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Economic Analysis of Duck Farming in Anambra State of Nigeria

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ABSTRACT

Duck is one of the indigenous poultry species in Nigeria and its production is at the rudimentary stage. This study, therefore, examines the Analysis of duck farming in Awka South L.G.A of Anambra State. Data were collected through questionnaires distributed to 120 duck framers in Awka South L.G.A of Anambra State. Descriptive statistics, budget enterprise and regression analysiswere used to analyzed the data. The profitability of duck farming was realized using the budgetary technique while the influence of socio-economic characteristics was realized using the multiple regression method. Results obtained showed that 63.33% were male and 36.67% were female. Farmer's age ranges from 30-39 years (31.67%). The total revenue generated from duck production in every growing season were #6,261,573.61 and a total cost of #5,840,395.83 was incurred. The gross margin from the production is #3,186,136.23 implying that capital cost and operating cost are quite high. The net farm income is #421,177.78 which is encouraging for a production cost of #6,261,573.61. The result on the socio-economic characteristics shows that sex, age, level of education, household size, source of capital, and source of land were significant while others; marital status, mode of operation,and monthly income were not significant. The dirty nature of duck farming, psychological belief regarding duck farming, and cultural beliefs are the three main constraints to duck farming in the study area.
Keywords: Economic, Duck, Farming, Anambra, Nigeria

INTRODUCTION

Ducks are strong, hard animals that feeds on decaying matter [1]. They are cheaper,simpler,and easier, to handle than other poultry species [2]. This makes meat and eggs production in duck farming an attractive enterprise [3]. Around the world About 800million ducks are kept, in Asia more than 500million are found [4]. Duck certainly can also be raised in all parts of the world despite the uneven distribution. Duck, which is not popularly produced in Nigeria, isanother potential source of animal protein [5]. Duck requires water and this makes it popular in areas where paddy rice predominates. However, [6] observed that waterfor swimming is not necessary for successful duck production. Most duck farmers in Nigeria practiced extensive management system with substandard housing facilities, without adequate veterinary care and low quality food [7]. Duck produces eggs and meat like chicken [8]. They have several advantages over other poultry species and are disease tolerant [9]. They can withstand adverse weather conditions [10]. They possess both aquatic and terrestrial characteristics and they are also arboreal [11]. They are hardy, excellent foragers, and easy to handle, particularly in wetlands where they naturally tend to flock together [12]. Ducks are relatively easy to raise and generally need less care than chickens [13]. There are numerous advantages of starting a duck farming business. In many countries, ducks rank next to chicken for meat and egg production [14]. Itcan be raised for both commercial and small-scale meat or egg production purpose [15]. Backyard raising of duck is also encouraged like other birds or other animals [16]. Ducks need less expensive and simple housing facilities [7]. They are very hardy birds and they need less care and management [9]. They can adapt to almost all kinds of environmentalconditions [2]. [6], reported

that poultry production in Nigeria is largely dependent on chicken and that the preponderance of researches, awareness campaigns, improvement programmers and commercialization of poultry production has largely concentrated on chicken while other locally available poultry species such as guinea fowl, duck, turkey, and pigeons are utterly neglected and rarely exploited for domestic and commercial purposes. Despite the numerous advantages of local Muscovy ducks over the chickens, there is still a general lack of interest in their production in sub-Saharan Africa, including Nigeria [11]. There are low demand for duck meat and eggs in African countries because of missing information on its nutritional value [3]. In line with these, this research work is designed to analyze the economic of Duck farming in Anambra State, the specific objectives are to: ascertain the socio-economics characteristics of duck farmers; determine the profitability of duck farming in the area, and analyze the influence of socioeconomic characteristics on net farm income.

MATERIALS AND METHODS

The study area was carried in Anambra State and is one of the 36 States of Nigeria. It comprises of 21 local Government Areas. The study centredin Awka South LGA which is made up of nine (9) Towns namely Amawbia, Awka, Ezinato, Isiagu, Mbaukwu, Nise, Okpuno, and Umuawulu [8]. Awka South LGA has coordinates 6°, 10N, 7°, 4E (Nigeria Meteorological Agency 2013). On average, the maximum temperature in the area varies from 28° to 38°C while the minimum temperature varies from about 22°C to 27°C [9]. A multistage sampling procedure was used in selecting the communities and respondents for the study. Stage (I) involved the purposive selection of five communities namely Amaubia,Awka, Ezinato, Isiagu, and Mbaukwu from the local government. This was done because the selected communities have the highest number of duck farmers. Stage II, from each of the selected 5(five) communities, twenty-four (24) duck farmers were randomly selected. Giving a total of 120 (one hundred and twenty) respondents for the study. Data were collected on revenue and cost variables, product price, as well as constraints to Duck production. The profitability of Ducks production was achieved using the budgetary technique. The influence of socioeconomics characteristics on income was achieved using multiple regression. The net income technique was adopted by [8,11,14,15] in the determination of enterprise profitability. The technique is given as

$$NMI = \sum_{i-1}^{n} P_{yj} Y_j - \left(\sum_{i-1s}^{n} P_{xij} X_{ij} + \sum_{i-1}^{r} F_{ij} \right)$$

Where

NMI/Profit = Net Marketing Income/Profit

Σ = Sum

$P_{yj}Yj$ = Unit price x quantity of j^{th} respondent's sales = Total revenue (TR) for j^{th} respondent.

$P_{xij}X_{ij}$ = Price x quantities of j^{th} respondent's variable inputs = Total variable cost (VC) for j^{th} respondent

F_{ij} = Depreciation values of equipment, the annual rent for store, interest on a loan, etc. for j^{th} respondent = Total fixed cost (TFC) for j^{th}respondent

TC = Total cost (TVC + TFC).

The budgetary technique (Ugwumba and Uzoegbunam, 2010; Ugwumba*et al*, (2012) used in determining enterprise profitability is specified as;

$$NMI = \sum_{i=1}^{n} P_{yi} Y_i - \left(\sum_{k=0}^{n} P_{xij} X_{ij} + \sum_{i-1}^{r} F_{ij} \right)$$

Where:

NMI/Profit = Net Marketing Income /Profit

Σ = Sum

$P_{yj}Y_j$ = Unit price x quantity of j^{th} respondent's sales = total revenue (TR) for j^{th} respondent.

$P_{xij}Y_{ij}$ = Prices x quantities of j^{th} respondent's variable inputs = total variable cost (TVC) for j^{th} respondent.

F_{ij} = Depreciation values of equipment, annual rent for store, interest on loan, e.t.c. for j^{th} respondent = Total fixed cost (TFC) for j^{th} respondent.

TC = Total cast (TVC + TFC).

RESULTS AND DISCUSSION

SOCIOECONOMIC CHARACTERISTICS OF DUCK FARMERS

This is presented in the table below.

Sex: Majority (63.33° o) of the farmers are males while 36.670 0 are females. This shows that males in the study area dominatethe duck farming business. This, however, is not connected in any way with the belief that males have access to land more than females as has been reported by [2]. In this case, both males and females have equal opportunities to rear duck in the area

Age: Majority (31.67) of the farmers are aged 30-39 years while 27.5% are 40-49 years, 17.5% are 50 years and above, 15.83% are 20-29 years, and 7.5%a are less than 20 years. The mean age of the farmers is 37.4 years, signifying the involvement of the young and active in duck farming in the area. This favours the expansion of duck farming in the area.

Marital status:From the result, the majority (37.5%) of the farmer are married while 30.0% are single, 24.17% are widowed, 5.83% are divorced and 2.5% are separated. This implies that married people are more active in duck farming. This is in agreement with the study of [2] reported that many married people are duck farmers. The implication of this is that married people are likely to use their experiences better in duck farming.

Level of Education: The table showed that the majority 35.0% of the farmers attended secondary school, 30.0% attended primary school, 15.83% had non-formal education, 15.0% had adult education while only 4.17% had tertiary education. According to FAO (2010), educated farmers find it less challenging tothe adoption of innovative technology in agriculture than non-educated ones. This poses a challenge in the study area as many of the farmers are not well educated.

Household Size:The inclusion of members of the family in farming has always been an advantage to farmers [12]. To this, the majority (50.83%) of the respondents have 6-10 family members, 39.17% have 1-5 family members while 10.0% have 11-15 family members to help them. With a mean household size of 11 persons, farmers in the area have additional family labour available that Contributes to duck rearing.

Table 1: socioeconomic characteristics of duck farmers

Socioeconomic Characteristics	Percentage	Frequency (n=120)	Mean
Sex			
Male	63.33	76	
Female	36.67	44	
Age			
‹20 years			
20-29 years	7.50	9	37.375
30-39 years	15.83	19	
40-49 years	31.67	38	
50 years & above	27.50	33	
	17.50	21	
Marital status			
Single	30.00	36	
Married	37.50	45	
Widowed	24.17	29	
Divorced	5.83	7	
Separated	2.50	3	
Level of education			
Non-formal	15.83	19	
Primary	30.00	36	
Secondary	35.00	42	
Tertiary	4.17	5	
Adult education	15.00	18	
Household size			
1-5 persons	39.17	47	
6-10 persons	50.83	61	
11-15 persons	10.00	12	

Source: field Survey July 2019

Influence of socioeconomic characteristics on the gross income of duck farmers in Awka South L.G.A of Anambra State

From the result of the Table, the exponential function has the highest number of significant variables. Thus, the coefficient of determination (R2 = 0.723) indicates that 72.3% of the variation in gross income is explained by the interaction of socioeconomic variables of duck farmers in the area. The coefficient of sex (5.025) that is statistically significant at a 1% level of probability implies that replacing a male duck farmer with a female one or Vice versa increases the gross income to N5.025. Hence, whether a male or female duck farmer is found in the area has a positive impact on the output. The coefficient of age (-3.058) that is statistically significant at a 5% level of probability implies that having younger duck farmers in the area reduces N3.058 from the gross income of the area, meaning that experience from elderly farmers matters a lot in the area. The coefficient of the level of education (34.291) that is statistically significant at a 5% level of probability implies that obtain higher education increases the gross income of the area by N34.291. This is in agreement with the FAO (2014) study on the benefit of education to local farmers. The coefficient of household size (23.731) that is statistically significant at a 5% level of probability shows that for every increase of person in duck farming, there is an increase in the gross income of N23.731. This agrees with the study of Olufemi (2010) stating that household size was significant in the economic analysis of farm production in Kano State. The coefficient of the source of capita (17.737) which is significant at a 5% level of probability implies that raising capital outside loans increases the gross income of farmers to N17.737. This is because of the interest rates associated with loans, which when not met at the stipulated time attract extra interest to detriment of the farmers. The coefficient of the source of land (19.035%) which is significant at a 1% level of probability shows that savings of N19.035 as gross income is made when the farmers do not spend their money on leased or purchased land.

Table 2: influence of socioeconomic characteristics on the gross income of duck farmers in Awka South L.G.A. _____

Table 3

Variable	Linear	Exponential	Semi-log	Double log
Intercept	1345.423 (-0.821)	-2972.652 (-1.875)	2.315 (16.129)	1.450 (3.132)
Sex (SEX)	-2.112 (-0.651)	5.025 (0.006)*	-3.235 (-65.1)	-6.044 (-0.189)
Age (AGE)	9.642 (0.034)**	-3.058 (-0.029)**	0.232 (0.812)	-4.103 (-0.414)
Marital status (MS)	-0.031 (-0.021)**	-3.029 (-0.453)	2.513 (0.014)**	0.202 (0.001)*
Level of education (LOE)	25.965 (1.287)	34.291 (0.043)**	-10.244 (3.971)	-14.091 (-0.211)
Household size (HHS)	39.110 (0.032)**	23.731 (0.048)**	10.331 (1.035)	4.726 (0.022)**
Mode of operation (MOO)	3.961 (0.409)	9.209 (0.523)	2.027 (0.034)**	3.139 (0.056)
Source of capital (SOC)	7.923 (0.112)	17.737 (0.031)**	-10.124 (-0.043)	-11.253 (0.352)
Source of land (SOL)	-17.388 (-0.354)	19.035 (0.005)*	13.478 (1.352)	8.146 (0.021)**
Monthly income (MI)	-8.059 (-0.043)**	-11.253 (-1.035)	6.029 (0.047)**	2.152 (0.014)**
R^2	0.658	0.723	0.735	0.567
F-stat	2.376	5.361	4.643	6.459

CONSTRAINTS TO DUCK FARMING

The constraint to duck farming in Awka South L.G.A in table 3 shows that the dirty nature of duck farm (X= 3.32), psychological understanding towards duck rearing (X= 3.25), cultural belief (X=3.17), and duck framing acceptability are the constraints to the farmers in the study area. The dirty nature of the duck farm ranks first in the table above with a mean score of 3.32. The implication of this is that duck is naturally a dirty species of poultry that likes a dirty environment. Psychological towards duck rearing ranked second in the table. The implication of this is that ducksmeat is not stapled meat in the area and this and this discourages people from engaging in the business. The cultural belief came third in the table with a mean score of 3.17. This is also in connection with duck not being sable poultry meat. Other constraints are duck farming acceptability 3.08, duck farming marketing system 2.38, cost of purchase 2.08, and lack of scientific knowledge in duck farming 1.73.

TABLE 4: CONSTRAINTS TO DUCK FARMING IN THE AREA

S/N	Major Constraints	Mean
1	Dirty nature of duck farming	3.32
2	Psychological understanding towards duck rearing	3.25
3	Cultural belief	3.17
4	Duck farming acceptability	3.08
5	Duck farming marketing system	2.38
	Cost of purchase	2.08

CONCLUSION

Duck farming is a profitable poultry farming business that is less laborious in comparison to other poultry businesses even though many people are not into the business because of the psychological belief attached to it. Duck needs less care than other poultry species and minimum input recourses are likely to generate a maximum return. Therefore this enterprise is recommended to farmers of medium and large-scale production.

RECOMMENDATIONS

Having discussed some of the findings and major constraints to duck farming in the study area, the following recommendation is made. More land should be developed by the communities and made affordable to potential and active duck farmers. The leasable land should be made to be cheap to grant its affordability.

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