



DETERMINANTS OF POULTRY EGG PRODUCTION IN ETIM EKPO LOCAL GOVERNMENT AREA OF AKWA IBOM STATE, NIGERIA

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ABSTRACT

This study analysed the determinants of poultry egg production in Etim Ekpo Local Government Area. Multistage sampling procedure was adopted to collect primary data from seventy-five (75) poultry egg producers using a well-structured questionnaire. Percentage, frequency count, average and multiple regression were employed to analyse the data on the determinants of poultry egg production in the study area. The result of the findings revealed that, 71% of the poultry egg farmers were male and the average age of the respondents was 41 years. The result revealed that, poultry egg farmers had one form of education or the other which contributed to the increase in poultry egg production in the study area. It was discovered that, majority (83%) of the poultry egg farmers were married. The mean household size stood at 4 persons per household and 76% were members of cooperative society. The mean income of the respondents stood at ₦70,800 per month. The result also revealed that, most (99%) of the respondent had farming as their major source of income. The regression analysis show that, cost of feeds and membership in cooperative were statistically significant at 5% and 1% levels respectively. With the growing demand for poultry egg in the study area, investment in poultry egg production is a viable agribusiness enterprise for income generation, job creation especially, poverty alleviation and enhancement of food security. The study recommends, the integration of poultry egg production programmes to geared towards empowerment, better management practices, subsidy on poultry equipment and credit facilities and encouragement of farm records keeping to achieve the objective of high production.

Keywords: Determinants, Egg, Malnutrition, Production and Poultry

INTRODUCTION

A constant threat to human survival is the apparent differences between the rate of food production and the growth of human population. Nigeria is not exempted from this global threat. The Nigerian population and the overall demand for food is growing at an alarming rate while the current food production is growing at a decreasing rate much below the population growth rate and food demand. This has led to a heavy reliance on importation of food items to supplement domestic production. (Inyang *et al.*, 2014).

According to Inyang *et al.* (2016), man's basic drive is for food to satisfy his hunger. Food is intimately woven into the physical, economic, psychological, intellectual and social life of man. It is a more basic need of man than shelter and clothing. It provides adequately for the body's, growth, maintenance, repairs and reproduction. Besides, protein energy malnutrition is still a major problem of public health importance in Nigeria as it affects the survival, health, education and the economy of a nation especially the developing countries including Nigeria. Animal protein contains essential amino acids that are deficient in cereals. Eating even a small amount of animal products corrects amino acid deficiencies in cereal-based human diets, permitting more of the total protein to be utilized, because animal proteins are



more digestible and metabolized more efficiently than plant proteins. Out of the six classes of nutrients, proteins are the major sources of building materials for the body. Proteins are found in both animals and plant tissues. Meat, fish, poultry, eggs, milk and cheese are good sources of protein foods from animal sources (Inyang and Onu, 2018).

The term poultry mean birds that are domesticated and reared at home for the provision of food such as egg and meat for human consumption and for the generation of income for the national economy and the producer as well. Other products such as poultry feather and poultry droppings are also of economic importance to man. Poultry birds also provide income to the farmers (Haruna *et al.*, 2012). The poultry industry is significant to the Nigerian economy at large and the rural economy in particular because it provides a good source of meat and eggs which supplies animal protein to the human diet. Proteins play key roles in the formation of a balanced human diet that is essential for better health, vigor, and productive capacity of the people. It builds and repairs body tissues; a low intake or deficiency of protein reduces the skillfulness of the young, hinders the development of the brain, retards rate of growth and increases rate of susceptibility to infections by animals (Ijah *et al.*, 2020).

The Food and Agricultural Organization of the United Nations (FAO) stipulates a daily requirement of 65gm-75gm total protein, out of which 40% should be derived from animal protein such as the poultry egg. The average level of animal protein consumption in Nigeria is 15g/head/day which is grossly below the Food and Agricultural Organization recommended level of 35g/head/day (FAOSTAT, 2016). The poultry sector is one of the most organized and vibrant segments of the agriculture industry in Nigeria, which strives harder towards the provision of much protein human diet. This sector generates direct and indirect employment and income for many people not leaving out the generation of revenue to the overall economy (Ijah *et al.*, 2020). The poultry egg industry, apart from providing employment and a livelihood to thousands of people in Nigeria, also provides high quality, nutritious food to not only the urban dwellers but the rural dwellers. The egg is a complete protein with excellent quality; one egg will give 6g of protein and egg-white protein has a biological value of 100, the highest biological value of any single protein (FAO, 2012).

Ayinde *et al.* (2012) examined the economics value of poultry egg production under different management systems in Odeda Local Government Area of Ogun State in 2008 using a combination of descriptive statistics, budgetary techniques, profitability ratios and multiple regression analysis. The results show that the Gross Margin under battery cage system per bird / year was ₦ 8, 089.56, while the Net Farm Income per bird / year was ₦ 1, 773. 17. On educational status of the producers, the result shows that majority (69.2%) of the producers had tertiary education indicating that they are highly educated. The implication is that the level of education of the producers will contribute significantly to their decision making. e. Analysis of the off-farm income of the producers showed that the mean off farm income for broiler and pullet-egg enterprises were ₦351,590.91 and ₦113,034.17 per annum respectively. This implies that the producers in both enterprises are likely to cushion some of the effects of their financial constraints using their off-farm income.

Apart from poultry industry being so significant to the Nigerian economy, it also provides a good source of meat and eggs supplies of animal protein to the human diet. The proteins play key function in the formation of a balanced human diet that is essential for better health, vigor, and productive capacity of the people as well as building and repairing of body tissues. While low intake or deficiency of protein reduces the skillfulness of the young ones, hinders the development of the brain, retards rate of growth and increases rate of susceptibility to infections (Hassan *et al.*, 2016). It is on this ground that this research study is necessary to analysed the determinants of poultry egg production efficiency in Etim Ekpo Local



Government Area. The specific objectives are to; assess the socioeconomic characteristics of poultry egg producers and ascertain the determinants of poultry egg production efficiency in the study area.

RESEARCH METHODOLOGY

The Study Area

Etim Ekpo coordinate is 5⁰1'N 7⁰37'E. The L.G.A was created from the former Abak division, Etim Ekpo is one of the Annang-speaking natives. The seat of the local government council is in Utu Etim Ekpo a community in Etim Ekpo. The inhabitants of this town are estimated to be 108,418, according to 2006 population census. This figure was projected to 112,660 people in 2021. Etim Ekpo local government area is made up of four districts of seventy-four communities and villages. The people of this locality are predominantly subsistence farmers, traders and craftsmen. Natural resources in Etim Ekpo local government area are sharp sand, gravel, timber and oil-palm. The people of Etim Ekpo are mainly farmers, but the educated indigenes work as civil servants within and outside the local government area. In the area of education, there are many public and private secondary schools. The local government area is the home of one private university, the Obong University, located at Obong Ntak. The people of Etim Ekpo are vast in knowledge and every other creative activity (Wikipedia 2021).

Sample and Sampling Techniques

A multistage sampling technique was adopted in this research. The first stage was a purposive selection of five (5) clans in Etim Ekpo Local Government Area. The second stage, was a simple random selection of five (5) villages from each clan. The third stage was a simple random selection of three (3) poultry farmers in each of the five villages. The total respondents for the research were 75 poultry farmers.

Analytical Techniques

Both descriptive and inferential statistics were used in the analysis. Descriptive statistics such as percentages, frequency counts, arithmetic means and tables were employed in analysing the socioeconomic characteristics of the farmers. While, multiple regression was used to analysed the determinants of poultry egg production in the study area.

Model Specification

Multiple regression analysis is defined by

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + e$$

Where:

Y = Value of egg Production

X₁ = Age (In Years)

X₂ = Education (Years)

X₃ = Farming Experience (Years)

X₄ = Cooperative Membership

X₅ = Access to Credit

X₆ = Sex

X₇ = Marital Status

X₈ = Households' Size (No. of People)

X₉ = Number of Birds

X₁₀ = Cost of Drug and Vet Services (Naira)



X_{11} = Cost of Feed (Naira)

X_{12} = Cost of Labour (Naira)

e = Error Term.

RESULTS AND DISCUSSION

Socioeconomic Characteristics of Poultry Egg Farmers in the Study Area

Socioeconomic Characteristics of Poultry Egg Farmers in the Study Area is a way of describing farmers based on their education, income, and type of job as shown in Table 1 below. The result depicts that, majority (71%) of the poultry egg farmers in the study area were male while 29% were females. This indicated that the males were more involved in poultry egg production in the study area than their female counterparts. This finding is in line with the finding of Ijah *et al.* (2020) who discovered that majority; 76.7% of the poultry egg producers in their study area were male. The result further supported Oluyemi *et al.* (2020) who stated that the distribution of poultry egg farmers according to gender revealed that 81.7% were males while 18.3% were females. This shows that the enterprise is dominated by male and this is expected because of the energy demanding nature of the poultry enterprise. Besides, males being the household heads are expected to engage in income generating jobs in order to cater for their family.

Age is an indication of the stage of life of the respondents as well as how active a respondent could be especially in poultry egg farming activities. Table 1 also reveal that 29 farmers fell within the age range of 25-36 years representing about 38% of the total respondents, 31 farmers fell within the age range of 37 – 48 years representing about 41% of the total respondents and 15 farmers fell within the age range of 49-60 years representing about 20% of the total respondents. While the average age of the respondents in the study was 41 years. This is an indication that the farmers as at the time of this research were at their prime and active stage of their life existence, as such being able to cope with the tediousness involved in the poultry egg production as well as adaptation of new techniques for production. This age status will enhance their rate of productivity which will lead to increase in income to enhance more profit. This is confirming Akerele *et al.* (2019) that, the mean age of the producers is 43 years with higher percentage of the farmers being relatively young and in their active ages of production which, implied that the younger farmers are likely to adopt innovations faster than the older ones.



Table 1: Socioeconomic Characteristics Egg Producers

Item	Socioeconomic Variables	Frequency (n = 75)	Percentage	Mean
1	Sex			
	Male	53	70.7	
	Female	22	29.3	
2	Age			
	25 – 36	29	38.7	} 41
	37 – 48	31	41.3	
49 – 60	15	20.0		
3	Educational Level			
	FSLC	8	10.7	
	WAEC/WASSCE	29	38.7	
	OND	12	16.0	
	NCE	10	13.3	
	HND	15	20.0	
	BA/BSc	1	1.3	
4	Marital Status			
	Single	13	17.3	
	Married	62	82.7	
5	Household Size			
	1 – 2	3	4.0	} 4
	3 – 4	56	74.7	
5 – 6	16	21.3		
6	Total Membership in Cooperative Society			
	Yes	18	24.0	
	No	57	76.0	
7	Monthly Farm Income (₦)			
	20000 – 80000	52	69.3	} 70,800
	80001 – 140000	20	26.7	
	140001 – 200000	3	4.0	
8	Major Source of income			
	Farming	74	98.7	
	Civil Servant and Farming	1	1.3	

Source: Field survey, 2021.

On the aspect of educational attainment, Table 1 further showed that, about 11% of the respondents had First School Leaving Certificate (FSLC), majority representing about 39% of the respondents had West African Examination Certificate/ West African Senior Secondary Certificate Examination (WAEC/WASSCE), 16% acquired Ordinary National Diploma (OND), about 13% of the farmers had the National Certificate in Education (NCE), 20% had higher National Diploma (HND) while only about 1% had either Bachelor of Art or Bachelor of Science (BA/B.Sc.) respectively.

Table 1 depicts that, the respondents in the study area had one form of education or the other. This implied that their educational status has significantly contributed to the increase in poultry egg production efficiency in the study area whereby enhanced high-income generation. This is in line with Akerele *et al.* (2019) findings that, the level of education of the producers



will contribute significantly to their decision making. The findings further revealed that most of the farmers were married about 83%, while about 17% were single. This is in line with Akerele *et al.* (2019) who revealed that, majority (78.5%) of the sampled producers were married with implication that the producers are responsible according to the societal standard and therefore are likely to have some experience of life challenges which instills some level of discipline in making decision. The study depicts that majority, about 75% of the respondents had household size that ranged between 3-4 persons, followed by about 21% of the respondents fell within 5-6 persons and 4% had 1-2 persons in their household. While the means household size stood at 4 persons per household, indicating that the household size is small within the African context.

Report on cooperative society membership revealed that, 57 farmers forming the majority representing 76% of the respondents responded that they do not belong to any cooperative society while only 18 farmers representing 24% of the respondents accepted that they belong to one cooperative society or the other. This may be the reason why some of them were unable to accessed loans to increased their production capacity. Majority, about 69% of the poultry egg farmers in the study area acquired monthly farm income ranges from ₦20,000 – ₦80,000. This was followed by about 27% of the respondents who got income ranges from ₦81,000 – ₦140,000 per month. Only 4% of the respondents acquired the ranges of income between ₦140,000 – ₦200,000 per month. While, the mean income stood at ₦70,800 per month, this level of income may be as the result of the high cost of production inputs.

The result also revealed that majority, about 99% of the respondents had farming as their major source of income while only 1% of the respondents had income from civil Service work as well as farm work. This result may not be far from the average age status of 41 years, being young and active to perform farm work as well as their literate levels which will enable them to adopt innovation faster. Another reason for the respondents to take farming as their major source of income may be due to lack of white-collar jobs for the teeming youths' population that make them to resort to farming as their last option.

Poultry Egg Producer Farm Production Capacity

Poultry farm capacity is the maximum number of birds which a farmer can hold on his/her farm (flock size) (Wikipedia, 2021). Capacity is the overall scale of your poultry business as shown in Table 2 below. The result on table 2 revealed that greater percentage, about 85% of the poultry egg farmers had between 50 – 224 birds per pen. Followed by about 7% of the respondents that had 225-399 birds per pen. About 5% of the respondents had 400 – 576 birds per pen while about 3% had 576 – 750 birds per pen. This finding contradicts the finding of Ijah *et al.* (2020) who found out that the number of birds per pen in their study area ranged between 301 – 400 birds per pen. The study also revealed that more than half, about 57% of the respondents had access to credit facilities while about 43% did not have any access to credit facilities. This scenario has helped the poultry egg production in the study area to face a tremendous boost during the study period. This finding supported Oluyemi *et al.* (2020) who stated that 68.7% of the farmers had access to credit while the remaining 31.3% did not have access to credit.

On the aspect of extension services, about 71% of the poultry egg farmers had less frequent extension agent's visitation to their farms. Only 4% of the poultry egg farmers had more frequent extension agent's visitation to their farms. About 5% of the poultry egg farmers had most frequent (Regular) extension agent's visitation to their farms. While 20% of the poultry egg farmers has never been visited by the extension agents. It was also revealed that, majority, 72% of the poultry egg farmers had only one pen in their farms. About 23% had two pens, 4% had three while only 1% had 4 pens in their farms. This implied that most of the



poultry egg producers in the study area were small scale farmers due to their limited resources as well as high cost of inputs such as feeds. It was also revealed that, 64% of the poultry egg farmers had a total pen size ranges from 12 – 309 square metres, 28% had 310 – 607 square metres, 7% had 608- 905 square metres while only 1% of the respondents had 908 – 1203 square metres. These figures also depict the true picture of poultry egg producers in the study area as small-scale farmers since majority 82% of the poultry egg producers had between 12-607 pen size ranges. This not far their low-income status.

Table 2: Production Capacity of Poultry Egg Producers

Item	Poultry Business Capacity	Frequency (n = 75)	Percentage
1	No of Birds cate		
	50 – 224	64	85.3
	225 – 399	5	6.7
	400 – 576	4	5.3
	575 – 750	2	2.7
2	Access to Credit facility		
	Yes	43	57.3
	No	32	42.7
3	Access to Extension Services		
	No	16	21.3
	few times	52	69.3
	More	3	4.0
	Regularly	4	5.3
4	No of pens		
	1.00	54	72.0
	2.00	17	22.7
	3.00	3	4.0
	4.00	1	1.3
5	Total Pen Size		
	12 – 309	48	64.0
	310 – 607	21	28.0
	608 – 905	5	6.7
	906 – 1203	1	1.3

Source: Field survey Data, 2021

Determinants of Poultry Egg Production in the Study Area

This subsection analysed factors affecting egg production in the study area as shown in Table 3. The result revealed that out of the four functional forms tried, exponential production form 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 R²) included in the model. The F –value is statistically significant at 10% level which implies that the independent variables (X₁ to X₁₂) included in the model best explained the dependent variable (Y), value of egg production. The R² was 0.267 which implied that the regression model gives a good fit. It means that 26.7% of the total variations in value of egg production was explained by the independent variables (Xi) included in the model.

The results also show that factors such as cost of feeds and membership in cooperative were the major factors that affected the value of egg production because they have shown a



statistically significant effect at 5% and 1% levels respectively. The implication is that a unit reduction in feed cost will lead to about 37% increase in egg production while 1 unit increase in the membership of cooperative, can increase value of egg production by 28% in the study area as shown in Table 3. This may be due to the fact that cooperative members can easily access loans from financial institutions as well as obtaining firsthand information on agricultural production activities. This is in line with the a priori expectation that the higher the exposure to social capital, knowledge, and economics of cooperative entrepreneurship involvement, the higher the returns from egg investment opportunities. The coefficients of other variables even though were not statistically significant but were either proportional or inversely related to the poultry egg production in the study area in one way or the other.

Table 3. Determinants of Poultry Egg Production in the Study Area

Variables	Linear	Exponential	Double- log	Semi-log
(Constant)	-1304953.818 (-.137)	13.507* (9.221)	13.222 (1.044)	-20624647.773 (-0.255)
X ₁ Age (years)	0.108 (0.514)	0.042 (0.215)	-0.016 (-0.078)	0.065 (0.302)
X ₂ Education (years)	-0.0129 (-0.832)	-0.129 (-0.889)	-.138 (-0.910)	-0.099 (-0.621)
X ₃ Farming experience (years)	-0.082 (-0.513)	-0.026 (-0.171)	-0.007 (-0.043)	-0.028 (-0.171)
X ₄ cooperative membership (1= yes, 0 = no)	0.232 (1.494)	0.283*** (1.944)	0.27*** (1.723)	0.217 (1.314)
X ₅ access to credit (1=yes, 0= no)	0.099 (0.713)	0.165 (1.274)	.0168 (1.214)	0.085 (0.591)
X ₆ Sex (1=Male, 0= Female)	-0.096 (-0.618)	-0.018 (-0.124)	0.009 (.058)	-0.072 (-.445)
X ₇ marital status (1=married, 0=unmarried)	-0.195 (-1.337)	-0.128 (-0.936)	-0.111 (-.738)	-0.193 (-1.219)
X ₈ households' size (no. of people)	0.167 (.965)	0.183 (1.127)	0.243 (1.444)	0.202 (1.144)
X ₉ No. of birds	-0.103 (-0.695)	-0.100 (-0.721)	-0.069 (-0.423)	-0.083 (-.485)
X ₁₀ cost of drug and vet services	-0.159 (-1.247)	-0.042 (-0.353)	-0.106 (-0.847)	-0.181 (-1.379)
X ₁₁ cost of feed	0.278** (2.224)	0.366** (3.120)	0.236*** (1.899)	0.161 (1.234)
X ₁₂ Cost of Labour	0.023 (0.176)	-0.015 (-0.125)	-0.034 (-0.263)	0.019 (.0143)
Diagnostics				
R	0.407	0.517	0.446	0.344
R ²	0.166	0.267	.0199	0.119
Adj. R ²	0.005	0.125	0.044	-0.052
F-Statistic	1.028	21.880*	1.281	0.696
Sig	0.435	0.050	0.252	0.749

(***) = 1% significant level, (**) = 5% significant level, (*) = 10% significant level



CONCLUSION AND RECOMMENDATIONS

This study analysed the determinants of poultry egg production in Etim Ekpo local government Area of Akwa Ibom State. Based on the findings from the study, it can be concluded that, the farmers as at the time of this research were at their prime and active stage of their life existence, as such being able to cope with the tediousness involved in the poultry egg production as well as adaptation of new techniques for production that enhance high rate of poultry egg production in the study area. Besides, cooperative membership and cost of feed were the major determinants of poultry egg production in the study area. The coefficients of other variables even though were not statistically significant but were either proportional or inversely related to the poultry egg production in the study area in one way or the other.

In view of the research findings, the following recommendations are hereby proffered: Adequate measures aimed at reducing the cost of poultry egg production through research in the study area, especially the cost of feeds which constituted the largest proportion of the total cost of commercial poultry egg production, that will help in increasing egg production of the commercial poultry farmers in the study area and the nation at large.

Poultry egg production should be integrated as a vital component in government programs geared towards empowerment especially for the teeming unemployed youths in the state as well as the nation due to its profitability. To increase the rate of poultry egg production, better management practices should be implemented, feed should be formulated locally to reduce feed cost. To achieve high productivity, poultry egg producers should be encouraged to keep records of sales, purchase in order to determine their production output.

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