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Economics of Broiler Production among Rural Women in Ahiazu Mbaise L.G.A of Imo State, Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Author USI designed the study, wrote the protocol and wrote the first draft of the manuscript. Author JPDC reviewed the experimental design and all drafts of the manuscript. Authors IOJ and USI managed the analyses of the study. Authors JPDC and USI performed the statistical analysis. All authors read and approved the final manuscript.

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ABSTRACT

This study was carried out in Ahiazu Mbaise Local Government Area of Imo state, Nigeria. This was necessitated by the need to estimate economics of broiler production, since broiler production is widely gaining prominence in recent time in the state. 200 rural women broiler farmers were selected using purposive and multi stage random sampling techniques, from which data were collected using structured questionnaire and oral interview. Percentage response and gross margin analysis were used to address the objectives. The result showed that age bracket of 42-62 constituted the majority (39%) of the broiler farmers studied, while (15%) constituted the least with a age bracket of 63-82 years. 79% of the respondents were married while 21% were single. 61% of the farmers had no extension contact while 39% had contact. 86% of the respondents were educated, while 14% had no formal of education. 39% had greater majority of farming experience,

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85% of sampled farmers were landlord, while 15% were tenants, 39% of the respondents had the highest household size, and 84% were into commercial broiler production while 16% were private. The costs and return analysis showed that the gross margin for broiler production was N212,875, the total variable cost was N712,125, the total revenue generated was N925,000 ,while the benefit cost ratio was N1:1.2. Major constraints to broiler production and their percentage contributions in the study were; poor marketing price, high cost of labour, poor access to credit and disease and pest (25%). The study recommended that extension agents should be adequately motivated to enhance their efficiency and effectiveness for high production and productivity of the broiler farm. Farmers were advised to form cooperatives which would assist them in getting government grants and loans from bank without collateral. Finally, the need for farmers to be tutored broiler feed formulation in order to reduce cost of feed in broiler production are very important.

Keywords: Economics; broiler production; rural; women.

1. INTRODUCTION

In most developing counties, agriculture is predominantly rural and women dominated the farming population, existing in form of farmers, wage labourers, small-scale entrepreneurs and caretakers of children and elderly. These efforts of the rural women are dwarfed significantly as they are often marginalised in rural development programmes which are capable of equipping them for economic empowerment, social advancement and political participation [1]. Notably is gender inequalities which has been linked to this dismal position of women in many societies, resulting in countless women unlike their men folk being plunged into higher poverty incidence, depth and severity despite the fact that they work longer hours comparative to men [2].

In recognition of the repulsive consequences of poverty to the general societies, successive governments in the developing countries have earmarked development programmes, particularly in rural area with intent to alleviate the suffering of the underprivileged masses, women inclusive. Nigeria is not left out in this pursuit and among such programmes are Agricultural Development Programme, (ADP) (1983) Green Revolution (1980), National Economic Empowerment and Development (NEED) millennium Development Goal (MDG) and Operation Feed the Nation (OFN) [3]. The central objective of these programmeSs according to [4] is provision of improved inputs and technical assistance to farmers in order to increase their productivity and income.

In Nigeria, among array of livestock farming engaged by women in most rural areas, broiler production stands prominent and has received government reassurances through innovation dissemination, source of inputs and technical assistance on broiler production as provided by ADP extension arm of ministry of agriculture of different states of Nigeria [5]. Broiler, a sector of poultry constitutes more than 18% of animal proteins consumed in urban area with more than 28% also produced in the urban area [6]. However, broiler production play prominent roles in economic development in comparison to other livestock enterprises though having fast growth rate, high feed conversion efficiency and can therefore be relied upon in the short run for ameliorating the protein deficiency and poverty [7].

Generally, broiler production in developing countries is faced with numerous problems and chiefly amongst are 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 which dwarfed significantly the production and productivity of the enterprise [8,9]. It is to address these problems that the broad objective of this study is focused on.

Specifically, the objectives are to; describe the socio economic characteristics of broiler women farmers, estimate the profitability of broiler production in the study area and identify the constraints to women broiler production in the study area.

2. MATERIALS AND METHODS

The study area was carried out at Ahiazu Mbaise Local Government Area of Imo State. Its headquarters is at Afor-oru and bounded in the North by Ehime Mbano Local Government Area, in the east by Ihite Uboma Local Government Area, in the West by Mbaitoli and in the south by Aboh Mbaise Local Government Area respectively. The local Government comprises of two (2) towns, Ahiara and Ekwerazu.

Ahiazu Mbaise Local Government is located between latitude 5°19 [1] and 5°32 [1]N and longitude 7°12 [1] and 7°20 [1]E. The local government has a population of one hundred and seventy thousand, nine hundred and two (170,902) people [10]. It occupies a land area of about one hundred and six thousand square kilometers (1006 km^2) with temperature ranges between 28-45℃. It is characterized by the dust laden North easterly winds, which blow across the country during the dry season (mind October to march). The rainy period is from April to October. The people are mainly agrarian producing crop like; yam, vegetable, palm oil, cassava. They rear animal like poultry, sheep, goat, dogs and pigs. Other economic activities engaged by the people include, salon, hunting, vulcanizing, tailoring, shoe copular and others.

Purposive and multi-sampling techniques were used to select town, communities, villages and farmers. Firstly, purposive sampling technique was used to select one [1] out of the two towns, Ahiara town was selected because of larger number of women boiler farmers.

In the second stage, random sampling technique was used to select five [11] communities out of seven. In the third stage, four villages were selected from each of the community. This brought to a total of thirty [10] villages. In the fourth stage, 10 farmers each were selected from the twenty villages, this brought to a total of 200 women broiler farmers for detailed study.

Primary and secondary sources were used to collect information for the study. Structured questionnaire and oral interview were used to collect information on primary data, including, socio-economic characteristics of the women farmers, flock size of broiler kept, the value of birds, broiler income, annual income, household size, index of food security and improved nutrition, ownership of residential accommodation, educational as well as farming experience of household head. Secondary data were obtained through internets, journals, textbooks, processing's, seminar papers, and other periodicals.

Objective 1 and 3 were analyzed using percentage response and frequency distribution, while objective 2 were analyzed using Net farm income analysis.

Net income can be calculated as gross margin less fixed inputs. The net farm income can be expressed as thus;

Gross margin = TR – TVC

NFI = $\sum_{1-1}^{n}$

P, Q ($\sum_{nr1x1}^{m}$) + KT_{VC} = Total variable cost

NFI = Net farm income, TR = Total Revenue
P_1 = Market (Unit) prices of output (N)
Q = Quality of output,
r_1 = Unit Price of variable inputs (kg),
x_1 = Quantity of the variable inputs,
k = Annual fixed cost
(depreciation) I = 123 -- -- n
J = 123 -- -- m

3. RESULTS

Table 1 showed that 30% of the women broiler farmers studied were less than 41 years, while 70?% were above 42 years of age. Furthermore, majority (61%) of the farmers had no contacts with the extension agent, while only 39% had contact. Also, 86% of the respondents had formal education with secondary education (36%) being the highest, followed by tertiary education (32%) and finally primary education (18%). However, only 14% of the respondents had no formal education. In addition, the table shows that the women broiler farmers were well experience in the business as about 54% of them had more than 11 years rearing experience. Moreover, 85% of the respondents were landlords to their businesses, while 15% were tenants. The table shows that 71% s of the sampled farmers had more than five (5) persons. Besides, 84% of the respondents were into commercial boiler production, while only 16% were for private use. Finally, 39% of the respondents operated below annual income of ₦ 300,000, while the least, 14% operated between ₦ 451000 -520,000.

The common tools used by the farmer are wheel barrow, stoves, shovels, cutlass and their depreciation values were ₦2,000, ₦1, 500, ₦ 2,500 and ₦3, 000 respectively as shown in Table 2. The physical inputs used in broiler production were broiler chicks, feeds, drugs, saw duct, cages and land. Among all the physical inputs, the cost of feeds (₦462, 000) constituted the highest proportion, constituting about 67% of total cost of production. The cost of vaccination (₦1, 500) was the least, accounting for 0.5%. The total operating cost was ₦593, 000. Among the labour items considered in Table 2, costs of cleaning and feeding / watering were ₦ 9000 respectively. A total of 90 man day were used to produce 450 broilers. Furthermore, Table 3 revealed that a total of 450 birds were reared and given a market value of ₦675, 000 at ₦1, 500

/bird. More so a total of 100 kg bags of 250 bags of poultry dropping were sold at ₦1000/bag, giving a total of ₦250, 000. These brought the total revenue to ₦925,000, gross margin of ₦ 212, 875; The return per investment was 1:1.2 total cost of ₦712, 125, Net profit of ₦207, 875 and benefit cost ratio of 1:1.2.

Table 1. Distribution of respondents according to socioeconomic characteristics

Variable	Frequency	Percentage (%)
Age (yrs)		
Less than 20	13	16
21-41	24	30
42-62	31	39
63-82	12	15
Marital status		
Single	17	21
Married	31	39
Divorced	19	24
Widow	13	16
Extension contact		
No access	49	61
Access	31	39
Level of education		
No formal education	11	14
Primary education	14	18
Secondary education	29	36
Tertiary education	26	32
Years of experience		
1-5	13	16
6-10	24	30
11-15	31	39
16-20	12	15
Ownership of residence		
Yes	68	85
No	12	15
Household size		
1-5	23	29
6-8	31	39
9-10	26	32
Annual income		
60,000-150,000	18	22
151,000-300,000	31	39
301,000-450,000	20	25
451 and above	11	14
Total	80	100

Source: Field survey, 2015

Table 3 indicted the problems of the women broiler farmers (in descending order), included; High cost of labour (53%), problem of climate factors (52%), poor breeds of broiler chicks (51%), marketing price (50%), inadequate veterinary personnel (47%), poor access to credit (34), problem of disease and pest (25%), high cost and adulteration of drugs (11%), The high epileptic and unreliable power supply (28%).

4. DISCUSSION

Table 1 indicated that old women dominated broiler production in the study area and this did not concur with [12,13] on broiler production in Enugu urban of Enugu state, Nigeria. Aged farmers in the words of [14] are often conservative to technology adoption and lacks the necessary physical strength requires in farming. The poor extension contact among the farmers as showcased in Table 1 is in line with [15,16] which he related to high farmers – extension agent ratio and poor motivation of the change agent. This impacts negatively on agricultural development as many important technologies that is supposedly to be disseminated to farmers, elude countless of them.

The high level of education attainment as reported in the study contradicts the popular axiom/prior knowledge that most farmers in the developing counties are illiterates. Education attainment assists to unlock the potential of individuals, makes one risk averse and improves the technology adoptability of individuals [9,4]. Nevertheless, [17,18] opined that farmers count more on experience than the level of education attained. Farmers with wealthy experience can easily manipulate obstacles in the business and as well could set realistic goal for high productivity and income [5,19]. Ownership of business premises ensures ease of business expansion for high production which could tantamount to more income for better wellbeing.

More so, most of the respondents have large household size which is often associated with developing countries, hence have more proxy to family labour in their production. It is import to state that most broiler farmers interviewed engaged in broiler production virtuously for commercial business since the study area has easy access to urban area for marketing of their output in order to earn unusual income and assuage their poverty status. This finding concurs with [11,5] but contradicted [20] on resource use of efficiency of broiler enterprises in Cross River State.. High annual income as reported by the farmers could mean high productivity, which may transcend to higher revenue [21].

Table 2. Costs and return on 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	13.2
Broiler starter	Bag	60	2500	150,000	20.9
Broiler finisher	Bag	120	2600	312,000	43.5
Veterinary drugs				15000	0.21
Saw dust				2500	0.35
Transportation				10,000	1.4
Water				9000	1.2
Warning and lighting costs				20000	2,8
Total operating cost				613,000	
Total variable cost (TVC)				632,500	88
Bank lending rate 13%				79,625	
Total variable cost (TVC)				712,125	
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	
Interest cost				5000	
Total fixed cost				25,000	
Total cost (TC) TVC+TFC				717,125	
Net return (NR) = TR-TC				207,875	
Benefit cost ratio (BCR) TR				1:1.2	

Source: Field survey, 2015

Table 3. Distribution of respondents according to constraints limiting broiler production

Constraints	Frequency	Percentage %
Poor marketing price	40	50
Disease and pest	20	25
Climate problem	41	52
Literacy level	18	23
High cost/adulteration of drugs	9	11
Poor breeds of chicks	40	51
Poor power supply	22	28
High cost of labour	42	53
Poor access to credit	27	34
Inadequate veterinary	37	47

Multiple response
Source: Field survey, 2015

The costs and return in broiler production as presented in Table 2 were broiler chicks, feeds, drugs, saw duct, cages, lantern, kerosene lamp 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 were used in computation. High cost of feed item constituted the highest of the total cost of production and this could be attributed to high cost of industrial poultry feeds as result of high cost of grains and concentrates used in feed formulation [20]. The costs of warming and lighting constituted about 2.8% of the total costs of production. This finding coincided with [7] who observed that the high cost of pump price of kerosiene (₦ 170/ litre in Nigeria could have been responsible for that. Miscellaneous such as transportation cost constituted the least (1.4%) to the total cost of production.

On labour use, cleaning had the highest man hours [14] as disclosed in Table 2. This could be as a result of many activities involvement in cleaning, such as sweeping, washing and arrangement of feeders and drinkers [18]. Feeding/drinking and vaccination had one man day hour each. This is as a result of its less tediousness. The high as well as positive value of the net profit is an indication of the profitability of the enterprise. The average live chicken per kilogram (kg) was 3.o kg. 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 [22] who made similar finding among broiler farmers in Enugu urban of Enugu state, Nigeria.

Table 3 shows constraint to broiler in the study area. Broiler production is both capital and labour intensive and Labour alone according to studies constitutes more than one-third of the total cost of production [23]. Therefore, the need for rational labour management in order to curtail total cost of production for reasonable gains for consumption, while the remains for savings and further investment. The problem of climate change in form of especially variations in temperature is capable of adversely affecting broiler production and in effect threatening the food security of the farmers. Climate change is capable of causing long-term changes in the environment, which in turn affect feed crop production and the production of farm animals. For instance, the crucial temperature for poultry in generally is 30℃, of which birds usually have a better feed conversion rate and lower basal metabolic rate, hence are able to compensate for the energy loss caused by the lower feed intake. Above 30℃, the feed and energy intake declines to such an extent that birds are no more able to compensate for it, production declines rapidly and the rate of mortality increases [24].

Climate change also in form of alterations of temperature and precipitation regimes may result in a spread of disease and parasites into new regions or produce an increase in the incidence of disease, which, in turn, would reduce animal productivity and possibly increase animal mortality [25]. Consequently, is reduction in income, which results in low saving and low investment.

Moreover, poor breeds of broiler chicks as complained by the respondents as showcased in Table 3 is a threat to food status to the women food security as the poor performances of these breeds are highly uneconomical as not only missing the target but also wastage of space, labour and finance with minimal profit [24]. The poor marketing price of broiler could be as result of low patronage by the customers especially during off season (season outside festival period), thus causing the price of the commodity to plunge to the detriment of the farmers' profit [21].

As well the high interest rate and the mandatory collaterals as demanded by the lending agencies in the country of which most of the poor resource women farmers cannot afford but resort to mearge farming that cannot uphold their sustenance. [26] study on technical efficiency of Enugu urban broiler farmers in Enugu State, Nigeria concur to the assertion. Besides, the high epileptic and unreliable power supply by the National creed resulting in farmers' use of other sources of heat and light including charcoal and kerosene especially during brooding stage to the detriment of their livelihood as their cost of production is bloated [6].

Also, most veterinary drugs in developing countries are not only exorbitant but are often adulterated as no effective auditing agency exist in such locality, hence lack efficacy [27]. Most veterinary posts in the developing countries are sited in urban areas instead of in rural area where their services are needed. In effect, most poor resourced farmer often resorts to use of indigenous known technology (IKT) whose efficacies are doubtful, and in effect high bird mortality results to the expense of the farmers' food security status.

5. CONCLUSION AND RECOMMENDA-TIONS

The major conclusions deduced were;

Broiler production is profitable in the study area with Net farm income of N 212, 875 and benefit cost ratio of 1:1:2 Also, the major constraints hindering broiler production in the study area were poor marketing price, high cost of labour, poor broiler breeds and climatic problem. Based on the result obtained from the study, the following policy consideration and recommendations are proffered;

1. Farmers should learn on how to formulate their broiler feeds in order to minimize cost and maximize profit.

2. Extension agents-farmers ratio should be reduced and as well as the need to motivate the change agent in order to improve the women farmers' broiler production and productivity.
3. The need to improve rural infrastructures in order to discourage urban draft of youth, who could serve as labourers in the farm
4. Adequate measures must be taken to ensure efficiency of broiler production through; supply of inputs such as feed, drug and disease control surveillance.
5. It is also recommended that efforts should be made to improve maize production through the provision of incentive and input subsidies to farmers in order to produce maize enough for feed formulation since the grain is in competition with man.
6. There is need to ensure that improved breeds of broiler chicks be made available to farmers in order to boost their production.
7. Veterinary drugs and vaccines should be standardized through proper auditing and testing to curtail among others mortality rates among broilers.
8. In line with national epileptic power supply and high cost of kerosene, broiler women farmers were advised to use charcoal as source of heat during brooding.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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