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Profitability and Constraints of Median Scale Battery Cage System of Poultry Egg Production in Edo State, Nigeria

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Abstract: This research was aimed at examining the Profitability and Constraints of medium scale Battery Cage system of Poultry farmers involved in egg production in Edo State. Nigeria. A total of 100 questionnaires were administered and the simple random sampling technique was used to select egg producers from Oredo Local Government Area (LGA) of Edo State of which eighty eight questionnaires were found suitable for analysis. Descriptive statistics such as tables, frequency distribution and percentages were used to determine the socio-economic characteristics of the poultry farmers. The gross margin analysis, net returns and return per naira were used to determine the profitability of egg production. The constraints to egg production were analyzed using the likert scale technique. The results of the analysis revealed that the average number of birds raised is 1,930 birds. (This revealed that the system was operated under small-Scale). The study revealed that 44% and 54% of the respondent was females and males respectively. The results of the study also revealed that the fixed capital investment per farm was N 474, 988.65. Also, total fixed cost less depreciation was N 423,545.86. The study also revealed that total revenue and net returns from the sales of egg and other sources per bird per year was N3, 421.86 and N3, 168.70 respectively. Finally the major constraints faced by the farmers are in the order of inadequate finance, high cost of feed, low egg price and high cost of medicine and vaccine.

Key words: Battery cage, profitability, egg production, constraints, Edo State Nigeria

Introduction

Livestock production is an important part of farming in Nigeria agriculture. People depend on livestock production for supplies of food, clothing, fuel, fertilizer and draught power to sustain the economy. Livestock farming also serves as a subsidiary occupation to supplement the income of small and marginal farm families. The production of livestock involves selection, breeding, feeding, care and marketing of animal. Success in raising livestock depend on many factors, Farmer must have knowledge, skill and patience. They must use the results by animal scientist. Research in animal science is carried out by many state University and many of the commercial firms which supply and services the animal industry and also do research in animal science. Among livestock based vocations, poultry occupies a pivotal position because of its enormous potential to bring about rapid economic growth, particularly benefiting the weaker section. Further, it needs low capital investment and yet assures quick returns within weeks and months in case of broilers and layers respectively. Eggs and poultry meat has emerged next to milk as a contributor to the output from livestock sector in recent years. The percentage contribution of eggs and poultry meat was 4.47 percent in 1951-1952, which reached to a litter over 9 percent in 1995-1996 (Kumar and Pandey, 1999). Nigeria has potentials to produce a wide range of livestock based on its climate and agro-ecological conditions. While the Northern part and middle belt can guarantee the production of sheep, cattle, goat and poultry the Southern part of the country have potentials to produce goat, pig and poultry. Thus poultry production takes place in all parts of the country.

Penda, (1985) and Akinyosoye, (1985) reported that cage system is the best because it makes the most economic use of land and labour. The battery cage system for laying hens was introduced commercially on a wide scale in the 1950's. Since that time, it has become the predominant method for maintaining hens. Cage provides the egg producer with an efficient and cost effective means of collecting eggs, disposing of waste, reducing feed wastage, maintaining an adequate environmental temperature and inspecting the condition of individual birds. Cages are of different types, the wooden type or metal, each unit having drinking and feeding trough attached to it. Each cell can accommodate one, two, three or more birds depending on the dimension of the cells used (North, 1984). Legally 3 hens can be kept in a cage measuring only 41.5cm by 41.5cm and 5 hens can be kept in a cage measuring 50cm squared. The objectives of this study is:

To examine the socio economic characteristics of egg producers in the study area, to determine the profitability of egg production, to determine the return per naira of battery cage system of egg production and identify the constraints faced by poultry farmers in the area of study.

Materials and Methods

The data used in this study were collected from a cross sectional survey of poultry egg farmers in Oredo Local government area in Edo State, Nigeria. The state is one of the 36 states in Nigeria. It is located in the southern part of the country. Edo state was created in 1991 out of the former Bendel state. Edo state has 18 Local Government and Oredo is one of them. The total population in Oredo local area in (1999 estimation) is 352,918 with male population of 178,327(50.5%) and female population 174,591(49.5%). It occupies the area (km squared) of 249.1971 and population density (person/kmsq) of 1416. Oredo was created in the year 1976. The state is agrarian and well suited for the production of permanent crop such as Rubber and Oil palm and Arable crops (maize, yam and cassava) because of favorable climatic conditions. The people are predominantly peasant farmers cultivating food and cash crop. They also embark on small, medium and large-scale livestock production such as rearing of goats, sheep, pigs, rabbits and poultry as well as marketing of their products. The people live mostly in organized settlement, towns and cities. The economic mainstays are commerce, cottage, industries, arts and crafts, tourism, agriculture, furniture wood processing and the major agricultural products includes cassava, yam, cocoyam, plantain, melon, pepper, okra, palm kernel, tomatoes, vegetables, pineapple and Rubber.

The Random sampling technique was used both for economic reasons and especially because of time constraints. A total of 100 questionnaires were administered to egg production farmers and a response of 98 copies was received out of which 88 copies were suitable for analysis. This sampling procedure gives both male and female farmers equal chance of being represented

Primary data for the period of May-July 2005 were collected from Oredo local government area in Edo state to estimate the cost and returns, to find out the constraints in egg production and to compare the socio economic characteristics of egg producers. A questionnaire schedule was employed in gathering the required information from the relevant respondent. The questionnaire incorporated open ended and close-ended questions and was designed to obtain data to meet the objectives of the study. Data collection techniques included direct questioning & discussions with the egg producers as well as where possible, a review of farmer-kept records. In all cases informal discussions and observations were employed as techniques of a verifying collected data. Data were collected with the use of a structured questionnaire designed to collect information on output, input, prices of output and input and some major socio-economic characteristics of the farmers in the study area.

Descriptive statistics such as mean, tables, percentages etc also gross margin analysis, and likert scale were used to analyze the data obtained. The socioeconomic characteristics of the farmers were examined. The variables include age of farmer [years], experience of farmers in poultry production [years], years of schooling of farmer, family size of farmers and marital status of farmers. The socio-economic variables were analyzed using descriptive statistics such as tables, percentages, mean etc.

Table 1: Mean Statistics of Socioeconomic variables of Farmers in Oredo Local Government Area Edo State Nigeria

Variables	Battery Cage Poultry Farmers	%
Gender		
Male	49	56
Female	39	44
Age (Years)	38	
Marital Status:		
Married	49	56
Single	34	38
Divorced	5	6
Family Size (persons)	5	
Farming Experience (years):	14	
Education (years)	11	

Gross margin analysis was used to determine the profitability and returns per naira Gross margin: This is the difference between the Total Revenue (TR) and the Total variable cost (TVC) per unit of a fixed input required to produce the crop or a particular livestock product. Gross margin is used for comparative analysis of activities on one farm and between farms that are in similar environment.

GM = TR - TVC

Net profit = TGM - TFC

Where GM = Gross margin

TR = Total Revenue

TVC = Total variable cost

TGM = Total gross margin

TFC = Total fixed cost

Return per naira was calculated using the formula

R/N = NR / TC

where: NR = Net returns and TC = Total cost

Utomakili and Aganmwonyi (1995) and Ogbonna and Ezedinma (2005)

Likert scale method was used in determining the constraints. This scale is a 5 point scale and employs an ordinal level of measurement. That is, the response required from the respondents can be ranked in a sort of dimension. The responses to the various constraints were scored in a way that the response indicating the most serious constraint is given the highest score (that is, 5). As a 5 point scale the response were grouped into 5, that is

Very serious (VS) = 5 Serious (S) = 4

Moderately serious (MS) = 3 Least serious (LS) = 2

Not serious (NS) = 1

For a given constraint, the mean was completed by

Table 2: Cost of Fixed Capital

Particulars	Battery Cage System	%
Investments on Poultry building Store and Cage	633,888.89	33.22
Investment on borehole and overhead tank	285,555.56	14.97
Investment on equipment and machinery	328,058.82	17.19
Cost of land	660,450.00	34.62
Total	1,907,953.27	100

Table 3: Cost of production per farm (in Naira) per annum

Items of Cost	Battery Cage	%
Fixed Cost		
Depreciation on Building store and Cage	9,960.73	2.26
Depreciation on borehole and overhand tank	48,272.73	11.73
Depreciation on equipment and Machinery	51,950	12.2
Depreciation on land	20,255	4.78
Cost of day old chick	274,882.40	64.9
Cost of electricity	18,625	4.40
Total fixed cost	423,545.86	100
Variable cost		
Cost of feed	41,257.69	63.43
Medicine and Veterinary charges	5,156.25	7.92
Cost of Litter	2000	3.07
Cost of labour	6,183.33	9.51
Miscellaneous cost	10,451.56	16.07
Total variable cost	65,048.83	100

Table 4: Gross and Net Returns from egg and other sources in Naira per annum

Items of Cost	Battery Cage
Fixed Cost	
Depreciation on Building store and Cage	9,960.73 (2.26)
Depreciation on borehole and overhand tank	48,272.73 (11.73)
Depreciation on equipment and Machinery	51,950 (12.2)
Depreciation on land	20,255 (4.78)
Cost of day old chick	274,882.4 (64.9)
Cost of electricity	18,625 (4.40)
Total fixed cost	423,545.86 (100)
Variable cost	
Cost of feed	10,451.56 (16.07)
Medicine and Veterinary charges	5,156.25 (7.92)
Cost of Litter	2000 (3.07)
Cost of labour	6,183.33 (9.51)
Miscellaneous cost	41,257.69 (63.43)
Total variable cost	65,048.83 (100)
Total cost	6,578,222,96
Returns	
Crate of eggs	6578,196.95 (99.6)
Cullied birds	4,640 (0.07)
Manure	20,675 (0.31)
Other	700 (0.01)
Total Returns	6,604,211.95 (100)
Gross Returns	6,180,666.09
Net Returns	6,115,617.26

taking the sum of the products between the number of responses and grade point and then divided by the total number of responses. This method of determining the constraints is important because it tells us exactly those constraints that are not important, that is when the mean is less than 3, it also show us those very serious constraints, that is , those with mean equal to or more than 3 (Ekunwe *et al.,* 2006).

Results and Discussion

Socioeconomic Characteristics of Battery Cage Poultry Farmers: The results of the socioeconomic characteristics are presented in Table 1. The results of the analysis revealed that 56% and 44% of the respondents are male and female respectively. This shows that males are more involved in battery cage system of poultry management than females. The results of the analysis on age revealed that the age mean age of the farmers was 38 years. Also, 56% of the farmers are married while 38% and 6% are single and divorced respectively. This shows that the married are more involved in battery systems of egg production as opposed to the others. The analysis showed the farmers had average family size of 5 persons. The educational status of sampled farmers revealed the average years of formal education is 14 years. This shows that more of the literate farmers are more involved in the system of poultry management. From the analysis it was found that all the farmers interviewed had a considerable level of experience. The average farming experience was 11 years. The result also showed that the average number of birds raised was approximately 1930 birds. This result revealed that the entire respondents interviewed operated a medium scale. Ojo (2003) and Rajendran and Mohanty (2003).

Profitability of the system: The investment on land in battery cage system account for a major share of total fixed investment (34.62%). The total fixed capital investment was N1, 907,953.27 and per bird was N 988.58, (Table 2). Table 3 shows the total cost of production for the battery cage system of egg production. The results showed that the cost of day old chick accounted for 64.9% of the total fixed cost per annum, while for the variable cost, the cost of feed accounted for 63.43%. The results of the analysis also revealed that the total return from egg production from the system was N 6,578,196.95 that is about 99% of the total revenue from the system. (Table 4). However, the gross return

Table 5: Gross and Net Returns from Egg and other Sources per Bird (in Naira)

Sources of Income	Battery Cage	%
Egg	3,408.39	99.61
Culled Bird	2.40	0.07
Manure	10.71	0.31
Others	0.36	0.01
Total Returns	3,421.86	100
Total Cost	253.16	100
Net Return	3,168.70	
Return per Naira	12.5:1	

Table 6: Constraints faced by farmers

Constraints	Mean Value	Standard Deviation
Inadequate Finance	4.72	3.43
High cost of feed	4.27	3.45
Low egg price	3.89	3.56
High cost of medicine and vaccine	3.78	3.24
Low quality of feed and feed ingredients	2.89	1.34
High cost of labour	2.78	2.43
Lack of facilities for disease control	2.50	1.89
High electricity tariff	2.00	1.78

and net returns for the system per annum are N 6, 180, 66.09 and N 6,115,617.26 respectively. The results of the profitability analysis revealed that the total revenue from egg and other sources per bird was N3, 421.86. While the total cost per bird was N253.16. This gives a net return of N3, 168.7 per bird. The results of the analysis showed that the return per naira was 12.5:1 that is for every N1 invested the farmers get N12.5. (Table 5)

Constraints faced by farmers: The results of the analysis showed that inadequate finance ranked first among the various constraints with a mean value 4.72. Ranked next to inadequate finance is the high cost of feed 4. Also, Low egg price and high cost of medicine and vaccine Has a mean value of 3.89 and 3.78 respectively, (Table 6). Constraints with mean value less than 3 are minor constraints, while those with mean value above are major constraints.

Conclusion: The results of the analysis showed that despite the constraints that the poultry farmers faced they were still able to make considerable amount of profit. It is advised that reduced cost of input for egg production should be encouraged so that the farmers can be more productive through the provision of subsidies. The supply of medicine and vaccines to the poultry farmers are mostly in the hands of private sector in Nigeria and hence the state and local government should undertake necessary steps to regulate them so that the poultry farmers can get their supply at reasonable price

References

Akinyosoye, V.O., 1985. Poultry Production in Senior Tropical Agriculture. Macmillan Publisher Limited London Reprint, pg: 161-165.

Ekunwe, P.A. O.O. Soniregun and J.O. Oyedeji, 2006. Economics of Small Scale Deep Litter System of Egg production in Oredo Local Government Area of Edo State. Nigeria Federal Office of Statistics (FOS), (1996): Population Figures FOS Publication. Int. J. Poult. Sci., 5: 81-83.

Rajendran, K. and S. Mohanty, 2003. Comparative Economic Analysis and Constraints in Egg Production under Cage vs. Deep Litter System of Rearing in India, Int. J. Poult. Sci., 2: 153-158.

Kumar, A. and U.K. Pandey, 1999. Growth Performance of Livestock Sector in India, Policy Paper on Sources of Growth in the Livestock Sector, National Center for Agricultural Economics and Policy Research, New Delhi, India, 9: 3-12.

North, M.O., 1984. Commercial Chicken Production Manual 3rd edition. AVI Publishing Company Inc. West Port C.T.

Penda, P.C., 1985. Egg and Poultry Technology publishing house PYT Ltd Janipura India, pg: 2-4.

Ogbonna, M.C. and C.I. Ezedinma, 2005. Economics of Palm Oil Processing in Ihitte/Uboma, Imo State, Nigeria". Poceedings of the 39th Conference of Agriculture of Nigeria Benin 2005.

Ojo, S.O., 2003. Productivity and Technical Efficiency of Poultry Egg Production in Nigeria. Int. J. Poult. Sci., 2: 459-464.

Utomakili, J.B. and F.E. Aganmwonyi, 1995. Farm Management: A Basic Text Petersam Publisher, Benin City Nigeria.