

Analysis of Socio Economic Determinants to Broiler Production by Rural Women in Imo State of Nigeria

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Abstract— Women have been the bed rock of agriculture in Sub Saharan Africa as they feature in all arrays of the sector and prominent among them is broiler production. This sub sector of animal production has not only empowered these women in alleviating poverty in their domains but source of savings. In recognition of the aforesaid, successive Nigeria government and nongovernmental organization had introduced various policies and programmes aimed at developing and dissemination of improved technologies and associated production packages to these farmers in order to encourage them. This study was designed at identifying the farmers' socioeconomic factors that will enhance the adoption of improved production technologies as these would aid the concerned bodies for appropriate policies formulation for the success of the programmes. This research is indispensable especially now that animal protein origin is deficient in the menu of many poor households in the country and there is great need to remedy the situation as effects of malnutrition are devastating.. 120 farmers were selected using multi stage random sampling technique. Structured questionnaire was used to illicit information from the farmers. Pearson product moment correlation technique and percentage response were used to address the effect of farmers' socioeconomic characteristics on their output and their production constraints respectively. The study found that age, level of education, household size and access to credit were the major determinants of the size of broiler production in the study area. The cost and return analysis showed that broiler is a profitable venture, on comparing the total cost (712,125) to total revenue (925,000) with the benefit cost ratio of 1:1.2. The major constraints to broiler production were; poor access to credit, high labour cost, poor breed of chicks and

high cost of drugs. Policies options aimed at increasing farmers' access to credit, better quality of broiler chicks and standard drugs should be put in place.

Keyword— Socio Economic Determinants, Broiler Production, Rural Women.

I. INTRODUCTION

Rural areas are often characterized by highly dispersed, harder to reach communities, weak infrastructure, low levels of economic activity, and financial service providers with limited capacity and a narrow range of products (Eleke, 2005). Agriculture is the predominant occupation of the rural dwellers in sub Saharan Africa and of which and of which women represent a crucial resource in agriculture and rural economy through their roles as farmers, labourers and entrepreneurs (FAO , 2007). Women activities in agriculture typically include producing agricultural crops, tending animals, processing and preparing food, working for wages in agricultural or other rural enterprises, collecting fuel and water, engaging in trade and marketing, caring for family members and maintaining their homes (FAO, 2008). Nevertheless, these roles vary considerably between and within regions and are changing rapidly in many parts of the world, where economic and social forces are transforming the agricultural sector (Eleke, 2005).

Women are visible in facets of agriculture, for instance in livestock industry, they share responsibility with men and children in caring for animals that are housed and fed within the homestead, of which among the most prominent is poultry management (FAO , 2007; Eze, *et al*, 2010). The strong influence of women in the use of eggs, milk and poultry meat for home consumption and they often have control over marketing and the income from these products as asserted by (NPC 2006) may be invoked for the

admiration of the poultry sub sector of livestock industry by women.

Poultry industry has continues to be one of the fastest growing industries worldwide and contributes significantly to employment, income, nutrition, and national and international trades (FAO, 2008). Broiler is very important sector of poultry enterprise and constitutes more than 18% of animal proteins consumed in urban area with more than 28% produced in the urban area (Eleke, 2005). Broiler production is efficient in ensuring food security and poverty alleviation through possession of the following characteristics; super-efficient converter of feed to meat, large number of birds requires small space, marketable at different ages, ease of operation, gives quickest turnover, the meat is palatable, easily digestible and low production cost per unit relative to other livestock (Ishaka, *et al*, 2007). Almost everywhere face more severe constraints than men in access to productive resources (Daramola, 2005). In Nigeria and many Sub Saharan Africa, this farming group is challenged with difficulties in broiler production and such problems include lack of skills and equipment to produce more efficiently, lack of information on local markets, high mortality rate, high cost of feeding and poor breeds of chicks and others, which could militate against effective role of women to larger extent in overcoming poverty (Eleke, 2005).

However, empirical evidence has shown that the absolute level of broiler production in most developing countries, Nigeria inclusive has declined for the last decades (Eze, C. T *et al*, 2010). In, Nigeria, studies show that research has developed improved technologies on broiler production and extended to the farmers for adoption through the Agricultural development project (ADP) of different states for productivity (FAO, 2008). These improved technologies include use of improved day old chick, medication, improved feed and proper sanitation (FAO, 1984). Broad objective of this study is correlation analysis of socio economic determinants of broiler production by rural women in Imo State, Nigeria. Exploratory the association between women socioeconomic characteristics and broiler farmers' output could give policy makers and extension professionals more insight into processes partly by which protein deficiency problem which has plagued mostly the health of the vulnerable groups such as the aged, children and the nursing mothers are in the developing countries, Nigeria inclusive could be addressed This is justified in the sense that the determination of factors influencing the rate and extent of adoption of technology would go a long way in aiding policy makers and extension planners for further

modifications of the system. Furthermore, through identification of problems limiting broiler production, policy options could be instituted by government and researchers on how best to overcome the constraints to boost food security especially now animal protein origin is deficient in the menu of poor resourced household, hence predisposing lots of the vulnerable groups to kwashiorkor and marasmus.

II. MATERIALS AND METHODS

The study was conducted in Imo State of Nigeria. Imo State is located between latitude 6°64' and 5°59'N and longitude 6°53' and 5°56'E. It has temperature range of 28 – 31°C, relative humidity of 58 – 62% and annual rainfall of 1200mm – 2500mm. The State is bordered in the North by Anambra State in the east by Abia State and in the south by Rivers state. The State comprises of 27 Local Government Area with each having several communities and villages. It has three rivers an area of 3,934 million people (NPC, 2006). agricultural zones; namely Okigwe, Owerri and Orlu zones. The people of Imo State are agarians. The Enugu urban are civil servants and with some agrarians.

Multistage random sampling technique was employed for the study. In the 1st stage Okigwe and Owerri agricultural zones were randomly selected. These selected zones were further stratified into L G As. In the second Stage, Ihitte Uboma and Okigwe LGAs were selected from Okigwe zone, while Owerri North and Ohaji Egbema were selected from Owerri zone. These selected LGA were purposely done based on broiler performance. In the next stage, two, two communities were randomly each of the L G A., making a total of eight communities sampled. The list of women broiler farmers were selected with the help of agricultural extension agent assigned to the communities. This was done to form the sample frame. Fifteen broiler women farmers were randomly selected from each of the communities making a total of a hundred and twenty farmers sampled for detailed study.

Data were collected using primary and secondary sources. The primary data were collected from the farmers using structured questionnaire and the information collected on included; household expenditure on planting materials and inputs, value of planting materials and outputs, and constraints encountered in broiler production. Also, the socio-economic characteristics of the households were captured on; age, gender, marital status, farming experience, level of schooling, household size, farm size and membership of organization using questionnaire. Percentage response was used to address the farmers' socio economic

characteristics and constraints to broiler production in the study area. Secondary data were obtained from different literature sources related to this study such as recent published and unpublished survey articles, journals, textbooks, internet, proceedings and other periodicals. Pearson product moment correlation technique was used to determine the socioeconomic determinants to technology adoption.

The coefficient is specified as:

$$Y = \frac{n \sum xy - \sum x \sum y}{n \sum x^2 - (\sum x)^2 (n \sum y^2) - (\sum y^2)} \dots\dots(1)$$

Y=no. of birds, x_1 = Age of respondent (yrs), x_2 = level of education (yrs), x_3 = Household size(no.), x_4 =Aim of production(dummy), x_5 = Extension contact (yrs), x_6 =access to credit(access=1, non-access=0), X_7 =Membership of organization (dummy)

Objective 2 was captured using gross margin analysis. Gross margin (GM) = Total revenue (TR) – Total variable costs (TVC)

$$G.M. = TR - TVC \dots\dots\dots(2)$$

$$\text{i.e. } G.M = \sum_{i=1}^n P_i Q_i - \sum_{j=1}^m r_j x_j \dots\dots\dots(3)$$

The Net farm income can be calculated by gross margin less fixed input. The net farm income can be expressed as thus:

$$NFI = \sum_{i=1}^n P_i Q_i - \left[\left(\sum_{j=1}^m r_j x_j \right) + k \right] \dots\dots\dots(4)$$

Where: GM = Gross margin (₦), NFI = Net farm income (₦), P_1 = Market (unit) price of output (₦), Q = Quantity of output (kg)

r_i = Unit price of the variable input (kg), x_i = quantity of the variable input (kg) , K = Annual fixed cost (depreciation) (₦)

$i = 1 \ 2 \ 3 \ \dots\dots\dots n$

$j = 1 \ 2 \ 3$

III. RESULTS AND DISCUSSION

The mean statistics of broiler farmer is shown in Table1. On the average, a typical broiler farmer was 28.4 years old. This is synonymous with Nkematu,(2005) who reported a mean value of 27.8 years on poultry production in Imo State of Nigeria.This implies that the bulk of the farming population were energetic, able-bodied and active group that are not only enterprising but would supply the much needed farm labour in the farm enterprises. Educational attainment mean was 12.4 years. The high level of schooling reported in the study area was against the often

reported illiteracy status of the farmers in the developing countries. The high educational attainment is a desirable condition for agricultural development, since it augured well for extension services in transferring research result for sustainable food production (Inyang, 1998). The broiler farmers' production experience was at average 12years. This concurs with Ume *et al*, (2010) who found .the mean farming experience of broiler farmers in Enugu Urban to be 13 years. The aftermath of wealth of farming experience as noted by (Kughur, *et al*, (2012) is to enhance the farmer's capacity of maximizing the output and profit at minimum cost. The average stock size of 17 birds was reported in the study area. The mean of household size was 5 persons, which implies household head proxy to family use in broiler production in the study area. FAO, (2008) made comparable remark. The mean value of the cooperative organization was 6. The number of socioeconomic associations like cooperatives, age grade and trade union to which a farmer belongs, is expected to increase his interaction with his fellow farmers and other entrepreneurs in his environment. It is hoped that such interaction would help them to receive and synthesis new information on economic activities in his locality and even beyond (D'Silva, 1992; Ishaka, *et al* 2007). The average annual income of ₦72, 880 was reported made by the farmers. This could denote that chicken consumption has no cultural and religious barriers, hence commands considerable market in both rural and urban areas (Agwu, *et al* 2010). The mean of extension contact with the farmers was 10 visits and is in agreement with Ngoka, (1998) who had mean of 8.2. Extension services assists to disseminate innovations to farmers through among others provision of technical assistance and sources of improved inputs for enhancement of their productivity (Nwaru, *et al*, 2010,)

The mean output of 120 birds for 4 months was recorded, which could sustain an average household size of four in a year production cycle (CIMMYST, 1993) remarked similarly.

Table.1: Mean socioeconomic statistics of women broiler farmers

Variable	Mean value
Age of urban broiler farmer (yrs)	28.4
Educational level (yrs)	12.4
Farming experience	12

Flock size (no)	17
Household size	5
Annual income (₦)	₦72,880
Extension services	4
Membership of Organ	6
Output	120

Source: Field Survey, 2015

The coefficient of age of farmer was negative and significant at 5% as shown in Table 2. It is expected that optimism, mental and physical energy required in farming, decreases with age, hence affecting the output of the farmer (CIMMYST, 1993). In line with *a priori* expectation, the coefficients of educational level and household size were positive and significant at 1% respectively. Educated people are often risk averse and prudent in resource management, and could have positive effect on the flock size of broiler kept (FAO, 2007). As most often, farmers use their family members in farm works and this will invariably affect the flock size (FAO, 2007). The coefficient of rearing experience in line with *a priori* expectation had direct relationship with the dependent variable and significant at 99% confidence interval. Kughur, *et al* (2012) reported that aftermath of wealthy years of experience in farming enhances the farmers' capacity of maximizing their farm output and profit at minimal cost. Furthermore, D'Silva, (1992) opined that years of farming experience enhances efficient use of resources by the farmers.

The negative sign identity of the coefficient of credit and significant at at10 alphalevel as indicated in Table 2 could imply the diversion of credit into non-farm activities, thus negatively influencing the output of the farmer. This finding collaborated by (Ishaka, *et al.*2007; D'Silva, 1992) who asserted that paucity of fund for adoption of the technology

is a persistent problem in the adoption process, thereby affecting farmers' scale of production. The coefficient of extension services against apriori expectation was negative and significant at 5%probabilty level. The insufficient transfers of technologies to the farmers as well as bottleneck that militate against enhancing the adoption of technology as asserted by D'Silva, (1992) are the critical reasons for the behaviour of the variable. Furthermore, Ajibefun, *et al.*(2003) found negative relationship between extension services and farmers' level of production. This they attributed to the fact that in sub-Sahara Africa year after year, extension workers are hardly afforded in-service training and are rarely linked to research; continue to disseminate the same messages repeatedly to the same audience. This situation has consequently arisen where the extension audiences have become technically redundant and obsolete. Extension as an art of extending and educating is defined as a voluntary, informal, out-of school educational process which aims to teach rural people how to improve their level of living by their own efforts, through making wise use of the resources at their disposal and better system of farming and home making for the benefit of the individual, the family community and the nation as a whole (Ngoka, 1998; Ishaka, *et al*, 2007). As expected the coefficient of membership of organisation was positive and significant at 1% alpha level. Group organization is essential for efficient farmers' learning, receiving external support and achieving economies of scale. Daramola, (2005) made similar findings, while Nwaru, *et al.*, (2010) did not concur. They opined that farmers of organization inclination usually have limited time devoted in agriculture compare to the organization activities. Flock size represents the amount of land holding had a positive coefficient and statistically significant at 95% confidence level. Flock size, according to Agwu, *et al* (2010) affects adoption costs, human capital, and risk perception.

Table.2: Estimated Determinants Factors to Broiler Production

Determinants	Parameter	Coefficient	Standard error	T ratio
Age of farmer	a ₁	-0.0520	0.0227	-2.2916**
Flock size	a ₂	0.0928	0.0636	1.4148
Household size	a ₃	0.6912	0.0912	7.5759***
Educational level	a ₄	2.9577	0.4013	7.360***
Aim of production	a ₅	0.0599	0.3241	0.4561

Rearing experience	a ₆	04537	0.0067	4,634***
Extension contact	a ₆	03023	-2.0624	-2.0602**
Member of organ.	a ₇	0.654	0.332	2.334**
Access to credit				1.0269*
	a ₈	0.0544	0.0530	

Source: Computed from Field Survey, 2015

*** = significant at 1% , ** = significant at 5% , * = significant at 10%

The cost elements in calculating cost and return in broiler production as shown in Table 3 were broiler chicks, feeds, drugs, saw duct, cages and land. Land was not valued because most land is either inherited or communally owned in which no rent is paid for it.

The common tools used by the farmer are wheel barrow, stoves, shovels, cutlass and their depreciation values encountered were 2000, 1500, 2500 and 3000 respectively. An average 450 birds were used in the production cycle. Therefore, expenditure on broiler chicks for 450 chicks at ₦210 chicks was ₦94, 500 which constituted about 14% of the total cost of broiler production. About 60 bags of broiler starter costing ₦ 150,000 at ₦ 2,500/bag were fed to the chicken. Also, 120 bags of broiler finisher costing ₦ 312,000 at ₦2,600/bag were fed. These items constituted the highest (67%) of the total cost of production. The high cost of the resource could be attributed to high cost of industrial poultry feeds as result of high cost of grains and concentrates used in feed formulation (Ishaka, et al 2007). Miscellaneous such as transportation cost constituted the least (1.4%) of the total cost of production. The low contribution of transportation to the total variable cost could

be attributed to ease of access to market and veterinary services posts in the study area. Ishaka, et al 2007 made similar finding. Therefore the total variable cost was ₦612,500 which constituted about (88%) of the total cost of production.

A total of 90 manday were used to produce 450 broilers. Cleaning had 2 man hours, this as a result of many activities involvement in cleaning, such as sweeping, washing and arrangement of feeders and drinkers. Feeding/drinking and vaccination had one manday hour. This is because it's less tediousness. A total of 450 bird was reared and given a market value of ₦675,000 at ₦1500/bird. Moreso a total of 100kg bags of 250bags of poultry dropping were sold at ₦1000/bag, giving a total of ₦250,000. These brought the total revenue to ₦925,000. Taking away the total cost from revenue generated, therefore the gross margin for broiler production was ₦232,875; The return per investment was 1:1.2 which implies that in every ₦1 invested in broiler production ₦1.2 would be realized. The result concurs with Ume, et al. (2012) who made similar finding among broiler farmers in Enugu urban of Enugu state, Nigeria.

Table.3: Cost and Return of Broiler Production

Item	Unit	Qty	Price	Value	%
Revenue					
Birds	No	450	1500	673,000	
Poultry dropping	Bag(100 kg)	250	1000	250,000	
Total revenue				925,000	129
Labour cost					
Cleaning	MD	1	3000	9000	1.3
Feeding/drinking	MD	1	3000	9000	1.3
Vaccination	MD	3	500	1500	0.2
Total labour cost				19500	3

Operating cost					
Cost of day old broiler chicks	No	450	210	94,500	14
Broiler starter	Bag	60	2500	150,000	67
Broiler finisher	Bag	120	2600	312,000	
Veterinary drugs				15000	2
Saw dust				2500	0.3
Transportation				10,000	1.4
Water				9000	1.2
Total operating cost				593,000	
Total variable cost (TVC)				612,500	88
				79,625	
Bank lending rate 13%					
Total variable cost (TVC)				692,125	
Gross margin (GM) TR-TVC				232,875	
Total fixed cost = depreciation on (wheel barrow, stoves, shovel, hoes, cutlass)				12,000	
Constructed broiler pen				8,000	
Total fixed cost				20,000	
Total cost (TC) TVC+TFC				712,125	
Net return (NR) = TR-TC				212,875	
Benefit cost ratio (BCR) TR				1:1.2	

Source: Field Survey, 2015.

Table 3, the problem of poor access to credit(86%) as reported by most of the farmers interviewed and this could emanate from ignorance to high loan interest rate (Eleke, 2005). Furthermore, 82% of the farmers complained of poor breeds of broiler chick. Inyang, (1998) noted that the poor performances of these breeds are highly economical, as not only missing the market target but also wastage of space, labour and finance with minimal profit. In addition, 72% of the farmers reported high labour cost and in effect low profit ensued (FAO, 2008). Furthermore, 62% complained of substandard and adulterated drugs, resulting in low production of the bird. Also, 58% of the farmers reported high mortality of broiler especially during transportation and rearing. The consequence of high mortality is reduced income which tantamount to low savings and low investment (Ishaka, et al 2007)).

Table.4: Constraints to Broiler Production

Constraints	Percentage
Problems of adulterated drug	62
Scarcity of raw material	48
Poor breeds	82
High cost of labour	72
High mortality	58
High cost of feed	45
Poor access to credit	86
Pests and diseases	34

Multiple Responses

Source: Field survey: 2015

IV. CONCLUSION AND RECOMMENDATION

The major determinant factors to -broiler production in the study area were; age of the farmer, level of education, household siz, farming experience, access to credit and membership of organisation. In addition, the cost and return analysis shows that Broiler production is a profitable enterprise with positive net farm income of 212,789 with the benefit cost ratio of 1:1.2. Furthermore, the major constraints to broiler production were poor access to credit, high labour cost, poor breed of chick and high cost of drugs.

The following recommendations were proffered:

- 1) There is need for policy options to enhance farmers' access to credit through micro-credit bank and commercial bank.
- 2) There is need to farmers' access to education through adult education and nomadic education programme, Furthermore, policies aimed at improving farmer's access to education through aggressive awareness campaign and mass mobilization are needed. Agricultural shows and competitions could be organized to sensitize the farmers on improving their productivity.

- 3) There is need to enhance the access of women broiler farmers to high quality and standard drugs as there are lots of sub standard drugs in the market and as well as improved broiler chicks.
- 4) (4).Also experienced farmers should be encouraged to remain in the business by provision of improved inputs and other services.
- 5) Finally, the farmers are advised to groups in order to have easy access to loan and government services.

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