

Profitability of Indigenous and Hybrid Poultry Birds Enterprises in Imo State, Nigeria

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Abstract

Mixture poultry endeavors are turning out to be more liked to native poultry ventures in Imo State Nigeria. This study in a bid to establish a reason for this development, investigated the profitability of the two enterprises and the factors that influence their profitability. Essential information were gathered utilizing a bunch of organized poll from 96 respondents drawn from 48 native grill ranchers and 48 half breed oven ranchers who were chosen through multistage, purposive and irregular testing strategies. Information were dissected utilizing graphic measurements, benefit proportions and the standard Least squares products relapse method. The results showed that the majority of the respondents were in their mid-forties with mean age of 46 years and 45 years respectively. Female poultry farmers dominated in the indigenous birds based poultry enterprises while male farmers were mostly involved in hybrid bird poultry production. Majority of the entrepreneurs had formal education with an average of 13 years and 14 years. The degree of instruction ($P < 0.01$), stock size ($P < 0.01$), depreciation of capital assets ($P < 0.1$), amount of credit ($P < 0.01$) and total cost ($P < 0.01$) are factors that influence the profitability of indigenous birds based poultry enterprises in the State. The age of the entrepreneur ($P < 0.01$), the level of education of the entrepreneur ($P < 0.05$), the stock size ($P < 0.1$), depreciation of capital assets ($P < 0.05$) influenced the profitability of hybrid birds based poultry enterprises. The study recommended that extension of credit, better educational facilities to poultry enterprises and entrepreneurs in the State.

Keywords: Analysis, poultry, indigenous, hybrid, profitability, enterprise, imo state

INTRODUCTION

Nigeria is right now confronting an intense deficiency of a wide range of food including poultry meat regardless of the way that the Nigerian government is spending enormous unfamiliar trade on importation of different brands of poultry items. Poultry meat has been one of the earliest weight control plans for individuals. Its protein addresses one of the main wellsprings of fundamental amino corrosive for people [1]. Benefiting from food of creature beginning is likely the quickest financial

and wholesome course to progress in the dietary status. Food sources from creature beginning have the ability of giving 35 g for every capita of creature protein each day [2]. Over the years, poultry meat creation has been on the decrease in Nigeria. The declining creation and expanding request has prompted importation of this significant protein source. The interest for animals items, including poultry, is extending in West Africa because of populace development and expanded urbanization. Exchange progression has had varying consequences for poultry markets in the area, for certain nations encountering enormous import streams of frozen poultry from the European Union and others getting very little. The

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hybrid breeds have a high body weight and a fast growth rate but, one of the challenges farmers face with this breed is their inability to withstand harsh conditions. The favorable traits in indigenous chicken are the ability to withstand harsh weather conditions and diseases. One of the challenges facing the local breeds is that it is smaller in size and it has a slow growth rate [3]. Numerous ranchers are associated with poultry creation particularly in Imo State Nigeria, yet the level of the efficiency actually stays nearby and limited scope. FAO (2012) reports that there is an agreement that heightening of creation of meat and eggs got from productive creatures like poultry birds is fitting to meet creature protein prerequisites from homegrown sources [4]. Poultry farmers are faced with the problem of low productivity and profitability. These problems are as a result of intensive capital involved. Poultry farmers who operate in a small scale cannot afford the high cost of feeds, high cost of drugs and vaccines, high cost of building materials for the construction of poultry houses. This study therefore seeks to achieve the following objectives:

- i. Determine the socio economic characteristics of the indigenous and hybrid poultry farmers in the study area,
- ii. Determine the profitability of indigenous and hybrid poultry production in the study area; and
- iii. Estimate the determinants of profitability for indigenous and hybrid poultry production in the study area.

METHODOLOGY

The research was conducted in Imo State. The State is situated in the South-east international zone of Nigeria. It is bordered by Abia State on the east, River Niger and Delta States to the west, Anambra State on the north and Rivers State to the south. The State lies within latitudes 4°45'N and 7°15'N and longitude 6°50'E and 7°25'E of the Greenwich meridian. Imo State has an area of around 5,067.20sq km (Ministry of Land Owerri, 2014) with a current population estimate of about 5,408,800 (Nigeria Population Commission, 2016) [5, 6]. Arbitrary and purposive inspecting strategies were utilized to choose the respondents. The principal stage included irregular choice of two farming zones from the three zones in the State. At the second stage, two Local Government Areas from each zone were purposively selected due to the high concentration of poultry producers in these areas. This gave a sum of four (4) Local Government Areas for the review. In the third stage, purposive sampling was used to select three communities from each LGA where there are a considerable number of poultry producers. This gave a sum of twelve (12) networks for the review. At the fourth stage, two villages were selected from each of the 12 communities giving a total of 24 villages. Finally, two (2) farmers each for local poultry producers and hybrid poultry producers were selected from a list of poultry producers in the area giving a total number of 96 poultry farmers for the study. Essential information was gathered by the organization of survey to the ranchers. Elucidating measurements, for example, means, means and rates were utilized to depict the financial qualities of the poultry ranchers.

The profitability of the poultry enterprises was measured by the profitability index. The index is given as:

$$\text{Profitability index} = \frac{NFI}{GR} \quad (1)$$

Where

$$\text{Net farm income (NFI)} = \text{TR} - (\text{TVC} + \text{TFC}) \quad (2)$$

$$\text{Gross revenue (GR)} = \text{TR} - \text{TVC} \quad (3)$$

TR=Total revenue

TVC=Total variable cost

TFC=Total fixed cost

Other ratios that depict the profitability of the poultry enterprises include:

Operating profit ratio measures how much profit is made after paying for variable cost and is calculated as;

$$\text{Operating profit ratio} = \frac{\text{Operating income}}{\text{total revenue}} \quad (4)$$

$$\text{Debt-equity ratio} = \frac{\text{Total debts}}{\text{Total equity}} \quad (5)$$

The Ordinary Least Squares Multiple regression analysis model was used to estimate the determinants of profitability of the indigenous and hybrid poultry farmers. The model was implicitly specified as follows;

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}) \quad (6)$$

Where:

Y= profitability (Index)

X₁= Age (years)

X₂= Sex (Dummy; Male =1, female =0)

X₃=Marital status (Dummy; Married =1, otherwise =0)

X₄= Household size (number of persons)

X₅= Level of education (years)

X₆=Experience (years)

X₇=Stock size (number of birds)

X₈ = Depreciation (Naira)

X₉ = Credit (Naira)

X₁₀ = Total cost (Naira)

RESULTS AND DISCUSSION

Demographic features of the farmers

The demographic features of the farmers are presented in Table 1 below. The result showed that 41.67% of the indigenous poultry farmers were within the ages of (20-39) years of age while 43.75% of the hybrid poultry farmers were within the ages of (40-59) years. The mean ages of both farmers were approximately 46 years and 45 years respectively. This implies that these farmers were young and productive. Age is an important factor in labour intensive farming enterprises including broiler production as the age of the farmer determines the vitality and ability to perform various activities on the farm. Younger farmers are likely to be more willing to put their strength in production and adopt modern techniques that will help them to enhance increase in production. This result agrees with Otitolaiye *et al.*, (2009) and Simonyan *et al.*, (2019), who detailed that ranchers inside the ages of (41-45) years are bound to embrace advancements quicker than others in the other age sections [7, 8]. The results further shows that 52% of respondents engaged in indigenous poultry production were females and 60% of those engaged in hybrid broiler production were males. This showed that indigenous poultry production in the area was females dominated while the hybrid broiler production was male dominated. This implies that both males and females engaged in the poultry production for either household consumption or for sales. However the dominance of males in hybrid poultry production may not be unconnected with its capital intensive nature which females with leaner resources may not contend with. This result is in agreement with Simonyan *et al.*, (2019) who reported the dominance of males in both medium and small scale commercial poultry enterprises in Imo State [8]. The Table also showed that 64.5% and 62.42% of respondents engaged in both indigenous and hybrid broiler poultry production were mostly married, 22.12 percent of the respondents for both indigenous and hybrid poultry farmers were single and 12.50 and 14.58 percent of indigenous and hybrid poultry farmers respectively were widow. This implies that married people were mostly engaged in any poultry production activities than the single. This supports the findings of Anyiam (2019); Simonyan *et al.*, (2019) and Ibekwe *et al.*, (2015) who reported that agricultural activities in rural communities are mostly dominated by married persons [8–10]. The outcomes likewise show that the mean family sizes of the two respondents were around 5 people for each family. This showed that the average household

has an adequate labor for poultry production which is very crucial to reduce the cost of hired labor. This result differs slightly from the finding of Ibekwe *et al.*, (2014), who detailed a normal family size of 4 people among poultry ranchers [10]. Furthermore, the results showed that the mean level of education represented by the numbers of years spent in school among the respondents for indigenous and hybrid poultry farmers were approximately 13 years and 14 years respectively. This means that the farmers had up to secondary education and may therefore be more aware of the importance of the adoption of new technology to enhance their production. This supports the findings of Ukwuaba and Inoni (2012) that educational attainment is very essential; since modern agriculture requires some level of literacy and technical knowledge both of which greatly influence the farmer's performance on the farm [11]. The result shows that the mean farming experience of the respondents were approximately 5 years and 7 years respectively for indigenous and hybrid poultry production farmers. This revealed that hybrid farmers had been into the poultry production for a slightly longer time than the indigenous poultry farmers. The length of time the farmer has spent in an enterprise may be a reflection of the amount of experience gathered in various aspects of that enterprise. This experience may come in handy in navigating difficult times in business which for a poultry farmer may include disease outbreak and glut.

Table 1. Socio-economic characteristics of the respondents.

	Indigenous birds		Hybrid birds	
	Frequency	Percentage (%)	Frequency	Percentage (%)
<i>Age (Year)</i>				
20-39	20	41.67	19	39.58
40-59	17	35.42	21	43.75
60-79	11	22.92	8	16.67
Mean	45.75		44.92	
<i>Gender</i>				
Male	23	47.92	29	60.42
Female	25	52.08	19	39.58
<i>Marital status</i>				
Married	31	64.58	30	62.50
Single	11	22.92	11	22.92
Widow	6	12.50	7	14.58
<i>Household size (number)</i>				
1-5	32	66.67	27	52.25
6-10	16	33.33	21	43.75
Mean	4.67		5.18	
<i>Level of education (years)</i>				
0-6	5	10.42	1	2.08
7-13	21	43.75	20	41.67
14-19	22	45.83	27	56.25
Mean	12.56		13.57	
<i>Farming experience (year)</i>				
1-5	31	64.58	23	47.92
6-10	13	27.08	13	27.08
11-15	4	8.34	12	25.00
Mean	5.19		6.85	

Source: Field survey data, 2019

Profitability of Indigenous and Hybrid Poultry

The profitability of the indigenous and hybrid broiler enterprises was estimated. The result is presented in Table 2. The results showed that the average net returns and gross revenue of hybrid broiler farmers were higher than that of the indigenous poultry farmers; an indication that the hybrid broiler farmers performed better. The operating ratio of the indigenous and hybrid poultry enterprises was 0.54 and 0.47 respectively. The working proportion estimates how much benefit is made in the wake of paying for variable expense and the lower the proportion, the higher the productivity of the venture. The implication is that the hybrid broiler enterprise tended to make more profit than the indigenous poultry farmers. This may explain the prevalence of the use of hybrid birds in most commercial poultry enterprises in Nigeria. The obligation to value proportion estimates an undertaking's obligation comparative with the worth of its net resources. According to a good debt to equity ratio is that that does not exceed 1.5. A low debt to equity ratio implies strong financial solvency of the enterprise. The higher debt-equity ratio among the hybrid poultry enterprise may be attributed to their high capital intensive nature which usually necessitate the use of debt funding. The profitability index of the hybrid broiler enterprise was higher than that of the indigenous poultry enterprise. This indicates that the hybrid poultry enterprises performed better financially than the indigenous poultry enterprise. This further underscores the importance of poultry enterprises viable options for economic recovery especially among rural dwellers. This outcome concurs with the discoveries of Simonyan et al. (2019) who reported high profitability and viability of small and medium scale poultry enterprises in Imo State [8].

Table 2. Summary of financial ratios of indigenous and hybrid poultry farmers in imo state.

Ratios	Indigenous farmers	Hybrid farmers
Ave. Net farm income	115660	364015
Ave. Gross revenue	188360	466895
Operating ratio	0.54	0.47
Debt equity ratio	0.04	0.06
Profitability index	0.61	0.78

Source: Field survey data, 2019

Factors that influence Profitability of Indigenous and Hybrid Poultry Birds Enterprises

The results of the multiple regression analysis to identify the factors that influence the profitability of indigenous and hybrid poultry enterprises are presented in Tables 3 and 4. The result in Table 3 shows that exponential functional form gave the best fit with the independent variables accounting for about 93% of the variations in profitability of indigenous poultry bird's enterprises. Also, the value of the F ratio is an indication of the appropriateness of the model for the data set. The number of significant variables and their signs as they align with a priori expectations were also used to select the lead equation.

The coefficient of level of education was significant ($p < 0.01$) and positively related to the profitability of indigenous birds enterprises. This implied that the level of education is an importance factor that enhances profitability. When a farmer is well informed on the new techniques of raising and managing his poultry farm, he will be able to manage the risk associated with poultry production. This is in line with the findings of Ibekwe *et al.*, (2015) that farmers education enable him to adopt new technology to enhance his broiler production reduced mortality rate and brought about an enhanced income [10].

The coefficient of stock size was significant ($p < 0.01$), positive and directly influenced the profitability of indigenous poultry enterprises. This is expected since the stock size determines the number of birds that could be sold. A large stock size would imply more birds to be sold and hence more revenue and invariably higher profitability.

The coefficient of depreciation of assets was significant ($p < 0.1$), negative and had an inverse relationship with profitability. This may imply the use of old and or inefficient production equipment that are no longer contributing to enhance output and profitability in the enterprise.

The coefficient of how much credit got to was critical ($p < 0.01$), positive and directly influenced the profitability of the indigenous poultry enterprise. Credit provides entrepreneur with much needed funds to acquire equipment and other inputs that enhance the output, income and profitability of the enterprise. Credit also enables entrepreneur to expand the scale of production and acquire technology that could reduce cost while also boosting production, output and profitability.

The coefficient of all out cost was critical ($p < 0.01$), negative and had an inverse relationship with profitability of the indigenous poultry enterprise. This clearly shows that the higher the costs outlay of the enterprise, the lower the revenue and invariably the lower the profitability. Entrepreneurs in the poultry industry have had to contend with rising cost of inputs such as feed and other inputs and these put pressure on the income of the enterprise.

Table 3. Factors that influence profitability of indigenous poultry enterprises.

Variable	Linear	Exponential+	Semilog	Double log
(Constant)	.153 (1.501)	-1.804 (-6.206)***	-1.456 (-5.251)***	-5.600 (-6.987)***
Age	-.002 (-.721)	-.018 (-.386)	-.003 (-.513)	-.026 (-.211)
Sex	-.023 (-.532)	.003 (.156)	-.063 (-.533)	.021 (.340)
Matstat	-.024 (-.531)	-.006 (-.240)	-.096 (-.784)	-.048 (-.741)
Hhs	-.007 (-1.161)	-.012 (-.643)	-.025 (-1.468)	-.090 (-1.737)*
Edu	.016 (3.530)***	.123 (4.681)***	.033 (2.630)**	.259 (3.563)***
Exp	.006 (.998)	.016 (.806)	.018 (1.034)	.051 (.943)
Stocksize	.000 (5.872)***	.343 (13.129)***	.001 (4.278)	.785 (10.908)***
Depre	-1.036E-6 (-1.403)	-.061 (-2.021)*	-1.175E-6 (-.584)	-.105 (-1.252)
Credit	-5.382E-8 (-1.230)	.051 (2.793)***	-1.337E-7 (-1.120)	.123 (2.423)**
Totalcost	5.259E-6 (3.500)***	-.130 (-5.455)***	8.869E-6 (2.165)**	-.228 (-3.478)***
R ²	.722	.928	.591	.891
Adj R ²	.647	.908	.480	.862
F-stat	9.623***	47.601***	5.346***	30.361***

Source: Field survey data, (2019). Values in parentheses are *t*-ratio. ***= significant at 1 %, ** = significant at 5% and * = significant at 1%.

The result in Table 4 shows that the semi-log functional form gave the best fit for the estimation of factors that influence the profitability of hybrid poultry bird's enterprises. 70.4% of the variations in the profitability of the hybrid poultry enterprises were accounted for by the independent variables in the model. Also, the value of the F ratio is an indication of the appropriateness of the model for the data set. The number of significant variables and their signs as they align with a priori expectations were also used to select the lead equation. The results show that age of the entrepreneur was

significant ($p < 0.01$), positive and straightforwardly affected the productivity of the undertaking. This suggests that the more seasoned the business person, the higher the benefit of the endeavor. This may accounted for on the premise that older entrepreneurs are more likely to have made higher investments in equipment and technology that could enhance output, revenue and profitability. This position is further strengthened by the experience they would have garnered over time would enhance expertise and specialization thereby giving rise to higher output, higher revenue and higher profitability. Simonyan *et al.*, (2019) also reported a positive relationship between the viability accruing from high profitability of poultry enterprises [8]. The outcome likewise shows that the degree of instruction accomplished by the business person was critical ($p < 0.05$), positive and straightforwardly affected the productivity of the endeavor. This is expected since the educated entrepreneur is more likely to adopt top management practices and techniques that could enhance output, improve revenue and boast profitability. Furthermore, when a farmer is well informed on the new techniques of raising and managing his poultry farm, he will be able to manage the risk associated with poultry production. This is in line with the findings of Ibekwe et al, (2015) that farmers education enable him to adopt new technology to enhance his broiler production reduced mortality rate and brought about an enhanced income [10]. The coefficient of stock size was critical ($p < 0.10$), positive and straightforwardly affected the productivity of the undertaking. This is expected since the stock size determines the number of birds that could be sold. A large stock size would imply more birds to be sold and hence more revenue and invariably higher profitability. The coefficient of capital depreciation was significant ($p < 0.05$), positive and directly related to the profitability of the hybrid poultry enterprise. This implies that the capita assets being used in the enterprise are efficient and aid in enhancing output, revenue and productivity in the enterprise. This is couple with deduced assumptions.

Table 4. Factors that influence profitability of hybrid poultry enterprises.

Variable	Linear	Exponential	Semilog+	Double log
(Constant)	-.322 (-1.889)*	-4.368 (-3.575)***	-2.260 (-6.431)***	-9.643 (-3.889)***
Age	.009 (8.698)***	.473 (7.755)***	.018 (8.184)***	.937 (7.564)***
Sex	.028 (1.104)	.028 (.298)	.061 (1.192)	.060 (1.105)
Matstat	.036 (1.054)	.044 (.270)	.081 (1.138)	.099 (1.238)
Hhs	.001 (.121)	.009 (.180)	.003 (.188)	.024 (.807)
Edu	.008 (2.103)**	.104 (2.470)**	.017 (2.092)**	.217 (.016)
Exp	.005 (1.392)	.037 (1.000)	.011 (1.356)	.075 (.327)
Stocksize	.000 (2.125)	.325 (2.652)**	.000 (1.757)*	.591 (.023)
Depre	1.139E-6 (2.215)	.026 (1.919)*	2.340E-6 (2.207)**	.055 (.055)
Credit	-1.068E-7 (-.588)	.008 (.265)	-3.625E-7 (-.968)	-.004 (.947)
Totalcost	-3.447E-8 (-.414)	.004 (.120)	-1.191E-7 (-.693)	-.007 (.913)
R2	.723	.660	.704	.648
Adj R2	.648	.568	.624	.553
F-stat	9.667***	7.181***	8.805***	6.822***

Source: Field Survey Data, 2019. Values in parentheses are *t* –ratio. ***= significant at 1 %, ** = significant at 5% and * = significant at 1%.

CONCLUSION

The exploration was done to break down the productivity of native and half and half poultry endeavors in Imo State. The study showed that female entrepreneur dominate the production of indigenous poultry birds and males dominate the hybrid poultry enterprises in the State. Furthermore, poultry enterprises in the State are profitable with the hybrid birds based enterprises having higher profitability. The profitability of the indigenous birds based enterprises in the area is influenced by the level of education of the entrepreneur, the stock size, depreciation of capital assets, and amount of credit and total costs of production. The profitability of the hybrid birds based enterprises is influenced by the age and level of education of the entrepreneur. It is likewise impacted by the stock size and the deterioration of capita resources.

Recommendations

In light of the discoveries of the review, the accompanying proposals are made:

1. Government special focus to the poultry industry in terms of grants, credit, low interests loan and tax reliefs would enable entrepreneurs acquire equipment and technology as well as improved inputs that will further give impetus to the growing importance of the industry as a highly profitable sector which could lend itself to income generation among young to middle aged adults in the community.
2. Women who dominate in the indigenous poultry industry should be encouraged through the extension of credit and trainings.
3. Exposure of poultry entrepreneurs to better educational and training facilities would enhance the performance of the industry.

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