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ANALYSIS OF THE VIABILITY OF POULTRY ENTERPRISES IN IMO STATE, NIGERIA

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ABSTRACT: *Against the background of the ban on the importation of poultry products, and growing interest in the local Poultry production, this study looked at the viability of poultry enterprises in Imo State, Nigeria. It specifically analyzed the profit level of these enterprises and estimated their viability using the Benefit-Cost Ratio. Logistic regression technique was used to estimate the determinants of viability of the poultry enterprises in the area. Sixty Poultry enterprises were randomly selected from Owerri Agricultural Zone of the State and their entrepreneurs interviewed. Data were collected by means of structured questionnaire. Descriptive statistics, net returns model and Benefit-Cost Ratio were analytical tools used to achieve the objectives of the study. The results showed that males dominated the poultry business in the study area and the average age of the entrepreneurs was 44 years. Majority of the entrepreneurs attained some level of formal education and had average number of employees of about 6 persons. The poultry enterprises in the area were found to be profitable and viable with profit level of ₦188163.86 and BCR of 1.68. Sex, marital status, age, farming experience, facility size, returns and access to veterinary services were the determinants of viability of the poultry enterprises in the area. Age of entrepreneur, marital status, facility size, access to veterinary services and returns positively influenced the viability of poultry enterprises in the area. Years of experience of the entrepreneur negatively influenced viability of the poultry enterprises in the study area. The study recommended the encouragement of more females to venture into poultry production. It also advocated the provision of efficiency and easily accessible veterinary services for the poultry farmers in the area.*

KEY WORDS: Poultry Enterprises, Profit, Viability, Imo State, Logistic regression

INTRODUCTION

Agriculture plays a critical role in the economic development of most African countries. In Nigeria, agriculture employs about two- thirds of the total labour force (about 60 percent), accounting for over 40 percent of the Gross Domestic Product (GDP) and producing 88 percent of non-oil earnings (Nwafor *et al* 2011cited in Oyakhilomen and Zibah, 2014). According to Eboh *et. al* (2012), four major subsectors; crops livestock, fisheries and forestry account largely for agricultural contribution to economic growth of the Country. The crops subsector contributes 85percent, livestock 10 percent, fisheries 4 percent and forestry 1 percent. More than 90 percent of the agricultural output is accounted for by small-scale farmers who own farm sizes of less than two 2 hectares. It is estimated that about 75 percent or 68million ha of the total land area has potential for agricultural activities with about 33million ha under cultivation. Similarly, of the

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estimated 3.14 million ha irrigable land area, only about 220,000ha (7 percent) is utilized (Ugwu ,2009).

The poultry sub-sector is the most commercialized and capitalized of all the sub sectors in Nigeria agriculture. The poultry sector has transformed from the backyard, peasant and primitive household-oriented husbandry to modern and large scale enterprises scattered around the urban and rural landscape of the country (Ike and Ugwumba 2011). According to Ahmed and Hamid (1992) in Ohajianya (2013) Poultry farming is an important agribusiness enterprise that has a great potential for providing additional income to our farming community and educated unemployed persons of the rural areas through creating self-employment opportunities. Poultry also offers the quickest returns to investment outlay in livestock enterprises (Lawal, 2014; p.1). The poultry industry in Nigeria has over the years developed and diversified into a large industry with a variety of business interests such as egg production, broiler production, hatchery and poultry equipment business (Oluyemi and Roberts, 1979 in Emmanikwu, Chikwendu and Sanni, 2011;p. 203).

The poultry industry is a major sub sector in the livestock industry, which comprises of chickens, turkeys, ducks quails, peafowl, Guinea fowls etc. Whether dressed or alive which are reared for their economic benefit (Lawal, 2014). The chickens predominate. They are reared under two distinct poultry enterprise systems in Nigeria, as in most developing countries of Africa and Asia, namely, commercial poultry and rural poultry. Each of these two systems is associated with features of scale, stock, husbandry and productivity.

The ban on poultry products by the Federal Government of Nigeria (FGN) has caused a turnaround in poultry which grew by 10.3 percent as compared to 0.3 percent in 2003. This growth was partly due to the ban and also due to the use of veterinary services by lots of farmers which has led to a reduction in flock mortality rate (Ugwu, 2009). The sharp drop in employment opportunities in other sectors of the economy has also served to inspire large number of school leavers who are now venturing into agriculture as a means of self-employment. Most of these go into poultry production because of its relatively high return on investment. There has been increased activity in the poultry subsector and operators do so at various scales of production.

The poultry industry is not however without challenges. Disease outbreaks have become more frequent, decimating the flocks and ruining the investments of many individuals. Also, massive importation of poultry products into the country usually causes glut, sending the price of local poultry crashing in the market and reducing drastically the revenue and profit of poultry producers. In the light of the above therefore, this study looks at the; The profit level and viability of poultry enterprises in the study area; and factors influencing the viability of poultry enterprises in the study area.

METHODOLOGY

This study was carried out in Imo, Nigeria. The State lies between latitudes $5^0\ 40^1$ and $7^0\ 05^1$ North and longitude $5^0\ 35^1$ and $8^0\ 30^1$ East. It has a population of about 3.92 million people (NPC, 2006). Imo State is divided into three agricultural zones, namely: Owerri agricultural zone, Orlu agricultural zone and Okigwe agricultural zones. Administratively, the State has twenty-seven (27)

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Local Government Areas (LGAs). Farming is the major occupation of the people. Agriculture earns the largest share of the state's GDP while a greater percentage of her citizens derive their income and livelihoods from agriculture. Farmers in the State rear livestock like cattle, poultry, and small ruminants; they also produce a wide variety of staple crops like cassava, yam, maize, vegetables and fruits.

Multi- Stage sampling technique approach was used in the selection of 60 respondents from the state. In the first stage, one agricultural zone, Owerri agricultural zone was purposively selected from the three agricultural zones in the state. The zone was selected because of the high concentration of poultry enterprises in the area. Next, 5 Local Government Areas (LGAs) were randomly selected from the zone. 2 communities were then selected from each LGA giving a total of 10 communities for the study. From a list of poultry producers obtained from the association of poultry producers, 6 respondents comprising 3 small scale poultry enterprises and 3 medium scale poultry enterprises were randomly selected from each LGA making a total of 60 respondents. Data collection was by means of structured questionnaire administered to the respondent.

Data collected were analyzed qualitatively and quantitatively. Descriptive statistics were used to describe the socioeconomic characteristics of the respondents. The farm budgeting model for examining the profit level of an enterprise was used to determine the net return from the poultry enterprises in the study area. The model is stated as follows:

NR = TR - TC

And TC = TVC + TFC

Where NR - Net Return (profit) measured in Naira

TR - Total revenue (₦)

TC - Total cost (₦)

TVC - Total variable cost (₦)

TFC - Total fixed cost (₦)

The viability estimate of the poultry enterprises based on their scale of operation is given by the Benefit-Cost Ratio BCR as used by Iheke and Nwagbara (2012). The model is specified thus:

$$BCR = \frac{\Sigma Discounted\ TR}{\Sigma Discounter\ TC}$$

Where BCR = The benefit cost ratio

TR = Total revenue and

TC = Total Cost.

However, since the period under consideration is 1 year, the discounted aspect is discountenanced. The BCR therefore becomes

$$BCR = \frac{TR}{TC}$$

Decision rule:Where BCR < 1: the poultry enterprise is not viable since more cost will be measured than benefit; BCR > 1: the poultry enterprise is viable and hence profitable

BCR = 1: the viability of the poultry enterprise is inconclusive as the business is only at a breakeven point where neither loss was incurred nor profit gained.

The logistic regression model was employed to analyze the determinants of the viability of poultry enterprises in the study area. The implicit function of the model is given as:

$P_i = \beta_1 + \beta_2 \times_i$ $P_i = \frac{1}{}$

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$1+e^{-(\beta_1+\beta_2 \times_i)}$

or explicitly specified as:

$Y = Ln (P/ 1- p) = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9 + \beta_{10}X_{10} + \beta_{11}X_{11} + \beta_{12}X_{12} + e$

Where,

Y = The viability of the poultry enterprises is viable =1; non-viable = 0
P = Probability of viable to the poultry enterprises
1-p = Probability of non-viable to the poultry enterprises
Ln = Natural logarithm function
β_0 = Constant
β_1-β_{12} = logistic regression coefficient
X_1-X_{12}= Explanatory variables
X_1 = Sex (male =1, female =0)
X_2 = Marital status (married =1, otherwise =0)
X_3 = Age (years)
X_4 =Farming experience
X_5 = Household size (no. of persons)
X_6 = Facility size in hectares
X_7 = Level of education in years
X_8 = Cost of labour in Naira
X_9 = Other inputs cost in Naira
X_{10} = Returns from poultry enterprise in Naira
X_{11} = Training attended (Yes =1, No =0)
X_{12} = Access to veterinary services (Yes =1,No =0)
e = Error term.

RESULTS AND DISCUSSION

The socioeconomic characteristics of the poultry producers were analyzed. The variables analyzed include: gender, age, marital status, years of formal education, experience, etc. The result is presented in table one.

Table 1: Socioeconomic characteristics of poultry producers in the study area

Socioeconomic variables	Frequency	Percentage
Gender		
Male	44	73.33
Female	16	26.67
Total	60	100
Age		
21 – 30	4	6.67
31 – 40	20	33.33
41 – 50	28	46.67
51 – 60	7	11.67
≥ 60	1	1.67
Total	60	100
Mean	44	
Marital Status		
Married	54	90.00

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Single	5	8.33
Widowed	1	1.67
Total	60	100
Years of formal education		
6 – 10	7	11.67
11 – 15	29	48.33
16 – 20	24	40
Total	60	100
Mean	19.22	
Household Size		
1 – 4	12	20.00
5 – 8	31	51.67
9 – 12	17	28.33
Total	60	100
Mean	6.92	
Experience		
1 – 5	40	66.67
6 – 10	11	18.33
11 – 15	5	8.33
16 – 20	4	6.67
Total	60	100
Mean	5.75	
No. of Employees		
1 – 5	35	58.33
6 – 10	13	21.67
11 – 15	8	13.33
16 – 20	4	6.67
Mean	5.58	100
Total	60	

Source: Field Survey, 2014.

The results in Table 1 show that males dominated in the poultry business in the study area. About 73 percent of both small and medium scale poultry enterprises were owned by males. This may be because males have more access to the resources like land, labour and capital needed to establish poultry enterprises.

Majority of the owners of poultry enterprises, (about 47 percent) fell between the ages of 41-50. This is followed by those in the age bracket of 31- 40 with about 33.33 percent being in this age category. The mean age of the owners of poultry enterprises was 44 years. This result implies that the respondents were still in their productive years and should be able to manage and grow their enterprises.

The result in the table also shows that 90.00 percent of the owners of poultry enterprises in the study area were married. This implies that poultry enterprises are dominated by married men and women. It serves as their source of income to sustain the family. About 48 percent of the respondents obtained between 11-15 years of formal education, while 40 percent had between 16-20 years of formal education. The mean years of formal education was about 19 years. This implies that most of the respondents had formal education and this will help them in acquiring good

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management practices and other skills such as good record keeping that will enhance the growth of their business.

About 52 percent of the owners of poultry enterprises in the area had household sizes of between 5-8 persons. Just 20 percent had household sizes of between 1-4 persons. The respondents had an average household size of about 7 persons. The fairly large household size of the respondents may be an advantage especially with respect to providing family labour on the farm. If however there are more dependents in the household, the household size may be a challenge in growing the business as there would be more mouths to feed, thus leading to possible reduction in the Net Returns from the business.

The result in the table shows that about 84 percent of the respondents had experience of not more than 10 years in poultry farming. The average for years of farming experience was about 6 years for all the respondents. This result may be an indication that there may be many new entrants in the business of poultry production in the area of study. The ban on the importation of poultry products may be the reason for the recent increase in the number of local poultry farmers in the area. Also, the number of unemployed youths who have recently taken to agriculture as a means of livelihood have been on the increase and this may account for the high number of largely inexperienced poultry farmers in the study area.

About 80 percent of the poultry farmers had employees not exceeding 10 persons. There was on the average about 6 employees per farm. This result may be a likely indication that some of the poultry enterprises in this study area use their family members as workers.

Profit level and viability of poultry enterprise in the area

The profit level of the poultry farmers and the viability of their poultry enterprises were determined. The result is presented in Table 2. 17796226

Table 2: Average cost and returns for one production season and viability of poultry enterprises in the study area

Items	Value (₦)
Revenue from poultry product sales	**466783.33**
Cost of Labour	100328.33
Cost of Feed	108388.17
Cost of Drugs	11511.67
Cost of Veterinary	55000
Rent on Land	51333.33
Total Variable Cost	278228.17
Total Fixed Cost	391.3031
Total Cost	278619.47
Net Return	188163.86
Viability	1.68

Source: Field Survey, 2014.

The result shows that the poultry farmers made an average net return of ₦188163.86 at the end of last production season. This is an indication that poultry farming in the area is profitable. The determination of the viability of the poultry enterprises in the area gave a BCR of 1.68 indicating that for every N1 invested, about 68k is made in return. This also indicates that poultry enterprises

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in the area is viable. The viability of poultry farming is a boost to the government policy of encouraging local production of poultry products while curbing their importation.

Determinants of the viability of poultry enterprise

The logistic regression was used to estimate the determinants of the viability of poultry enterprise in the study. The results shows that the estimated Pseudo R^2 is about 54 percent and the Likelihood ratio Chi square is significant at 1% showing that the viability of poultry enterprises in the area is influenced by the variables in the model

Table 3: Results of the logistic regression model

Variable	Coefficient	dy/dx	Std. error	Z	P>Z
Constant	-5.007018		4.730361	-1.06	0.290
Sex	-2.087705*	-0.0335708	0.02803	-1.20	0.231
Matstatus	2.012849*	0.0427094	0.03466	1.23	0.218
Age	0.2796535***	0.0059338	0.00446	1.33	0.183
Experience	-0.178091***	-0.0037788	0.00319	-1.19	0.236
Household size	0.3834126	0.0081354	0.00744	1.09	0.274
Facility size	1.033781***	0.0219352	0.01477	1.48	0.138
Education	-0.2457228	-0.0052138	0.01175	-0.44	0.657
Labour cost	0.0013215	0.000028	0.00003	0.94	0.348
Other inputs cost	-0.0000544	-1.15E-06	0.00001	-0.21	0.832
Returns	8.45e-06***	1.79e-07	0.00000	1.47	0.143
Access to Veterinary services	3.820458***	0.3369811	0.18693	1.80	0.071
Training	0.5984537	-0.0120907	0.02331	-0.52	0.604
Observation	60				
LR Chi2 (12)	61.45				
Prob. >Chi2	0.000				
Log Likelihood	-26.446				
Pseudo R^2	0.5374				

Source: Field Survey, 2014. *significant at 10%; ***significant at 1%

Table 3 shows that sex, marital status, age, farming experience, farm size, returns and veterinary services, significantly influenced the viability of poultry enterprises in the study area. The coefficient of sex was significant at 10% and negatively signed. This indicates an indirect relationship with viability of the poultry enterprise. The result also shows that the probability of the female owned poultry enterprise in the area being more viable than those owned by males is about 0.34. This may be ascribed to the skilled ability of females to manage their resources more efficiently and frugally than males thereby leading to higher output and hence greater viability.

The coefficient of marital status was also significant at 10% and positively related to viability. The result also shows that the probability of poultry enterprises owned by married individuals being more viable than the unmarried is 0.43. This is hardly surprising considering the fact that that

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married individuals are likely to be more coordinated, stable and responsible then the unmarried. They may also obtain assistance from their spouses in form of labour and skills or even cash which may be used to improve the business which may not be available to the unmarried. All these should translate to owning better performing poultry enterprises with high viability.

The coefficient of age was significant at 1% and positively signed. This implies that age has a direct relationship with the viability of the poultry enterprise. The result also shows that the probability that the viability of the poultry enterprise will increase with a unit increase in age is about 0.005. This differs from a proiri expectation but may be ascribed to the tendency of individuals to become more careful and thorough as they grow older; qualities that are absolutely necessary for successful and viable poultry enterprise.

The coefficient of farming experience was significant at 1% and negatively signed implying it has an indirect relationship with viability. The result also shows that the probability that the viability of the poultry will decrease with a unit increase in years of experience is about 0.004. Here again, the result does not conform to a proiri expectations but may be explained by the tendency of individuals to rely on experience in operating and managing their poultry enterprise rather than seeking expert advice. They may also reject and refuse to adopt new innovations and technology that could boost output.

The coefficient of facility size was significant at 1% and positively signed implying a direct relationship with the viability of the poultry enterprise. The result also shows that the probability that viability will increase with a unit increase in facility size is 0.02. This result underlines the importance of maintaining a reasonably large farm facility so that overcrowding and the issues that it leads to including fast spread of diseases and high mortality rate are reduced. The returns from such an enterprise will be more than adequate for offsetting the cost incurred in operating the farm, while also yielding a high net return. This result agrees with that of Mendes et al. (2014) which reported that large farm facility has a positive influence on performance.

The coefficient of returns from the enterprise was significant at 1% and positively signed indicating a direct relationship with viability of the poultry enterprise. It may be adduced from this result that higher returns lead to greater viability. This is plausible since it is likely that some of the returns are reinvested in the business in form of improved breeds or equipment to bring about greater output and hence more returns and more viability. This result agrees with that of Altahat *et al* (2012) and Siyaya (2013) who reported that returns has highly positive influence on the profitability and hence the viability of a poultry firm.

The coefficient of access to veterinary services was significant and positively signed indicating a direct relationship with viability. The result also shows that there is a probability of about 0.34 percent that viability of the poultry will increase with increase in access to veterinary services. A good and efficient veterinary service is important for sustained growth of the poultry enterprise. The possibility of entire flocks of birds being decimated by the spread of a single disease makes it imperative for the owner to regularly seek experience and efficient veterinary services. This in turns will have a positive effect on output, returns and viability.

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CONCLUSION AND RECOMMENDATIONS

This study has shown that poultry enterprises in the study area are profitable and viable. Female owned poultry enterprises and those owned by married individuals have a higher probability of being viable. The probability of poultry enterprises being viable is positively influenced by returns, facility size and access to veterinary services. Based on these findings the following recommendations are made:

1. More females should be encouraged to go into poultry production through the provision of incentives like special loan schemes and grants specially designed for that purpose.
2. Veterinary services should be made easily accessible to the poultry farmers such that they could rapidly respond to challenges such as disease outbreak which may occur from timt to time on the farms.
3. Modern extension and advisory services should be provided for the farmers. These may also be used to disseminate improved technologies while helping and encouraging the farmers to adopt them on their farms.
4. The large number of unemployed young school leavers should be encouraged to go into poultry production as it is profitable, viable and reliable source of income.

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