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FACTORS AFFECTING THE GROSS MARGINS OF BROILER ENTERPRISES IN CALABAR MUNICIPALITY, CROSS RIVER STATE, NIGERIA.

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ABSTRACT

A survey was conducted to determine the factors that affect the gross margins of some broiler farms in Calabar Municipality of Cross River State using regression analysis. Six independent variables (X_1-X_6) were fitted into the regression equation to determine gross margin which is the dependent variable (Y). These independent variables were cost of feed (X_1), day old chicks (X_2), labour (X_3), drugs and vaccines (X_4), water (X_5) and other costs (X_6). The linear functional form was selected as the lead equation on the basis of the strength of the coefficient of determination (R^2), significance levels of variables and the signs of the coefficients. The linear function had an R^2 value of 65.7% implying that 65.7% of the variation in gross margin was explained by the included variables in the equation. The F value of 5.75 was significant at 1% implying that the overall equation had significance. The coefficients were all negative except other costs (X_6), meaning that they were all negatively correlated to the gross margin. This implies that the more the amounts expended on these variables, the smaller the gross margin. However, only cost of feeds, labour and other costs were significant at 1%, 5% and 5% respectively. There is therefore the need to keep the amounts expended on all these variables low, particularly cost of feeds which was significant at 1%, implying a very strong influence on gross margin. This can be achieved by looking for cheaper alternatives such as cassava to supply carbohydrates instead of maize, in a way that would not compromise standards and quality.

KEY WORDS: Gross margin, Broiler enterprise, regression, input variables, coefficients.

INTRODUCTION

Animal protein deficiency, which has become the hallmark of most developing economies can be confronted head on and surmounted if there is a major policy thrust on the part of governments of developing Countries to encourage poultry production. The reason is simple. Birds are prolific, with a short gestation period and Generation Interval, they have the benefit of high numbers and can be ready for the table in a matter of weeks. Broilers for instance can be ready for the table these days in as short as six weeks (Oluyemi and Roberts, 2000). Poultry enjoys wide acceptance among adherents of different religious sects across the nations of the earth (Enyenihi, *et al*, 2003).

A lot of research has been carried out and many are on going, on how to improve poultry production. Specialised breeds like meat breeds, layers and dual purpose birds have been developed over the years through breeding and selection. Animal nutritionists have been concerned with how to reduce anti- nutritional factors in feed ingredients, meeting the nutritional requirements and enhancing the efficiency of feed use of poultry birds. Those involved in Poultry Housing and equipment have also been working round the clock to increase efficiency. There have also been great breakthroughs in the storage of poultry products and value addition.

In spite of all these advances in poultry production and on-going research efforts, there is the need to ask the question, 'how profitable is the poultry enterprise in a depressed economy like Nigeria's?' The need therefore arises to focus on the different variables that affect the Gross margins of Broiler enterprises. According to Abiola (2003), Broiler production is characterized by fast returns on investment, low land requirement as well as adaptability to small, part-time and large commercial production. The projected profit per broiler is N150:00.A hundred kilograms of poultry droppings in Calabar goes for a N100:00.Maggots from poultry droppings have also been shown to have a great potential as a source of protein in poultry nutrition with a biological value close to fish meal and superior to ground nut cake and soyabean (Abiola, 2003). Even hydrolised feather meal can replace soyabean in poultry rations though it is low in sulphur-containing amino acids and lysine (Adejumo and Ladokun, 2005).

The ban on the importation of frozen chicken by the Nigerian Federal Government (even though poorly supervised), and the growth of the fast foods industry portends a great future for broiler production in Nigeria. However, the cost of producing poultry meat has increased steadily over the years. A ton of maize as at November 2004 was N39, 000:00 in Ibadan in Southwestern Nigeria (a region that can be conveniently described as the mitochondria of commercial poultry production in Nigeria), but as at May 2005, a ton of maize in Ibadan sold for N64, 000:00, representing a 73.45% increase over the November 2004 price. This high cost of maize, which was occasioned in 2004, by drought in northern Nigeria where most of the nation's maize is produced, also caught up with other energy sources like millet, sorghum and guinea corn. The new export value of cassava has further exacerbated the scarcity of grains, causing the Nigerian Federal government in the month of July, 2005, to release grains from the National Strategic Food Reserve (NSFR) to cushion the effect of the high prices of foodstuffs. But the Government has had to be very cautious to check against smugglers catching in on this (The Guardian, July 29th, 2005). This trend occurs annually as most production in Nigeria is rain fed. Since nutrition gulps more than 80% of the total cost of running any poultry enterprise, any effort or government policy that reduces the cost of feed inputs, would increase gross margin.

Gross margin according to Say (1987) is one of the most useful indicators pointing to the viability of any enterprise. It is simply the difference between Total revenue (TR) and Total Variable Cost (TVC) (Upton, 1996). Ekpeyong (1995) opined that feed represents 64.96% of Total Variable Cost (TVC) while Ekpeyong (2002) observed that feed cost represented just 54.25% of TVC. Several other factors affect Gross margin of any Broiler enterprise. The age of the birds at marketing, for instance if birds are marketed between 8-12 weeks when the feed conversion efficiency of the birds must have dropped, this would obviously have a negative effect on Gross margin; Cost of day-old chicks, government policies and high cost of other inputs also take their own toll on gross

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margin (Gillespie 1992; Obioha 1992). As at 1983, Nigeria was acclaimed to be the 13th leading producer of poultry and poultry products in the world, but this is no longer the case today, 22years after, due partly to high cost of inputs and the fact that over the years Nigeria has progressively slided lower and lower on the poverty and production ladder.

The objective of this paper therefore, is to crystallize the factors that affect the Gross margins of Broiler farms in Calabar municipality with the ultimate goal of influencing policies concerning this sector of Agriculture. Findings that arise here from would be useful, not only to current broiler farmers, but also to prospective investors in this sector.

METHODOLOGY

The study was conducted in Calabar Municipality of Cross River State, located between latitude 4° 55'N and 5°55'N and longitude 8° 20'E and 8° 25'E. It is bordered in the north and west by Odukpani local government area, on the east by Akpabuyo local government area, and on the south by Calabar South local government area. The people are mostly Civil servants and speak the Qua and Efik languages. The population of the local government Area as at year 2000 was put at 176,213 (CRSG, 2004).

Data for the study came from both primary and secondary sources. The primary data were obtained from 25 broiler farms purposively sampled for the purpose of this study. This small number of respondents is due to the fact that we have very few poultry farmers in the study area. The names of the respondent farms and farmers were obtained from commercial suppliers of day old chicks as well as from their acquaintances. The selected farmers were interviewed using a set of structured questionnaire. The collected data were subjected to budgetary analysis as well as ordinary least squares (OLS) regression techniques using three functional forms (linear, exponential and double log) (Koutsoyiannis, 1977; Marriot, 1974).

The gross margins were obtained using:

GM=TR-TVC ... ... (1)

Where:

GM=Gross Margin

TR=Total Revenue

TVC=Total Variable Cost

The Total revenue (TR) in this study was given as the gross income accruing to broiler farms as a result of sales of matured birds, poultry droppings and empty bags of feeds.

The regression analysis was carried out to determine the factors affecting Gross margins. This is given implicitly as:

$Y = f(X_1, X_2, X_3, X_4, X_5, X_6)$ ... ... (2)

Where

Y=Gross margin of farm in Naira

X_1=Value of feed used by farm in Naira

X_2=Value of day-old chicks purchased by farm in Naira

X_3=Value of labour used on farm in Naira

X_4=Value of drugs and vaccines used by farms in Naira

X_5=Value of water used by farm in Naira

X_6=Value of other costs incurred by farm in Naira.

RESULTS AND DISCUSSION

The regression analysis revealed that 65.7% of the variation in Gross Margins of broiler farms in Calabar Municipality is jointly explained by Feeds (X_1), cost of day-old chicks (X_2), value of Labour (X_3), value of drugs and vaccines (X_4), value of water (X_5) and other costs (X_6).

The F-value of 5.750 was significant at 1%, indicating that the included variables were significant in jointly determining the Gross margin. The coefficient of feed was significant at 1%, with a negative sign, implying that the more the funds expended on feeds, the lower the gross margin. The matter is even more serious with the glaring reality that nutrition gulps more than 80% of the total cost of running any poultry enterprise (Oluyemi and Roberts, 2000). The coefficient of Labour was also significant (at 5%) with a negative sign. Table 1 shows the Variables that affect Gross Margin in Calabar Municipality using different functional forms.

Table 1: Coefficients of factors influencing the gross margins of Broiler enterprises in Calabar

Functional Form	Constant	X_1	X_2	X_3	X_4	X_5	X_6	R^2	$\bar{R}^2$	F
Linear	-3495.84 (-1.603)	-5.995** (-2.718)	-0.638 (-0.268)	-10.536* (-2.544)	-4.041 (-1.246)	-1.918 (-0.106)	5.014* (2.546)	0.657	0.543	5.750
Exponential	9.278 (29.573)	-8.497E-05 (-2.718)	4.149E-05 (1.217)	-9.664E--05 (-1.626)	-9.859E-05 (-2.119)	-2.764E-04 (1.0653)	5.965E-05 (2.114)	0.659	0.539	5.483
Double-log	-14.450 (-0.778)	-63.397[a]	5.363 (0.741)	0.772 (0.448)	0.514 (0.422)	0.635 (0.813)	-3.804 (0.622)	0.884	0.302	1.520

Figures in parenthesis are the t-values

** Significant at 1%

* Significant at 5%

X_1=Value of Feed (₦)

X_2=Value of day old chicks (₦)

X_3=Value of labour (₦)

X_4=Value of Drugs and Vaccines (₦)

X_5=Value of Water (₦)

X_6=Value of other costs (₦)

The Linear functional form was selected as the Lead equation on the strength of its R^2, the significance levels of most of the variables and the signs of the coefficients. The result of the analysis is presented in the equation below:

$Y = -34945.84 - 5.995X_1^{**} - 0.638X_2 - 10.536X_3^{*} - 4.04X_4 - 1.918X_5 + 5.014X_6^{*}$ ...(3)

(-1.603) (-2.718) (-0.268) (-2.544) (-1.246) (-0.106) (2.546)

R^2=0.657

$\bar{R}^2$=0.543

F=5.750

Figures in parenthesis are t-values

** Indicates that the variable is significant at 1%

* indicates that the variable is significant at 5%

All variables are as earlier defined

The R^2 value of 0.657 indicates that 65.7% of the variation in gross margins of broiler enterprises in Calabar municipality are jointly explained by the included variables namely; costs of feeds (X_1), day old chicks (X_2), Labour (X_3), drugs and vaccines (X_4), water (X_5) and other costs (X_6). The coefficients of feed and labour were negative (the more the amount expended on them, the lower the gross margin). Sourcing for cheaper alternatives to these variables would impact positively on the Gross Margins. These negative correlations between the dependent variable (Gross margin) and these independent variables (feed and labour cost, cost of drugs and vaccines, day old chicks and water) could also translate to inefficiency in the use of these resources.

CONCLUSION AND RECOMMENDATIONS

Feeds, chicks, labour, water and vaccines all affect Gross margin. The negative relationship these have with gross margin implies inefficiency in the use of these inputs. An arrangement for cheaper but no less effective alternatives to all these inputs should be sought. Efficient use of these inputs would also positively impact on Gross margins.

Investors should be encouraged to establish hatcheries to service the eastern axis of Nigeria to bring down the cost of day old chicks and total cost of production; this will also improve on the gross margin of the enterprise.

Establishment of feed mills and encouraging large scale cultivation of maize in Nigeria will go a long way in assuaging the high cost of poultry feeds which constitutes the main cost item in all broiler enterprises.

One of the ways to increase the Gross margins of farmers in Calabar Municipality and the entire Nation, is for several investors to plough their resources into setting up feed mills and looking for cheaper alternatives for feed ingredients like, maize. The fact that most of the feed ingredients come from the northern States also increases feed costs; the level of production of some of these feed ingredients could also be increased in the Southeastern .States. Another way of increasing the GM of broiler farmers is to set up more hatcheries in the Southeastern region, as is the case with the Southwestern part of Nigeria, which has come to be accepted as the hub of poultry production in Nigeria. The fact that hatcheries are many in South Western Nigeria brings about competition between the hatcheries, invariably keeping the prices of day old chicks low. The Southeast could also benefit from this competition and enjoy low prices, lower total cost and higher gross margins.

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