Profit Analysis of Poultry Production and Marketing in Okigwe L.G.A of Imo State, Nigeria: Implications for Employment Generation

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Abstract

This study compared the production and marketing of poultry in Okigwe Local Government Area of Imo state, Nigeria. Multistage random sampling technique was used in the study where communities, villages, poultry producers and marketers were randomly selected to get a total of 70 respondents in the study area. Primary data was collected from the field through the administration of well-structured questionnaires while cost and returns, regression and Z-test models were used in the data analyses. Cost and returns analysis showed that Poultry marketers made higher profits (₦55, 375.19) than producers (₦43, 647.11 The result of the regression analysis showed that age of the respondents, educational level, experience, household size, feed and access to credit strongly predicted the production and marketing of poultry by the operators. The test for significant differences in the mean profit of poultry producers showed that there is a significant difference (at 1%) in the average of profit of poultry producers and marketers in the study area. Based on findings of this study, there is need for the provision of marketing facilities and improvement on infrastructure such as roads and transportation facilities. Encouraging the younger poultry farmers to enter into production and marketing and the formation of cooperatives to enhance easy access to inputs will lead to increased production and marketing profits while creating employment for the teeming population.

Keywords: production, marketing, poultry, profit, employment

1.0   Introduction

Poultry is one of the most developed animal industries in Nigeria whose historic growth began as a result of its high level of energy and protein, rapid turnover rate and short incubation period – factors that has given the subsector upper hand above the others (Olapade *et al.,* 2005). The types of poultry that are commonly reared in Nigeria for commercial purpose are chickens, guinea fowls and turkeys (Kassali *et al.*, 2011); others include pigeons, ducks and of late, ostriches while.

Poultry (broilers and layers) are kept for the production of eggs and meat, and provide an acceptable form of animal protein to most people throughout the world. During the last decade, many developing countries have adopted intensive poultry production to meet the demand for this form of animal protein (FAO, 2013).

The poultry industry has emerged as the most dynamic and fastest expanding segment in animal husbandry sub-sector. Poultry meat is an important source of high quality proteins, minerals, and vitamins to balance the human diet (USDA, 1999). Due to the favourable nutrient conversion efficiency relative to beef and pork, global poultry production is projected to double by the year 2030 to meet this demand. The vast majority of the global demand for poultry products will

be in the form of chicken meat (Dave, 2003). Chicken meat is derived from poultry and it is reputed to be one of the safest meats available, as it is least associated with any side effects of consumption (Obi, 2003).

Agricultural development cannot occur without improved marketing. This is because agricultural marketing is concerned with all the economic activities involved in the production and distribution of agricultural products, Odii and Obih (2000). According to Egwu and Akubuilo (2007), marketing is the movement of goods and services from the point of production to the point of consumption by the ultimate consumers.

Marketing systems play a decisive role in vibrant economies as mechanisms for both exchange (necessary for specialization and hence leads to higher economic growth) functions and the proper coordination of the exchange (through price signals) which reflect and shape producer and consumer incentives in supply and demand interaction. If small scale domestic producers are to take advantage of the projected domestic demand growth, then marketing systems in the supply chains linking producers to consumers must be able to support low cost production and timely delivery of the products (Andrew *et al.,* 2008).

Poultry can only be supplied to satisfy the demand through effective and efficient marketing system which links farm and non-farm communities. For a marketing system to successfully coordinate the interaction of the suppliers and consumers of goods and services must be accompanied by efficient marketing system. It was noted that indigenous marketing systems in developing countries are generally exploitative, collusive and economically inefficient. The marketing system for poultry in most developing countries is described as informal and poorly developed.

It is obvious from the foregoing that exist a poor linking framework between poultry production and marketing system owing to inefficient pricing system. Both producers and consumers satisfy their conflicting goals regarding the pricing behaviour of a marketing system through such efficient and competitive marketing systems. This pricing behaviour as well value-chain activities are expected to affect profits from both production and marketing of poultry. The investigation into the profit difference spurred by these operations is the major thrust of this study. As a fall out, the study will examine the implications of the level of accrued profits on employment generation capacity by the existing and intending poultry operators. The specific objectives of this study are to: determine costs and return involved in the production and marketing of poultry in the study area; analyze the factors affecting the profit of poultry production and marketing in the study area and examine for differences in the profit of the producers and marketers.

2.0   Methodology

Study area: The study was carried out in Okigwe Local Government Area of Imo State, Nigeria. The area is located within the south east rain forest zone of Nigeria. The annual rainfall duration of Okigwe Local Government Area lasts from April to September; annual temperature varies from 26 °C to 28 °C and the relative humidity between 80 and 90%.The major food crops grown in the area are yam, maize, melon, cocoyam, oil palm, pineapple and vegetable. In addition, they also rear animals like goat sheep, poultry etc.

Sampling technique: Multi-stage sampling procedure was used in the selection of the sample size of the study. In the first stage, an autonomous community was selected randomly from the (6) autonomous communities in Okigwe Local Government Area. The second stage involved the random selection of a village from the selected community. In the third stage, assistance of

Extension officers and states ministries of Agriculture was employed to help identify seventy (70) poultry operators (35 producers and 35 marketers).

Data collection: Data for the study were obtained with the aid of a well-structured questionnaire designed to elicit the needed data from the respondents.

Data analysis: identification of the costs and returns involved in the marketing of poultry in the study area was realized through gross margin analysis and to analyze the factor affecting poultry marketing, using multiple model was employed.

Gross margin is defined as the difference between total revenue and total variable cost. Mathematically it is usually expressed as;

GM = TR – TVC

$\quad$ = P x Q -TVC

Where

TR = Total Revenue

TVC = Total Variable cost

P = Price Unit of Poultry product (₦)

Q = Number of Poultry product (number)

For factors affecting the profit of poultry production and marketing in the area, the model is given as:

$Y = f (X_1 X_2 X_3 X_4 X_5 X_6 …. X_9)$

Where;

Y = Profit of the poultry marketer (₦)

X_1 = Age (years)

X_2 = Household size (number of people living with respondents)

X_3 = Level of formal education (years)

X_4 = Experience (years)

X_5 =Cooperative membership

X_6 = Transportation cost (₦)

X_7 = Depreciation cost

X_8 = Amount of credit used. (₦)

X_9 = Quantity sold (numbers of birds)

For producers,

$Y = f (X_1 .... X_9)$

Y= profit in naira

X_1 = Age of respondents (years)

X_2 = Household size (number)

X_3 = Formal educational level (years)

X_4 = Experience (years)

X_5= feed cost (naira)

X_6 = labour cost (naira)

X_7 = capital (naira)

X_8 = cost of vaccines

X_9 = Quantity sold (numbers of birds)

To compare the profits by producers and marketers, the Z-test was used. It is stated as follows:

$$Z = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

$\bar{x}_1$ = Mean profit of marketers

$\bar{x}_2$ = Mean profit of producers
S_1^2 = Variance of profit for marketers
S_2^2 = Variance of profit for producers
n_1 = Sample size of marketers
n_2 = Sample size of producers

3.0   Results and Discussion
Cost and return involved in the production and marketing of poultry
Table 1 shows cost and return involved in the production and marketing of poultry.

Table 1: Cost and Return Analysis of Poultry Production and Marketing

PRODUCERS		MARKETERS	
ITEMS	Av. cost (₦)	ITEMS	Av. cost (₦)
Variable inputs		Variable inputs	
Feeds and vaccines	57657.14	Transportation	1743.71
Transportation	2480.88	Labour cost	1837.86
Cost of water	1195.71	Union charges	1521.43
Total Variable Cost (TVC)	61333.73	Loading/offloading	2351.67
Fixed costs		Total Variable Cost (TVC)	7454.67
Labour	7247.86	Fixed costs	
Rent	1995	Rents	1268
Total fixed cost	9242.06	Other cots	1000
Total Cost (TC = TVC + TFC)	70575.79	Interest rate	1200
Total Revenue from sales (TRS)	114222.86	Depreciation on fixed items,	4000
Profit (TRS – TC)	43647.11	Total fixed cost	7468
		Total Cost (TC = TVC + TFC)	14922.67
		Total Revenue from sales (TRS)	70297.86
		Profit (TRS – TC)	55375.19
Profitability ratio (Profit/TC)	0.62	Profitability ratio (Profit/TC)	3.71

Source: Field survey, 2017

The profitability of poultry producers and marketers was ascertained using cost and returns analysis as shown in Table 1. Poultry producers total fixed cost (₦9242.06) and total variable cost (₦9242) constituted about 87 and 13% of the total cost of poultry production while for the marketers, ₦7468 (50%) and ₦7468 (50%) were incurred as fixed and variable costs respectively. Poultry marketers made higher profits (₦55,375.19) than producers (₦43,647.11). The profitability ratio shows that for every one naira invested, producers made about 62 kobo while marketers made ₦3.71, a clear indication that marketers performed far better in the value chain. The profits obtained from these enterprises are higher than the prevalent national minimum wage of ₦18,000 implying that poultry production and marketing is a viable option for employment generation.

Factors affecting the profit of poultry production and marketing in Okigwe LGA
Table 2 shows the result of factors affecting the profit of poultry production. The linear function was chosen as the lead equation for the analysis based on conformity with *a priori* expectation of signs, magnitude of coefficients, overall significance of the functional form (F-statistics) as well as the explanatory power of the variables (adjusted R^2) included in the model. The F –

value was statistically significant at 1% level which implies that the independent variables (Xs) included in the model explained the dependent variable (Y), the output of poultry farmers. The R^2 value was 0.599 indicates that 59% of the total observed variations in poultry production were explained by the variables included in the model, while 41% of the variation was due to error.

Table 2: Multiple Regression result factor affecting profit of poultry production

Variables	Linear+	Exponential	Semi-log	Double-log
(Constant)	88076.051 (3.422)***	-288804.074 (-1.141)	11.405 (50.508)***	8.028 (3.619)***
Age	-59.76 (-3.621)***	-799.263 (-0.172)	-0.001 (-0.533)	-0.008 (-0.191)
Household Size	-5.016 (-2.126)**	-91.19 (-0.037)	-0.003 (-0.641)	-0.001 (-0.025)
Educational Level	5407.87 (1.828)*	-2.429 (-18.402)***	-0.047 (-1.808)*	-0.071 (-1.587)*
Experience	4851.932 (1.763)*	7454.77 (1.611)*	0.042 (1.749)*	0.065 (1.589)*
Feed	-0.504 (-2.389)**	36222.035 (1.541)*	4.60E-06 (1.277)	0.327 (-0.977)
Labour	-0.411 (-0.768)	-3334.749 (-0.958)	-3.67E-06 (-0.781)	-0.03 (1.159)
Capital	1.079 (1.536)*	1.335 (4.070)***	9.22E-06 (1.496)	0.048 (-0.102)
Credit	-0.957 (-1.937)*	-673.268 (-0.147)	-0.311 (-2.237)**	-0.004 (-0.420)
Vaccine	-0.015 (-0.11)	-1302.061 (-0.396)	-3.36E-07 (-0.028)	-0.012 (-0.970)
R²	**0.599**	0.278	**0.297**	**0.277**
F –ratio	**4.183***	1.072	**1.172**	**1.066**

***= significant at 1%,*= significant at 10%, **=significant at 5%
Source: Field Survey Data, 2017

The coefficient of age was statistically significant at 1% and negatively related to profit. This implies that as the age of farmers increased, profit decreased. Expectedly, the increase in farmer's age come with demanding responsibilities and as such increase his knowledge, experience, income and efficiency.

The coefficient for educational level was significant at 10% and positively related. This implies that as the educational level increased, poultry output increased. This is in conformity with *a-priori* expectation that the level of education of the farmers enhances their knowledge of farm business as well as their technical and managerial efficiency. The more educated the farmers is, the more his/her efficiency in farming. This result is in agreement with the research findings of Salimonu and Falusi (2009) that farmers level of education increase their output.

The coefficient of experience was significant at 10% and positively related to profit. It shows that a unit increase in the years of farming experience will lead to an increase in profit. It has been observed that the longer the years of farming experience, the more efficient the farmer becomes because the number of years a farmer has spent in the farming business may clearly give an indication of the practical knowledge he has acquired. This is an advantage in reducing farming risk inherent in the enterprise which will also help to boost production in any pre-determined period of farming business.

The coefficient of household size was significant at 5% and it is positively related to output. This implies that a unit increase in household size will lead to an increase in output. This implies that a unit increase on farmer's household size of the respondents would lead to an increase poultry output. This may be attributed to the fact that an increase in household size will enable the farmer to adopt proper and new technologies and improved varieties of breeding materials because of the availability of labour which in turn boosts output.

The coefficient of feed was statistically significant at 5% and it is positively related to the profit. This explains that a unit increase in the feed will result to an increase in poultry output. The feed material determines the quality and quantity of the farmers output as well as influences the farmers' market price. The coefficient of capital was statistically significant at 10% and positively related to poultry output. This suggests that a unit increase in the farmer's capital will result to an increase in output.

Surprisingly, the coefficient of access to credit was found to be negatively signed and significant at 10% level. The sign of the variable was at variance with normal expectation. It implies that poultry output decreases with access to credit. The result shows that the farmers in the study area might have spent most of their sourced credit on other household demands, rather than poultry production resulting in decrease in profit as more credit was sourced.

Multiple Regression result factor affecting profit of poultry marketing
The multiple regression result of the factors affecting the profit of poultry marketers in Okigwe Local Government Area is presented in Table 3. The exponential function was chosen as the lead equation for the analysis. The R^2 value was 0.549 indicates that 55% of the total observed variations in poultry marketing were explained by the variables included in the model, while 45% of the variation was due to error.

The coefficient of household size was significant at 10% and it is negatively related to profit. This implies that a unit increase in household size will lead to a decrease in marketers' profit. This implies that a unit increase on farmer's household size would lead to a decrease in profit. The coefficient for educational level was significant at1% and positively related to profit. This implies that as the educational level increased, poultry output increased. This is in conformity with *a- priori* expectation that the level of education of the marketers enhances their knowledge of market business as well as their technical and managerial efficiency. The more educated the marketers are, the more his/her efficiency. This result is in agreement with the research findings of Salimonu and Falusi (2009) that marketers level of education increase their profit.

The coefficient of experience was significant at 1% and positively related to output. It shows that a unit increase in the years of marketing experience will lead to an increase in poultry output. Ogoke (2009) observed that the longer the years of marketing experience, the more efficient the marketers become because the number of years a trader has spent in the marketing business may clearly give an indication of the practical knowledge he has acquired. This is an advantage in reducing marketing risk inherent in the enterprise which will also help to boost production in any pre-determined period of marketing business.

Table 3: Multiple Regression result factor affecting profit of poultry marketing

Variables	Linear+	Exponential	Semi-log	Double-log
Constant	66280.266 (9.465)***	29429.802 (1.015)	11.095 (110.540)***	10.568 (25.379)***
Age	94.269 (1.246)	3092.236 ((.971)	0.001 (1.241)	0.044 (.952)
Household size	-183.668 (-.745)	-5.045 (-1.818)*	-0.003 (-.744)	-0.027 (-1.276)
Educational level	-1580.127 (-2.391)**	4253.36 (2.851)***	-0.022 (-2.352)**	-0.06 (-2.799)***
Experience	619.008 (-.425)	0.891 (3.808)***	0.011 (.514)	0.045 (.840)
Coop. Membership	1502.709 (1.003)	1369.954 (.939)	0.022 (1.016)	0.02 (.951)
Transportation	0.981 (.862)	0.816 (1.629)*	1.37E-05 (.841)	0.024 (.662)
Depreciation	-0.91 (-625)	-925.312 (-2.323)**	-1.20E-05 (-.572)	-0.011 (-.261)
Quantity sold	-0.803 (-.947)	892.065 (3.806)***	-1.19E-05 (-.976)	-0.013 (-.832)
credit used	1.539 (1.993)**	4249.601 (2.313)**	2.19E-05 (1.975)**	0.06 (2.290)**
R²	**0.388**	0.549	**0.387**	**0.407**
F –ratio	1.409	1.551**	**1.401**	**1.528**

Source: field survey, 2017
*=Significant at 10% level, **=Significant at 5% level, ***=Significant at 1% level

The coefficient of transportation was statistically significant at 10% and positively related to profit. This implies that as transport cost increased, profit also increased. It is against a priori expectation but may be due to the fact that marketers increase their prices in a higher proportion than any proportionate increase in transport cost.

The coefficient of amount of credit was statistically significant at 5% and it is positively related to marketers' profit. The coefficient of the quantity sold is significant at 1%, this indicates a positive relationship between quantity sold and profit. The implication is that as the quantity sold increases, the profit increases also.

Z-test analysis of difference in profit of poultry producers and marketers
The test for significant differences in the mean profit of poultry producers and marketers in the study area is presented in Table 4.

Findings in Table 4 revealed that the mean income of poultry marketers was ₦114, 222.86 with standard deviation of 6240.62 and standard error of 1054.86 while that of the producers was ₦70, 297.86 and with standard deviation of 4071.84 and standard error of 688.267. The result therefore entails that poultry marketers made higher profits than producers. This is expected due to the concept of value addition where the value of a product increases as it goes along higher levels in the chain.

Table 4. Paired-sample statistics for mean profit of poultry producers and marketers

	N	Mean	Std. Dev.	Std. Error Mean	t	Sig
Poultry Marketers	35	114222.86	6240.62	1054.86		
Poultry Producers	35	70297.86	4071.84	688.267		
		43925	6933.86	1172.03	37.47	.000

Source: Field Survey, 2017.

Z-test analysis of difference in their profit gave a high mean income of ₦43, 935. Z-calculated was 37.47. Since Z-calculated > z-tabulated, the null hypothesis (Ho) is therefore rejected. This implies that there is significant difference (at 1%) in the average of profit of poultry producers and marketers in the study area.

Conclusion and Policy Directions
This study compared the production and marketing of poultry in Okigwe Local Government Area of Imo state, Nigeria. Cost and returns analysis showed that Poultry marketers made higher profits (₦55, 375.19) than producers (₦43, 647.11). The profitability ratio shows that for every one naira invested, producers made about 62 kobo while marketers made ₦3.71, a clear indication that marketers performed far better in the value chain. The result of the regression analysis showed that of age of the respondents, educational level, experience, household size, feed and access to credit strongly predicted the production and marketing of poultry by the operators. The test for significant differences in the mean profit of poultry producers gave a Z-calculated value of 37.47. Since Z-calculated > z-tabulated, the null hypothesis (Ho) is therefore rejected therefore implying that there is a significant difference (at 1%) in the average of profit of poultry producers and marketers in the study area.

Based on findings of this study, there is need for the provision of marketing facilities and improvement on infrastructure such as roads and transportation facilities; seminars and workshops for updated information on poultry because the more educated the marketers and producers are, the more their efficiency in farming/marketing is enhanced; provision of modern capital inputs to enhance production and marketing, encouraging the younger poultry farmers to enter into production and marketing and the formation of cooperatives to enhance easy access to inputs will lead to increased production and marketing profits while creating employment for the teeming population.

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