

Recommendation

Based on the findings of the study, the following suggestions were made.

(a) To increase their revenue, so as to earn more profit, farmers should find a way to reduce their variable cost especially on feed. This can be done either by compounding the feed locally or changing the source of the feed.

(b) The farmers should practice recommended flock size management in relations to the space available, as a means to reducing mortality rate, and / or disease out break.

(c) The farmers should form a marketing society for their product, in order to secure enough ready market for the eggs.

(d) Farmer should seek the services of qualified veterinary officers so as to avoid undiagnosed medication.

References

- Adegbola, T.A. (1989). A study of commercial poultry in selected farms in Anambra State. *Journal of Animal Production Research* 9 (2): 61-72.
- Adu, I.F. (1996). Poultry development in Nigeria: Politics, Problems and prospects *Nigerian Journal of Animal Production News letter* 13 (1): 1-4.
- Bucket, M. (1981). *An introduction to Farm Organisation and mangement* 2nd Edition. Paragon, Press Oxford 338pp.
- Hamidu, B.M. (2000). Economics of Resource-Use in small-scale Rice Farms: A Case of Labour Utilization in Dass L.G.A., Bauchi State. Ph.D. Thesis, Abubakar Tafawa Balewa University, Bauchi 122pp.
- Kay, R.D. (1981). *Farm Management, Planning, Control and Implementation*. Mac Graw Hill. Tokyo 370pp.
- Obibuoky, D.C. (1983). *Agricultural Extension Strategy for Agricultural Transformation*. University of Nigeria Press Nssuka 199pp.
- Okon, E. (1975). *Biology of Domestic fowl*. Ethione Publishing House, Benin City.
- Olukosi, J.O. and Erhabor, P.O. (1989). *Introduction to farm Management Economics*. Agitab Publishers Limited Zaria 114pp.