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PROFITABILITY ANALYSIS OF POULTRY EGG PRODUCTION IN KADUNA STATE, NIGERIA.

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SUMMARY

This study was undertaken with the broad objective of analyzing the profitability of egg production in three local government areas (Birnin-Gwari, Jema'a and Igabi) of Kaduna State. Data were collected through structured questionnaire administered in respect of production activities. The data obtained were analyzed using descriptive statistics, and Gross margin analysis. The results from the Gross margin analysis showed that egg production in the study area was profitable. The t-statistic test in the analysis of cost and revenue revealed that there was significant difference ($p<0.01$) between revenue and cost of production in the 3 local government areas (LGAs). Cost structure analysis for the production inputs in the 3 LGAs indicated that feed cost formed between 86 to 87% of the total variable costs of production. It was observed that 60% of the producers in Igabi LGA produced their poultry feeds locally and hence had lower feed costs and consequently higher Gross margins.

KEYWORDS: Profitability, poultry egg, production, kaduna state, Nigeria.

INTRODUCTION

Poultry production in Nigeria has developed to the level of commercial enterprise involving thousands of birds. Large scale poultry units have emerged while more efficient strains of birds, balanced feeds, intensive housing and better poultry equipments and veterinary care are now available. The poultry industry has become a diverse industry with a variety of business interests such as egg production, meat production, hatchery and poultry equipment marketing (Oluyemi and Roberts, 1979).

However the decision to start any of production type or enterprise depends on the availability of capital, viability of the business and the return on investment (Kekocha, 1994). The products from poultry provide an acceptable form of animal protein to most people in the world with the exception of strict vegetarians (Smith, 1990). Also in the spirit of the Federal Governments poverty alleviation and food security programmes, poultry production is advocated to individuals and corporate bodies. Therefore a prospective commercial egg producer requires financial capital to start the enterprise. It is also expected that the cash returns from the enterprise be sufficient to continue the business even to the end of the production cycle.

According to Olayide and Heady (1982), the end product of the input-output systems of livestock industry is the focus of attention; the economics of animal protein production becomes crucial for both producers and consumers. On the producer's side, interest centers on productive efficiency with respect to minimum costs, maximum output and optimum distribution. On the consumer's side, interest centers on the income structure in terms of purchasing power. Hence, the need for cost and returns analysis of the enterprise. The study therefore, seeks to determine the profitability of egg production and constraints limiting the productivity in three Local Government Areas (LGAs) of Kaduna state.

Problem Statement:

Nigeria has a rapidly growing population whose living standards change so rapidly. The country is gradually finding it difficult to sustain per capita consumption of food including meat and eggs (Anonymous 1988). In commercial egg production enterprise, egg is the major source of revenue, the egg price must be reasonable to be able to make profit, but egg price does not seem to favour poultry farmers in Nigeria. Egg price does not vary proportionately with the rise in feed prices and this has been an area of major concern to poultry farmers, researchers and policy makers (Ugbajah, 1987).

Poultry production is the cheapest means of producing animal protein which Nigerians need seriously due to its short supply in the country. According to Ogunsote (1988), Owolabi (1988), Aromolaran (1987), Ugbajah (1987), Judith (1993), Aromolaran and Asiru (1998), Nigeria as well as many developing countries have for a long time been plagued with the problem of a worsening situation of inadequate consumption of animal protein. This gave rise to a number of programs aimed at improving food production in the country. These programs include, Operation Feed the Nation (OFN) (1976), Green Revolution (1980), Directorate of Food, Roads and Rural Infrastructures (DEFRRI) (1986), Family Economic Advancement Progamme (FEAP) in (1995) and the present Poverty Alleviation and Food Security Programmes.

Poultry business, like nearly every other productive enterprise passes through periods of relative prosperity and depression. Profits in poultry keeping depend mainly on favorable relationship between the costs involved in producing poultry products and the income received from the products. Other factors that affect profits of egg producers include egg production per bird during the laying year, the extent of mortality in the flock, management efficiency, cost of inputs particularly of feed and egg prices received by the farmers.

This study attempted to answer the following questions and some others that may arise in the course of the study.

a. What are the components of egg production costs and how do these costs affect the profit of the poultry farms in the study area?

b. How profitable is commercial egg

production in Kaduna State?

Objectives of the Study

The broad objective of this study was to analyze costs components and profitability of egg production in three Local Government Areas (LGAs) of Kaduna State.

MATERIALS AND METHODS

This study was conducted in three local government areas (LGAs) of Kaduna State. The state is made up of 23 Local Government Areas (LGAs) and is situated between 8 degrees 45" and 11degrees 30" and 6 degrees 10" and 9 degrees east. The mean annual temperature is about 34 degrees centigrade with the hottest months being from March to April (40 degrees centigrade) and coldest period (13.2 degrees centigrade) is between December and January during severe harmattan. Rainfall varies between 1000mm and 1500mm and the rainy season lasts for about 150 to 200 days (mid April to mid October). The dry season occurs from late October to early April (RIM, 1993). The primary occupation of the people is farming. Three Local Government Areas (LGAs), Birnin-Gwari, Jema'a and Igabi from the three Agricultural zones of the state were purposively selected so as to enable the researchers obtain data that are representative of the state.

Sampling Procedure:

Thirty egg producers were randomly selected from a list of 36 egg producers from the 3 LGAs (13 egg producers in Igabi; 11 in Birnin-Gwari LGA and 12 in Jema'a LGA). At least 10 egg producers were randomly selected from each LGA. The names of the egg producers were obtained from egg sellers in the 3 LGAs during a pre-study survey of egg sellers in these LGAs. Data were collected from egg producers in these 3 LGAs.

Data collection:

The main tool used for data collection was a well-structured questionnaire administered using interview technique. Data collected were on sources of fund, productivity of birds, costs of production and constraints to production. The data were collected from the semi-intensive (100 to 500 birds) and intensive (501 to 1500 birds) egg producers in the state (Table I).

Data Analysis

Data collected were analysed by using descriptive statistics such as mean, frequency distribution, standard deviation, coefficient of variation and budgeting technique to determine the profitability or otherwise of the enterprise.

Descriptive Statistics

This was employed to achieve the objective of this study

(i) The mean is expressed as

Where, =mean

Xi = individual observation

n = Sample size

(ii) Standard deviation (S) is expressed as

Where, =mean

X_i = individual observation

n = Sample size

S = Standard deviation

(iii) The Coefficient of Variation (CV) is expressed as

CV = S/X

Where, S = standard deviation

=mean

Budgeting Technique

Gross margin analysis was used to calculate the income of the producers. According to Olukosi and Erhabor (1988), Gross margin (GM) is expressed as;

GM = GI - TVC

Where, GI = Gross Income

TVC = Total Variable cost

Unit of measurement is per 100 layers

RESULTS AND DISCUSSIONS

The major problems identified in the study area were high feed cost, high cost and non-availability of day-old chicks, vaccines failure and high capital investment.

This corroborates the findings of Adepoju (1999) that, feed input accounted for about 74% of the total cost of production in the poultry enterprise. Unfortunately, the farmer has no control over the feed prices and quality. The introduction of Structural Adjustment Programme (SAP) by the Federal Government of Nigeria in 1986 has raised the prices of crucial inputs such as feed, vaccines and day old chicks.

Socio-Economic Characteristics of the Egg Producers

It was discovered that 30% of the producers each in Birnin-Gwari, Jema'a and Igabi LGAs were in the age group 21 to 30 years, while 40% in Birnin-Gwari 30% in Jema'a and 50% in Igabi were in the age group 31 to 40 years. 30% of the producers in Birnin-Gwari and Jema'a LGAs each were in the age group 41 to 50 years while 20% of the producers in Igabi LGA were in this group. The analysis revealed that 70% of the producers in Birnin-Gwari; 60% in Jema'a and 70% in Igabi were between the age group of 31 to 50 years of age, implying that majority of the producers in the 3 LGAs were middle age people.

The analysis of years of experience in egg production in the study area showed that 70% of the producers in Birnin-Gwari; 50% in Jema'a and 40% in Igabi had years of experience in egg production ranging from 6 to 20 years. About 30% of the producers in Birnin-Gwari, 50% in Jema'a and 60% in Igabi had years of experience ranging from 1 to 5 years. This analysis showed that producers in the study area were not new in the business.

The study revealed that the least academic qualification of the respondents was primary school certificate (20% of the respondents). About 33% of the respondents had secondary school education while 47% attended higher institutions. This could be a reason for the producers being successful in the poultry business which requires one to be literate in order to be successful.

About 90% of the producers in Birnin-Gwari LGA were males while 10% were females. About 80% and 20% of the producers in Jema'a LGA were males and females respectively, while in Igabi LGA, 70% and 30% of the producers were males and females respectively. The result of the analysis showed that majority (80%) of the producers in the study area was males while 20% were females.

The results of the analysis also revealed that 70% and 30% of the producers in Birnin-Gwari LGA utilised family labour and both family and hired labour respectively. In Jema'a LGA 40% and 60% of the producers utilised family labour and hired labour respectively. For the producers in Igabi LGA, 40% and 60% utilised family labour and hired labour respectively as was the case in Jema'a LGA. No exclusive use of hired labour was observed in 3 LGAs studied.

Inputs Requirement (Feed, Flock Size and Labour) and Egg Output Level in Egg Production

This analysis is necessary in order to deduce the relationship between inputs and output in egg production. The important inputs involved in egg production are shown in Table I. The table revealed that producers in Birnin-Gwari LGA produced on the average 3,364 crates of egg using averagely 1,009 bags of feed and 4,819 man hours, the average number of layers for these producers was found to be 477. The coefficient of variation was 46.9%, 46.3%, 46.6% and 46.1% for output of eggs, feed, labour and flock size respectively. This indicates that there was wide variation in number of crates of egg produced, bags of feed used, labour and flock size of the producers in Birnin-Gwari LGA.

In Jema'a LGA, the analysis revealed that average number of crates of eggs produced was 5156 using on the average 1,569 bags of feed, 7027 man hours and 713 layers.

The coefficient of variation was found to be 51.9%, 54.5%, 55.1% and 53.7% for output of eggs, feed, labour and flock size respectively. There was wider variation in the output and inputs among producers in Jema'a LGA than in Birnin-Gwari LGA.

Producers in Igabi LGA produced on the average 6,721 crates of egg using averagely 2,388 bags of feed, 9,537 man hours and 944 layers. The coefficient of variation was found to be 69.1%, 69.4%, 69.8% and 67.3% for output of egg, feed, labour and flock size respectively. Producers in Igabi LGA had wider coefficient of variation in output of egg, feed, labour and flock size than in those two LGAs (Birnin-Gwari and Jema'a LGAs).

Gross Margin Analysis

The Gross margin analysis result showed that egg producers in Igabi LGA have higher Gross margin 84,695.69 than egg producers in Birnin-Gwari (63,266.64) and Jema'a LGAs (64,103.37) per 100 layers respectively. The reason for this difference was due to the fact that about 60% of the producers in Igabi LGA prepared their poultry feed locally and therefore had lower feed cost (102,444.69) than the producers in Birnin-Gwari and Jema'a LGAs (117706.72 and 119,459.60 respectively(TableII).

The Gross margin analysis for the producers in the study area on per 100 layers basis is shown in Table III. The Gross margin was 70,688.57, feed cost was 113,203.67, and labour cost was 6801.13 and chicks cost was 7,980.08. Medication cost was 2,439.29 per 100 layers.

Variability in Profit Margins among the Producers in 3 LGAs per 100 layers

Table 4 shows that the average profit margin for producers in Birnin-Gwari LGA was 63,266.64. The average revenue was 198,321.73 and average cost was 135,055.09.

The calculated coefficient of variation for revenue, cost and profit was 4.7%, 4.7% and 16% respectively. These figures indicate that there was wider variability in profit margin among the producers in Birnin-Gwari LGA than there was in revenue and cost.

For the producers in Jema'a LGA, the average revenue was 202,595.50, average cost was 138,492.13 and the average profit margin was 64,103.37 per 100 layers. The coefficient of variation of revenue, cost and profit margin was 4.8%, 7.2% and 21.4% respectively. These figures indicate that there was wider variation in profit margin among the producers in this LGA than in revenue and cost.In Igabi LGA, the average revenue was found to be 203,910.90, average cost was 119,215.21 and average profit margin was 84,695.69. The coefficient of variation was found to be 4.4%, 12.3% and 18.4% for revenue, cost and profit margin respectively. The higher coefficient of variation (18.4%) indicated that there was wider variation in the profit margin of the producers in Igabi LGA. The coefficient of variation (12.3%) for cost also indicated that there was a wide variation in cost among the producers in Igabi LGA. These (wide variations in profit margin and cost) could be attributed to the fact that 60% of the producers in this LGA produced their poultry feed locally and therefore their feed cost was lower and hence higher profit margins than the 40% who purchased feed.

The t-statistic test showed that there was significant difference between revenue and cost of production in the 3 LGAs (Birnin-Gwari, Jema'a and Igabi LGAs). The calculated t-values were 18.08, 14.49 and 5.48 for the producers in Birnin-Gwari, Jema'a and Igabi LGAs respectively. All the t-values were significant at 1% level of significance. Therefore, the null hypothesis was rejected, and the alternative hypothesis that egg production was profitable in the area of study was accepted.

CONCLUSION

It was observed that egg production was profitable. The Gross Margin calculated per

100 layers for the 3 LGAs was ₦84, 695.69 for producers in Igabi LGA, ₦63, 266.64 for producers in Birnin-Gwari LGA and ₦64, 103.37 for the produces in Jema'a LGA.

It was also discovered that feed input formed between 86 to 87% of the total variable cost of production. Producers who formulated their poultry feed were found to have lower feed cost and hence higher Gross Margins. The t-statistic test between cost and revenue showed that the t-values were significant at 1% level of significance meaning that egg production was profitable in the study area.

RECOMMENDATIONS

Government's primary role should be to act as a catalyst to development and to protect the interests of both the producer and the consumers. The small farmer will require greater attention and assistance as the findings of this study indicated.

The Federal and State Government efforts need to be intensified in the following areas:

Feeds: Farmers should be encouraged to establish cooperative feed mills. They should be taught how and where to procure the feed ingredients and mix their own feeds. They should be encouraged to use local feedstuff to cut down on costs of feed production.

Disease Control: Government should continue to promote veterinary services at subsidized levels to farmers and emphasis should be on prevention of diseases through flock health management. This should include the control of flock movement into the country and proper monitoring of hatcheries. Imported drugs and vaccines should be certified before being allowed into our markets. This will go along way in eliminating the importation of drugs and vaccines that are not suitable to our environment. National Veterinary Research Institute in Vom should be given more incentives and encouragement to continue with the production of veterinary drugs and vaccines that are suitable to our environment.

Day-old chicks: National Animal Production Research Institute (NAPRI) and breeders should be given financial assistance so as to encourage the production of day-old chicks in order to boost poultry production in the country.

TABLE I: Inputs (feed, labour and flock size) and egg output of producers in 3 LGAs of Kaduna state.

	Feed (bags)	Labour (man hour)	Flock size	Output (crates)	Feed (bags)	Labour (man hour)	Param eter	Output (crates)	Birnin-Gwari INPUTS	Output (crates)	Jema'a INPUTS
Maximum	5986	1702	8216	820	9275	2915	12985	1325	14058	4752	19850	1980
Minimum	1171	355	1663	165	1587	449	2300	230	1780	541	2600	258
Average	3364	1009	4819	477	5156	1569	7027	713	6721	2388	9537	944
Std. Deviation	1577	467	2253	220	2677	855	3871	383	4646	1657	6660	635
Coeff. of variation	46.9%	46.3%	46.6%	46.1%	51.9%	54.5%	55.1%	537%	69.1%	69.4%	69.8%	67.3%

Source: Field survey data 2004

TABLE II: Gross margin analysis per 100layers for producers in LGAs of Kaduna state.

Item cost per 100 layers/72 weeks	Birnin-Gwari (₦)	Jema'a (₦)	Igabi (₦)
Feed	117,706.72	119,459.60	102,444.69
Labour	5,647.43	7,472.65	7,283.32
Medication	2,941.87	2,758.06	1,617.95
Chick	8,194.54	8,212.34	7,533.90
Utilities	564.53	589.48	335.35
Total variable cost (TVC)	135,055.09	138,492.13	119,215.21
Revue			
Egg sales	176,653.31	181,603.23	181,060.61
Spent layers	21,668.42	20,992.27	22,850.29
Total Revenue (TR)	198,321.73	202,595.50	203,910.90
Gross margin (GM) (GM = TR-TVC)	63,266.64	64,103.37	84,695.69

Note: *All costs and revenues were computed at 2004 prices.

Source: Computed from Field Survey Data, 2004

TABLE III: Gross margin analysis of egg producer s in the study area per 100 layers).

Items per 100 layers/production cycle (72 wks)	Value (₦)
	113,203.67
Feed	6,801.13
Labour	2,439.29
Medication	7,980.08
Chicks	496.45
Utilities	130,920.62
Total variable cost (TVC)	
Revenue	179,772.38
Egg sales	21,836.99
Spent	201,609.38
Total revenue (TR)	
Gross margin (GM) (GM = TR-TVC)	70,688.57

Source: Computed from Field Survey Data, 2004

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TABLE IV: Variability in profit margin of producers in the 3 LGAs per 100 layers

	Birnin-Gwari			Jema'a			Igabi		
Parameter	Revenue	Cost	Profit	Revenue	Cost	Profit	Revenue	Cost	Profit
Maximum	211800	143412.50	79115.22	219391.30	152196.67	87307.32	214000.00	139165.41	106796.30
Minimum	184200	122518.31	48981.25	189916.67	119469.53	37720.00	182920.23	106411.56	63568.42
Average	198321.73	135055.09	63266.64	202595.50	138492.13	64103.37	203910.90	119.215.21	84695.69
Std. Deviation	9246.60	6285.47	10237.86	9685.51	9981.43	13651.09	8901.09	14781.13	15161.15
Coefficient of variation	4.7%	4.7%	16%	4.8%	7.2%	21.4%	4.4%	12.3%	18.4%
T-statistic		18.08*			14.49*			5.48*	

* Significant at 1 percent level of significance

Source: Field Survey Data 2004

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