

Influence of socio-economic characteristics on net farm income of broiler production in the southern agricultural zone of Nasarawa State, Nigeria

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Abstract. The study analyzed the economics of broiler production in the Southern Agricultural Zone of Nasarawa State in Nigeria. The study adopted a multi-stage sampling technique to select 60 broiler farmers; primary data on items such as age, gender, level of education, and cost of production were collected with the aid of well structured questionnaire complemented with interviewing schedule. The collected data were analyzed with descriptive statistics, farm budgeting technique and multiple regression models. The findings revealed that majority (60%) of the broiler farmers were male and 58.3% had tertiary education, 50.0% had 1 to 5 persons in their households and 36.7% had 6 to 10 years farming experience. The study also revealed that 50.0% had small flock size between 100 and 200 birds. The costs and returns results showed the estimated total revenue of broiler farmers to be ₦331,941.67, with an estimated total cost of ₦162,167.99. The estimated gross and net farm income were ₦182,177.77 and ₦169,833.61, respectively. The ROI was ₦1.05 which indicated that broiler production is profitable in the study area. The multiple linear regression of the factors influencing net profit showed the R^2 to be 0.852 indicating that about 85.2% of the variation in the dependent variable was explained by the independent variables. Age, level of education, farming experience, and flock size had positive effects, while gender, marital status and household had negative effects on the net farm income of farmers involved in broiler production in the study area. Age was significant at 1%, level of education at 1%, gender at 10% and years of experience in poultry at 10%. However broiler production was constrained by inadequate credit, high cost of day old chicks, and high cost of feed, pest and diseases infestation, lack of electricity among others. Based on the findings it was concluded that broiler production is profitable and showed that broiler production depends to a large extent on proper care and efficiency of the necessary resources used. The findings further reviewed that broiler farmers in the study area are faced with constraints such as high cost of feed, lack of electricity, high cost of day old chicks, disease outbreak and high cost of vaccines.

Keywords: Socio-economic, characteristics, net farm income, broiler, production.

INTRODUCTION

Agriculture is a significant sector in Nigeria's economy and the economic mainstay of the majority of households in Nigeria. It has a strategic importance in the fight against poverty and famine and ensuring food self-sufficiency (Biam, 2012). It contributes about 45% of the GDP, employs two third of total labor force and provides

livelihood for over 90% of the rural population (Ademosun, 2000).

In recent years, agricultural productivity in Nigeria has declined due to various decisive constraints and limitations. The declining performance of Nigerian agricultural sector, especially in the livestock sector is

traceable to technological, socio-economic, institutional, organizational, natural and climatic constraints. Njoku (2002) observed the problem from the point view of diversification which has occurred in the economy, especially the phenomenal growth of the crude oil, and manufacturing sector. Asiabaka (2000) identified inefficiency in improved agricultural technology transfer systems as the bane of Nigerian agricultural development. This decline in agricultural production coincides with the nation's oil boom. Onuk (2015) reported that some of the factors responsible for Nigeria's food insufficiency are low crop yields, use of traditional low yielding crop varieties, inconsistent macro-economic policies, pests and disease outbreak, wrong choice of enterprise combination and cropping systems. The food demand-supply gap that has been created resulted in increased for imports and high rate of food prices due to supply despite food importation.

Furthermore, Nigeria has enjoyed yearly economic growth (GDP) of 10.8% in real terms between 1980 and 1987 as a result of export earnings from petroleum. Real per capital income rose at 60% per year during this period. However, the decline in the world oil price experienced in 1987, combined with the reduction in world market prices of agricultural products in 1995 brought an end to the country's economic growth and real per capital income (Ademosun, 2000).

Poultry production (broiler) is one of the urban and pre-urban agricultural enterprises in Nasarawa State. It encompasses all birds (domesticated) kept or reared for meat or egg production. Poultry meat is highly purchased mainly by urban dwellers in Nigeria. In context, poultry production involves rearing of domesticated birds for meat. Modern Farming (2015), reported on the benefit of poultry farming as thus:

- i. The main benefit of poultry farming is that it does not require high capital for starting. You need just basic capital to start raising poultry. And most of the poultry birds are not costly enough to start rising.
- ii. Poultry farming does not require big space unless you are going to start commercially. Commercial poultry farming business also ensure high return of investment within a very short period.
- iii. Poultry provides fresh and nutritious food as has a huge global demand. Global consumers of poultry products prefer them due to their nutrients and freshness.
- iv. Poultry farming creates income and employment opportunities for the people. Unemployed educated youth can easily create a great income and employment opportunity for them by raising or going into poultry production.

Problem statement

Over the years, there has been a clarion call to improve the nutritional status of developing countries, through

protein intake especially animal protein. Production of poultry (broiler) in Nigeria has not been able to meet with the demand of her increasing population (FAO, 1990).

Some of these are the following challenges: The sector now faces a number of issues and difficulties including water, feed, electricity and other major problems. In addition to the challenges posed by the various pathogenic diseases, the farmers also face the problem for low capital. Help from the government and other investment institutions, is all that is needed by them for ensuring health growth and development conditions for the domesticated animals. High cost of production and low returns: most of the farmers of the third world countries are forced to sell their products at low costs to suppliers, which in turn earn little profits from them. Also limited access to core markets can pose as a challenge to the farmers. As they get little return on what they sell, so they never try to improve the quality of the poultry (broiler) (Mojtaba, 2011).

Research objectives

The broad objective of the study was to determine the influence of socio-economic characteristics on net farm income of broiler production in the Southern Agricultural Zone of Nasarawa State, Nigeria. The specific objectives were to:

- i. describe the socio-economic characteristics of broilers producers in the study area;
- ii. estimate the costs and returns to broiler production in the study area;
- iii. determine the factors influencing the net farm income of broiler production in the study area; and,
- iv. identify the constraints faced by the various broiler producers/farmers in the study area.

Justification

The Nigeria poultry industry in particular has been rapidly expanding in recent years and is therefore one of the most commercialized (capitalized) subsectors of Nigerian agriculture (USDA, 2013). The popularity of poultry production can be explained by the fact that poultry has many advantages over other livestock. Poultry birds are good converters of feed into useable protein in meat and eggs. The production costs per unit remain relatively low, and the return on investment is high. Therefore, farmers need a relatively small amount of capital to start a poultry farm. Furthermore, also the production cycle is quite short, so capital is not tied up over a long period (Aboki *et al.*, 2013). As the human population increases, the poultry industry continues to grow to meet the demand for poultry products in world markets. The importance of poultry farms lies in the quality of products that are provided to humans. Broilers farms provide meat that supplies the human body with

high quality proteins.

The challenges of food insecurity and hunger in developing African countries like Nigeria have caught the attention of experts and governments worldwide (Emaikwu *et al.*, 2013; FAO, 2011). Population growth, urbanization, and income improvements are the main drivers of increased demand for foods of animal origin in developing countries (Abdullah *et al.*, 2011). The sufficient supply of animal protein is most critical in the global food basket crisis. As a result, growing demand has led to a rise in the production of foods of animal origin all around the globe, especially from poultry (FAO, 2010). Therefore by determining the influence of socio-economic characteristics on net farm income of broiler production in the Southern Agricultural Zone of Nasarawa State, Nigeria the study would not only help to identify protein intake to improve the nutritional status of developing countries but also provided the indices for various significant improvements that can be made to improve the quality of the poultry products in the study area. Thus, the findings from this study, if well disseminated through seminars, publication and advocacy will help policy makers to formulate policies that would enhance the resource use efficiency and productivity of farmers. This will be used to determine the direction of resource adjustments that could lead to increase in the production of broilers that will meet the demand for the country's ever increasing population and the world at large.

MATERIALS AND METHODS

The study was conducted in the Southern agricultural zone of Nasarawa State. The State has thirteen (13) Local Government Areas (LGAs) and is divided into three agricultural zones namely: Central, Western and Southern agricultural zones respectively. The study was conducted in the Southern Agricultural Zone which is equally located in the Southern Senatorial Zone of the State. The zone comprises of three LGAs, namely; Lafia, Doma, and Obi. The study area is characterized by a long period of rainy season (May-October) and located between latitude 9°33' North and longitude 9°32' East. The average annual rainfall is approximately 107.3 mm and annual temperature ranging from 22.7 to 36.8°C (Meteorological Department, Nigeria, 2008). Crops grown in the study area include; Yam, maize, rice, millet, soya bean, beniseed, cassava, sweet potatoes and cocoyam. Farmers in the study area also keep livestock such as cattle, poultry, goats, and sheep. And the permanent tree crops planted by farmers include: oranges, mangoes and cashew. Most of the people are farmers who also engage in trading and artisan work as part-time commercial activities.

Sampling method

Southern Agricultural Zone comprises of five Local

Government Areas namely Lafia, Doma, Obi, Keana, and Awe. A multi-stage sampling technique was adopted in which three Local Government Areas namely Lafia, Doma and Obi out of five Local Government Areas were selected. The second stage involved random selection of two (2) farming communities from each of the three selected local government areas, namely, Lafia, Shabu, Obi, Agwatashi, Doma and Idiya-Yalwa, to give a total of six (6) farming communities. Lastly, ten (10) broiler farmers were purposively selected from each of the farming communities to give a total of sixty (60) respondents for the study. Data were analyzed using descriptive statistics such as mean frequency and percentages to achieve objectives 1 and 4. Objective 2 was achieved using farm budgeting model, while objective 3 was achieved using multiple regression model.

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

Results from the findings in Table 1 revealed that larger proportion (48.3%) of the respondents were between the ages of 31 and 40 years, 38.3% of the respondent were below the age of 30 years while only 13.3% of the respondents were between the ages of 41 and 50 years. The mean age was 35.5. This indicated that majority of the broilers farmers were in their active age. This is because most of the activities in the farm are done manually. The physical ability of a man obeys the law of diminishing returns. In this chasm, the productivity of man increases with age to a peak level after which it declines as the farmer advances in age.

Also a large proportion (36.7%) had years of experience in poultry business of between 6 and 10 years, 30.0% had experience between 1 and 5 years, 18.3% had experience above 15 years and 15.0% had experience between 11 and 15 years in poultry production. The mean farming experience was 3.96. It is noteworthy that experience in farming is very essential in order to effectively perform the activities profitably and low farming experience could impact negatively on the profitability and efficient production of broiler production in the study area. According to Otunaiya *et al.* (2007) experience is expected to have a significant positive impact on the ability of the farmer or farm manager. This implies that the more experienced a poultry farmer is, the more efficient he would be in management because the acquired experience over the years would be brought to bear on the production activities.

The results showed that majority (58.3%) of the respondents in the study area had tertiary education, 31.7% had secondary education, while those that had primary and non formal education were 5.0%. This shows that quite a number of the respondents are educated in the study area. It is noteworthy that education is one of

Table 1. Socio-economic characteristics of broiler farmers.

Variables	Frequency	Percentage
Age		
Below 31	23	38.3
31-40	29	48.3
41-50	8	13.3
Total	60	100
Farming experience		
1-5	18	30.0
6-10	22	36.7
11-15	9	15.0
Above 15	11	18.3
Total	60	100
Level of education		
Non-formal	3	5.0
Primary	3	5.0
Secondary	19	31.7
Tertiary	35	58.3
Total	60	100
Household size		
1-5	30	50.0
6-10	22	36.7
Above 10	8	13.3
Total	60	100
Gender		
Male	36	60.0
Female	24	40.0
Total	60	100
Marital status		
Single	16	26.7
Married	44	73.3
Total	60	100
Flock size		
Below 100	19	31.7
100-200	30	50.0
201-300	5	8.3
301-400	5	8.3
Above 500	1	1.7
Total	60	100

Source: Field survey, 2016.

the major socio-economic factors that have impact on the output and productivity of the farmers. Farmers with formal education are privileged to have early contact with new innovations and improved technologies which are designed to improve output and productivity, moreover

such farmers are early adopters and risk aversion tendency reduces with formal education. This is collaborated by Adams (2009) who reported that in poultry industry, formal education affords farmer especially, those that have training in agriculture the

Table 2. Cost and returns of broiler farmers.

Items	Mean value	Percentage of variable cost
A) Variable Cost (Naira)		
Feed	63,353.33	42.29
Labour	53,066.67	35.42
Chicks	20,976.69	13.94
Vaccines	3,889.23	2.60
Transport	2,736.67	1.83
Water	2,108.33	1.41
Litter material	1,386.33	1.00
Electricity	2,306.67	1.54
Total Variable Cost (TVC)	149,823.90	
B) Fixed Cost (FC)		
Rent	4,690.42	
Feeder	2,328.33	
Drinker	2,042.83	
Lantern	1,271.67	
Stove	1,118.67	
Weighing balance	612.50	
Basin	279.67	
Total Fixed Cost (TFC)	12,344.09	
C) Total Cost (TC) (Naira)	162,167.99	
D) Total Revenue (TR) (Naira)	331,941.67	
Gross Margin (GM) = TR - TVC	182,177.77	
Net Farm Income = GM - TFC	169,833.61	
Net farm income Per Naira Invested	1.05	

Source: Field survey, 2016.

opportunity to understand proper management of resources in poultry production.

Furthermore, the results from the findings showed that majority (50.0%) of the respondents had between 1 and 5 persons in their household and that 36.7% had family size of between 6 and 10 inhabitants in their household while 13.3% had above 10 persons. The mean household size was 4 persons. This showed that there are relatively small family sizes which could hamper family labour in poultry enterprise. This may be that family members are all educated and have gone for one or more educational programmes. Although a large family size implies that there are more mouths to be fed. This is in line with Baruwa and Oke (2012) who stated that the size of household is a good indicator of labour available for work in the production activities.

The results also revealed that majority (60%) of the respondents were male and 40% were female. This implies that there are more male in poultry production than female, and this is so because the activities involved are very strenuous which could be difficult for women to undertake.

Majority (73.3%) of the respondents were married and 26.7% were single in the study area. This implies that married people are more involved in broiler production than the single in the study area. This shows that married farmers tends to provide family labour for the poultry production and thus reduce money on hired labour.

The results also showed that 31.7% of the respondents had a flock size below 100 birds, 50.0% had a flock size ranging between 100 and 200 birds, with 8.3% each of the broiler farmers had a flock size of 201 to 300 and 301 to 400, respectively. The remaining 1.7% of the farmers had a flock size of over 500 birds. The mean flock size was 152. This implies that broiler farmers in the study area were operating on small scale.

Costs and returns on broiler production

Table 2 presents the estimated costs and returns of broiler production in the study area. The results revealed that the total variable cost (TVC) was calculated to be ₦149, 823. 90, while the total fixed cost (TFC) was

Table 3. Factors influencing farm net income of broiler production.

Model	B	Std. Error	Beta	T-value
1 (constant)	4.665	.166		28.037**
Gender	-.098	.051	-.121	-1.924*
Age	.133	.041	.227	3.269**
Marital status	-.030	.050	-.041	-.601 ^{NS}
Level of education	.089	.030	.183	3.001**
Years in poultry	.015	.007	.115	1.955*
Household size	-.013	.009	-.085	-1.416 ^{NS}
Farm size	.002	.000	.703	10.264**
R = 0.923				
R ² = 85.2				
F = 42.927				

Source: Field survey, 2016. *significant at 10%, **significant at 1%, NS = not significant.

Table 4. Constraints faced by broiler farmers.

Constraints	Frequency	Percentages
High cost of feed	55	91.6
Lack of electricity	42	70
High cost of day old chicks	40	66.7
Pest and disease infestation	40	66.7
High cost of vaccines	28	46.7
Inadequate credit	27	45
High cost of transportation	26	43.3
High cost of labour	18	30
Inadequate land	9	15
High cost of rent	5	8.3
Illiteracy	4	6.7

Source: Field survey, 2016.

estimated to be ₦12,344.09. The total revenue (TR) was estimated to be ₦331,941.67 with a gross margin (GM) of ₦182,177.77. The estimated net farm income (NFI) was ₦169,833.61 with a return per naira invested to be ₦1.05. This indicates that the farmer made profits at the end of their production. Therefore broiler production is profitable and should be giving priority. Also, the results showed that for every naira invested, a profit margin of ₦0.05K was realized. This is in line with the findings of Oyeleye (2013) who studied the economic analysis of broiler production in Aboekuta, Ogun State, Nigeria. His study showed that commercial broiler farmers had higher income on the enterprise than the small scale farmers. It also showed that total variable cost affects the level of broiler revenue than the fixed costs.

Regression analysis

The multiple linear regression analysis results as presented in Table 3 was used to determine the factors influencing the net farm income of broiler production in

the study area. The coefficient of determination R² indicated that about 85.2% of the variation in the dependent variable was explained by the independent variables included in the regression model. The standardized regression coefficients of age (.133), level of education (.089), farming experience (.015), and flock size (.002) have positive influence, while gender (-.098), marital status (-.030) and household size (-.013) have negative influence on broiler production. The negative influence on gender, marital status and household size indicated that an increase in any of these independent variables will lead to decrease in poultry production in the study area.

Constraints faced by broiler farmers

Table 4 revealed the constraints faced by the broiler farmers in the area of study. These constraints include high cost of feed, (96.6%), lack of electricity (70%), high cost of day old chicks (66.7%), pest and diseases (66.7%), high cost of vaccine (46.7%), inadequate credit

(45%), high cost of transportation (43.3%), high cost of labour (30%) and inadequate land (15%).

CONCLUSION

Base on the result from the findings of this study it is concluded that broiler production was profitable and most activities of poultry production in the area of study were undertaken by aged farmers, mostly males, educated but less experience in poultry production. The study further revealed that broiler production is a profitable enterprise as indicated by the various variables used in estimating the costs and returns. The research further revealed that the net return was ₦1.05 per naira invested with net farm income of N169,833.61 indicating that broiler production depends to a large extent proper care and efficiency of the necessary resources used. The study concluded by recommending the following:

- i) Young people should be encouraged to participate in poultry farming through having access to credit facilities.
- ii) Poultry farmers especially broilers producers, should provide sanitary condition and invite veterinary personnel to vaccinate their birds to avoid high mortality. .

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