



ANALYSIS OF PROFITABILITY OF SMALL-SCALE BROOD-AND-SELL (3-4 WEEKS OLD) BROILER ENTERPRISE IN IBARAPA AREA OF NIGERIA

Olufemi Adeyemi Owoade and Olatunde Seun Olarinwa

Department of Agricultural Science Education, School of Vocational and Technical Education, The College of Education, Lanlate, Oyo State, Nigeria

Correspondence: E-mail: femiowoade2020@yahoo.com Tel: 08056229609

ABSTRACT: *Generally, the willingness to engage in an enterprise developed once the profit incentive was acknowledged as without profits the enterprise is unsustainable and will either collapse or become dependent on external intervention. On this premises, profitability of brood-and-sell broiler enterprise was carried out in Ibarapa area of Oyo state, Nigeria. Data collected using structured questionnaire and interview schedules from 40 brood-and-sell poultry farmers were analyzed using budgetary analysis technique and descriptive statistics. Budgetary analysis revealed that the enterprise was profitable and gives a return of 28 kobo on every 100 kobo invested with variable cost made up of 96.30% of cost of production. The paper identified important hindrances to maximization of profit to include high cost of quality feeds and healthy day-old chicks and limited access to veterinary services. The paper concluded that profitability of the enterprise depends on the managerial ability of the enterpriser to control variable cost- feed and day-old chicks. To improve profitability and ensure sustainability of the enterprise it was recommended that there must be improved access to credit, veterinary services and investment in rural infrastructure of road and electricity in the area.*

KEYWORDS: Brood-and-Sell, Net Return, Protein, Enterpriser, Output, Broiler Enterprise

INTRODUCTION

Poultry industry in Nigeria presently occupies a prominent position as a major source of nutritious and the cheapest source of animal-based protein supply to the populace, as chicken and eggs are becoming increasingly popular among Nigeria consumers. The industry produces about 454 billion tonnes of meat and 3.8 million eggs per year, with a standing population of 180 million birds. (ASL 2050, 2018), and the industry is estimated at \$600 million (SAHEL, 2015). Again, with respect to market size, Nigeria is the largest egg producer in Africa followed by South Africa (540,000 MT) and it has the second largest chicken production in Africa after South Africa 200 million birds (SAHEL, 2015). All these pointed to the socio-economic significance of poultry and its potential contributions to improving food and nutrition security.

Although, Nigeria poultry industry despite constrained by the inconsistent supply of affordable, high-quality feeds and healthy day-old chicks to farmers, low operational inefficiencies and poor productivity, due to limited awareness among farmers of scientific poultry production methods (especially bio-security) and accessibility to veterinary support



has grown tremendously resulting in significant increase in the number of actors and participants in the sector (OLAM, 20??). This situation has led to an increase in backyard and small-scale producers, particularly in urban and peri-urban areas (Hartwich, Kormawa, Bisallah, Odufote, & Polycarp, 2010). Thus, affording the discerning investors the opportunity of creating wealth and employment in the sector through provision of day-old and brooded chicks, point of cage and point of lay birds, feeds, drugs and allied products.

Poultry production is unique in that it offers the highest turnover rate and the quickest returns to investment outlay in the livestock enterprises (Sanni & Ogundipe, 2005). The poultry industry has been described as the fastest means of solving the problem of protein deficiency in Nigeria since it has the highest feed conversion rates and produces the least expensive and best sources of animal protein (Akpabio, Okon, Angba, & Aboh, 2007). Broiler production is one of important aspect of poultry production in Nigeria. Broiler supplies poultry meat which is one of the sources of protein available to Nigerians most especially during the festive periods. Broilers are made in a scientific way of producing more quality meat in a short time for the consumer. They are fast growing and highly efficient feed converter. Thereby, capable of rapidly fulfilling the shortage of protein requirement of the country, as it can be produced within a very short time compared to other meat producing animals. Again, broiler production provides employment and regular income within the shortest possible time due to its fast body growth and shorter production cycle and low initial investment.

At present, broiler farming is popular in Nigeria, attracting tremendous interest both in peri-urban and rural areas. This interest cut across different strata of the economy from young to old, men to women, low to high-educated and small to large-scale participants. As low cost of production and quick and higher returns on investment are the key points of attraction of many people to the enterprise (Emokaro & Eweka, 2005; Iheke, & Nwagbara, 2011; Ike & Ugwumba, 2011; Olorunwa, 2018). These facts have encouraged diverse people including subsistence and small holder farmers, landless laborers and educated unemployed as well as industrialists to find their opportunity to participate in the enterprise (commercial production).

In the livestock market today, broilers are offered for sale at different ages and sizes depending on the objective and targeted market of the enterpriser. The market age in broiler production is the age at which producers target to offer their stock for sale. Thus, four distinct enterprises were identified based on market age, and these are:

- a. Day-old-chick broiler enterprise: the enterpriser supplies the day-old chicks at a profit to subsistence, semi-subsistence, semi commercial and commercial farmers who will further brood-and-finish or brood-and-sell.
- b. Brood-and-sell enterprise, in this case the enterpriser stocked the day-old-chicks carry out brooding and sell at a profit between 3-4 weeks;
- c. Brooded-and-finish (4-12 weeks old) enterprise, in this case the enterpriser will stock the brooded chicks at 3-4 weeks fattened them and sell at a profit between 6-12 weeks depending on the targeted customers and management;
- d. Brood-and-finish (0-12 weeks) enterprise, it involves stocking day-old-chicks, brood and fattening them until about 6-12 weeks of age and offer for sale to the targeted market.



Small-scale broiler enterprise is an easy entry and easy exit industry, with the enterprisers being price takers in the market for inputs since the input suppliers are mainly oligopolistic (few) (Bandara & Dassanayake, 2006). Inputs of feeds, day-old chicks and drugs are bought mainly from the wholesalers, retailers, agents and producers and the common mode of payment is cash. In terms of its impact on livelihoods of enterprisers and their households, it provides a steady major source of family protein and income or additional income and gainful employment to enterprisers throughout the year or a part time employment. The industry also plays a critical role in the development and linkage of small-scale commercial business activities in the economy.

In Ibarapa area small-scale brood-and-sell broiler farmers usually brood three or four batches of day-old chicks a year. During the season of high demand for brooded chicks which is usually 2-3 months prior to major festival (new year festival and Christmas, *Eidel-kabir*, *Eidel-fitr* and Easter). The major markets for the enterprises are the subsistence and semi-subsistence farmers who wanted to engage in brooded-and-finish activities.

Unfortunately, people engaged in brood-and-sell enterprises without finding out the profitability and factors that determine their level of output and profit. Although, several studies have been carried out on the economic and profitability analysis of broiler enterprise (Emokaro & Eweka, 2005; Iheke, & Nwagbara, 2011; Ike & Ugwumba, 2011; Olorunwa, 2018), but limited studies have been carried out on profitability of small-scale brood-and-sell broiler enterprise, especially in the study area.

On this premise this study investigates the profitability of brood-and-sell broiler (3-4 weeks) enterprises in Ibarapa area of Oyo state considering the increasing number of people interested in the brooded chicks in the area. Specifically, the paper examined the socio-economic characteristics of the enterpriser and evaluates the cost, returns and profit, and identified constraints to profitability in brood-and-sell broiler enterprise with the intention of improving profitability and ensures sustainability of the enterprise in the area.

Conceptual Clarification

Enterprise is commercial operations or productions whose goal is to maximise profits, where profits are revenues minus costs (perhaps discounted) (FAO, 2014). Such operations may in fact not be profitable in the short run, but the behavior of the enterpriser is determined by the profit-maximising or cost-minimizing goal.

Cost is the change in the equity that is caused by the performance of some specific operations. It could also be considered as expenditure in money and inputted terms which are incurred by a firm (Olayide and Heady, 1982), and the cost can be fixed or variable

Net farm income is the difference between the total return or revenue of the farm and the total cost. Net farm income represents the returns to the owner for personal and family labour, management and equity capital used in the farm business (Kay, 1980).

Profit is described as the excess of revenue over cost during a specific period of time (Ikpi, 1997). Conventionally profits are the income of an enterprise after deduction of all contraction payment from gross revenue. However, the profit level depends on the ability of the enterpriser to minimise the cost of production and maximise the sales revenue.



METHODOLOGY

The study was carried out in Ibarapa region of Oyo State an area which housed two of the largest poultry farms in Nigeria (Zartech and Obasanlo farms). Ibarapa region falls within latitude $7^{\circ}35'N$ and $7^{\circ}45'N$ and longitude $3^{\circ}10'E$ and $3^{\circ}40'E$. The annual rainfall is between 1500mm and 2000mm, relative humidity is over 80% in the morning and falls between 50% and 70% in the afternoon, and the mean annual temperature is $27^{\circ}C$ and annual temperature range is $8^{\circ}C$ (Oladapo, Ogundele & Akindele, 2012). This climatic condition allows for the practice of rain-fed agriculture on which poultry industry as a lucrative business thrives. Administratively, Ibarapa region comprises of three local government areas, namely Ibarapa East, Ibarapa Central and Ibarapa North. The Ibarapa region is dominated by seven famous towns of Lanlate, Eruwa, Igboora, Idere, Ayete, Tapa and Igangan, and these towns serve as social and commercial nerve centers for over 200 smaller settlements. It has an estimated population of 320,718 and the land mass is 279,160 hectares (NPC, 2006). Although, in recent time there had been a surge in the population due to establishment of two tertiary institutions in Lanlate and Igboora. This surge in population has brought about increase in demand for food, meat and poultry products, considering the fact that the added population is made up of young people and educated (Owoade, Okunlola & Omogoye, 2011).

This study focused on commercial small-scale brood-and-sell enterprise, and thereby excludes large-scale and subsistence operations. Out of the seven major towns in Ibarapa, four towns of Lanlate, Eruwa, Igboora and Ayete were selected as a pre-field investigation indicated that broilers were reared to a reasonable extent in those areas. With the help of feed millers and sellers in the area 10 brood-and-sell farmers were purposively selected in each of the communities, making the sample size a total of 40 respondents.

The selected respondents were personally interviewed and given a pre-test set of questions in the form of questionnaire. Questionnaires were distributed as well as collected by the researchers on the spot to curb much attrition. The socio-economic profile of the respondents, including age, sex, location, primary occupation, level of education, farming experience and family size were also recorded. Information from the questionnaire, oral interviews and observation during farm visits made up the required primary data.

Objectives I and IV were analysed by descriptive statistics of mean and percentages while objective II was determined with farm budgetary technique analysis. The analysis involves evaluating the efficiency of an individual enterprise (or farm plan) so that comparison can be made between enterprises or different farm plans. The cost and returns associated with the enterprise were computed to determine the profitability of brood-and-sell broiler enterprise. Net farm income and gross margin were used to determine the cost and returns of the enterprise. Gross margin (GM) gives the difference between the gross farm income (GFI) and the total variable cost (TVC) while the net farm income gives the difference between total farm income (GFI) and total cost (TC). Also, profitability ratios (operating, fixed and gross ratios) were determined to show how well enterprisers were able to control cost. High value indicates enterprisers' inability to control wastage in the production process.



RESULTS AND DISCUSSIONS

Table 1: Socio-Economic Characteristics of the Farmers **n = 40**

Variables	Frequency	Percentage	Mode
Age			
≤ 20yrs	3	7.5	
20-29	5	12.5	
30-39	14	35.0	
40-49	9	22.5	30-39
50-59	5	12.5	
≥ 60	4	10.0	
Sex			
Male	26	65	Male
Female	14	35	
Family Size			
1-4	22	55	1-4
5-9	13	32.5	
10 and above	5	12.5	
Marital Status			
Married	18	45	Married
Single	10	25	
Divorced or Separated	12	30	
Level of Education			
No formal Education	5	12.5	Post-
Basic Education	10	25.0	Secondary
Secondary Education	11	27.5	Education
Post-Secondary Education	14	35.0	
Farming Experience			
1-5yrs	8	20.0	
6-10yrs	16	40.0	6 years and
11yrs and above	16	40.0	above
Primary Occupation			
Public Service	5	12.5	
Trading	6	15.0	
Artisanship	5	12.5	
Farming	18	45.0	Farming
Others	6	15.5	
Household Income/month			
≤ N20,000	1	2.5	
N21,000-N60,000	18	45.0	N21,000-
N61,000-N100,000	12	30.0	N60000
≥ N101,000	9	22.5	

Source: Field Survey, 2018.



Table 1 shows 55% of the respondents were less than 40 years of age. 65% of the farmers were male considering tediousness of brooding. The family size was not large with 55% of the respondents having family size between 1- 4. Majority of the respondents were married and enjoyed support of the family members in the enterprise activities. The table also revealed that majority of the respondents had formal education with those with post-basic education 62.5%. 55% of the respondents take brood-and-sell broiler enterprise as a secondary occupation since the availability of market is restricted to certain period of the year and 45% of the respondents had a household monthly income of between N21, 000-N60, 000. The high rate of educational attainment, farming experience, youthfulness and possibility of an alternative source of income will increase propensity to take risk and adoption of improved management practices that will improve productivity (Dhraief, Bedhiaf, Dhehibi, Oueslati-Zlaoui, Jebali & Ben-Youssef, 2019).

Cost and Returns of Brood-and-Sell Broiler Enterprise

Table 2: Cost and Returns Analysis of Brood-and-Sell Broiler Enterprise in Ibarapa

Items	Quantity	Unit Price (N)	Total Value (N)
Income			
Stock consumed and gift	20	750	15000
Sale of stock at 3-4 weeks	480	750	360000
Sale of manure	-	-	-
Sales of empty feed bags	30	50	1500
Total Income (A)			376, 500
Variable Cost			
Purchase of day-old chicks	500	300	150000
Cost of feed	750 Kg	152/kg	114000
Cost of drugs & Vaccine			5000
Cost of water and litter material			4000
Labour Cost			10000
Total Variable Cost (B)			283,000
Variable Cost/Unit			
			566
Fixed Cost			
Depreciation on equipment			3000
Cost of housing			3000
Interest on capital (10%)			4867
Total Fixed Cost (C)			10867
Fixed Cost /Unit			
			21.73
Total Cost (D) = (B+C)			
			293,867
Cost/Unit			
			587.73
Operating ratio (D/A) %			78.05%
Fixed ratio (C/A) %			2.89%
Gross ratio (B/A) %			75.16%
Gross Margin (A-B)			93, 500
Net Farm Income (A-D)			82, 633
Fixed Cost/Variable Cost			1/24
Return on investment (ROI) %			28.12%
Benefit-Cost Ratio (A/D)			1.28



Break-Even Point (BEP) (quantity)	59 units
Break-Even Point (BEP) (sales)	44,294.84

Sources: Field Survey, 2018.

The results showed that a total of 500 birds were brooded and sold on the average. The total variable cost was N293, 500. The gross margin was N93, 500 whereas the net revenue was N82, 633. The benefit cost ratio (BCR) was 1.28 and return on investment was 28.12%. This shows that on every 100 kobo invested 28 kobo accrue to the enterpriser as net return on investment. The seemingly low-level of return may be due high cost of feeds and healthy day-old-chicks and inadequate access to veterinary support which usually leads to high production cost (Tanko, 2000; Poultry Association of Nigerian (PAN), 2004). The break-even point (BEP) was 59 units of day-old chicks. This implies that the minimum number of day-old chicks the enterpriser will brood-and-sell to make profit must be above 59 units.

Table 2 also shows that cost of chicks and cost of feed constitute about 90% of the cost of total production and form the bulk of the variable cost (93.29%). Also, the ratio of fixed and variable costs to total cost is 1:24 while the fixed, gross and operating ratios are 2.89, 75.06 and 78.05 percent respectively. These indicate that the cost of chicks and feeds are the most expensive resources in brood-and-sell broiler enterprise and ability of the enterpriser to control these costs will determine to a great extent the profitability of the enterprise. This agreed with the findings of Iheke & Nwagbara (2011) who found the cost of day-old chicks and feeds to be major determinants of profitability of brood-and-sell broiler enterprise in Abia State of Nigeria. Again, the gross and fixed ratios were 75.16% and 2.89% respectively leaving a profit margin of 21.95%. This implies that on every #100 made as income the variable cost is #75.16 while the fixed cost is #2.89. then to make more profit the enterpriser must be efficient with operational expenses and minimise mortality.

Table 3: Challenges to Profitability of Brood-and-Sell Enterprise

Challenges	NI	%	MI	%	IN	%	II	%	Mean	Rank	Remark
High cost of day-old chicks	00	00	02	05	13	32.5	25	62.5	3.58	1 st	Very Important
High cost of feed	03	7.5	04	10	06	15	27	67.5	3.43	2 nd	Very Important
Limited access to credit facility	02	05	16	40	4	10	18	45	2.95	3 rd	Important
Loss due to environmental variability	02	05	16	40	08	20	14	35	2.85	4 th	Important
Limited access to veterinary services	07	17.5	09	22.5	12	30	12	30	2.67	5 th	Fairly Important
Difficulties in getting quality feed	04	10	18	45	06	15	12	30	2.65	6 th	Fairly Important



Problem of vaccine failure	04	10	20	50	04	10	12	30	2.60	7 th	Fairly Important
Environmental pollution issues	06	15	18	45	04	10	12	30	2.55	7 th	Fairly Important
Non-existence of profit	10	25	05	12.5	20	50	4	10	2.40	9 th	Not Important
Low level of demand	11	27.5	18	45	04	10	07	17.5	2.18	10 th	Not Important

Source: Field Survey, 2018

Table 3 shows challenges to profitability of brood-and-sell enterprise in order of severity as high cost of chicks and feeds, limited access to credit, environmental variability and limited access to veterinary services. Factor contributing to the high cost of day-old chicks and feed is the cost of transporting the products from points of production to Ibarapa area, as all roads that lead to the area are in bad condition. With regards to access to credit most of the enterpriser relied on personal savings, cooperative society and private money lenders in the area as institutional sources are not available or are with stringent conditions that are difficult to be met. The poor electricity in the area causes the challenges of vaccines failure as cold storage of the vaccines are always difficult, making the vaccines to lose potency before usage. All these agreed with the observations of Tanko (2000), PAN, (2004) and Olam (20??) that Nigeria poultry production had been constrained by the inconsistent supply of affordable, high quality feeds and healthy day-old-chicks, low operational efficiencies and poor productivity, due to limited awareness among farmers of scientific poultry production methods and accessibility to veterinary support which usually lead to high mortality rate, which in turn, leads to high production cost and consumer prices.

CONCLUSION AND RECOMMENDATIONS

Brood-and-sell enterprise like any other poultry business activity requires that a farmer has requisite competencies in the management of the enterprise. The farmer is out to make profit and in order to actualize this, he/she should be able to produce at a level that will make him recoup his cost, at the least. To this end the profitability of small-scale brood-and sell enterprise was examined. This study revealed that the enterprise was profitable and gives a return of 28 kobo on every 100 kobo invested. The study also revealed that cost of feed and chicks made up of the 90% total cost of production, and profitability of the enterprise depends on the managerial ability of the enterpriser to control cost of day-old chicks and feed.

Although, the enterprise offers opportunities to make money but it is still constrained by high cost of feeds and day-old chicks and poor rural infrastructure. These constrains have both grave immediate consequences for the enterpriser and also for the sustainability of the enterprise in general. Therefore, in the studied area increase investment in rural infrastructure such as electricity and roads will go a long way to bring down the cost of production and increase the enterpriser profit margin. This singular act will reduce cost and stress of



transportation, improve access to day-old chicks, feeds and drugs, and reduce the cost of chicks and feeds.

Finally, improve access to credit and information on government support for the sector will reduce financial stress at start-up and enable participants and actors in the industry to take advantage of emerging opportunities in the industry. Also, to improve access to credit the enterpriser can form themselves into cooperative society and leverage on the group to access credits and other inputs. In the area of support, a functional veterinary unit should be established in the area where farmers can easily seek for support on animal health management and procurement of drugs and vaccines.

REFERENCES

- Akpabio, I. A., Okon, D. P., Angba, A. O. and Aboh, C. L (2007). “Avian Influence Scare and the Poultry Egg Production in Uyo Urban, Nigerian”. *International Journal Poultry Science* 6: 298–301.
- Africa Sustainable Livestock (ASL) 2050 (2018). Livestock production systems spotlight Nigeria. FAO, Rome, Italy.
- Bandara, R. M. A. S. and Dassanayake, D. M. W. K. (2006). A quantitative analysis on factors affecting profitability of small-scale broiler production. *The Journal of Agricultural Sciences*, 2 (3), 45-50
- Dhraief, M. Z., Bedhiaf, S., Dhehibi, B., Oueslati-Zlaoui, M., Jebali, O. & Ben-Youssef, S. (2019). Factors affecting innovative technologies adoption by livestock holders in arid area of Tunisia. *New Medit*, 18(4): pp. 3-18, <http://dx.doi.org/10.30682/nm1904a>
- Emokaro, C. O. & Eweka, K. I. (2015). A comparative analysis of profitability of broiler production systems in urban areas of Edo State, Nigeria. *Journal of Applied Sciences and Environmental Management*, 19(4), 627-633
<http://dx.doi.org/10.4314/jasem.v19i4.9>.
- Food and Agriculture Organization of the United Nations (FAO) (2014). *Aquaculture: Junior farmer field and life school- facilitator’s guide*. FAO, Rome Italy.
- Hartwich, F., Kormawa, P., Bisallah, I. D., Odufote, B.O., & Polycarp, I.M. (2010) *Unleashing agricultural development in Nigeria through value chain financing. A draft report prepared for Federal Government of Nigeria by Central Bank of Nigeria in collaboration with UNIDO and BOI.*
- Iheke, O. R. and C. Nwagbara (2011). Comparative Analysis of the Profitability in Brood-and Sell and Brood-and-Finish Broiler Enterprises in Abia State of Nigeria. *International Journal of Agriculture and Rural Development (IJARD)*, Vol. 13(2): 340 –345.
<http://DOI:10.4314/ijard.v13i2.67412>
- Ike, P. C. and Ugwumba, C. O. A. (2011). Profitability of small-scale broiler production in Onitsha North Local Government Area of Anambra State, Nigeria. *International Journal of Poultry Science* 10 (2): 106-109,
- Ikpi, A. E. (1997) “Poultry industry in Nigeria: The 1997 situation” *Journal of Rural Economies and Development*, Vol. 2 No.2.
- Kay, R. D. (1980) “Farm Management Planning Control and Implementation” (2nd ed.) International Publishers.
- National Population Commission (2006). *Population census of the federal republic of Nigeria: Analytical Report.*



- Oladapo, O. S., Ogundele, A. T. and Akindele, K. I (2012) “Defining Ibarapa Region” in L. A. Adeniran (Ed.) Ibarapa Region (pp 2-6). Lanlate: Department of Geography, Emmanuel Alayande College of Education, Oyo, Lanlate Campus, Lanlate.
- Olayide, S.O and Heady E.O (1982) Introduction to Agricultural Production Economics, Ibadan: University Press.
- Olorunwa, O. J. (2018). Economic Analysis of Broiler Production in Lagos State Poultry Estate, Nigeria. *Journal of Investment and Management*. Vol. 7, No. 1, 2018, pp. 35-44. DOI: 10.11648/j.jim.20180701.15
- Ogunlade, I. and Adebayo S. (2009). Socio-economic status of women in rural poultry production in selected areas of Kwara State Nigeria. *International Journal of Poultry Science*, 8: 55-59
- Owoade, O. A., Okunlola, O. O., & Omogoye, A. M. (2011). Street-vended foods in Ibarapa East Local Government Area of Nigeria. In Remi Adeyemo (Ed.), *Urban Agriculture, Cities and Climate Change* (pp. 226-230). Germany: Gottingen.
- Olam Grains (20??). Nigeria poultry fact sheet: Supporting Nigeria’s agricultural change and food security agenda. Accessed from: www.olamgroup.com. Accessed on 23/08/2020
- Poultry Association of Nigerian (PAN, 2004). Poultry Industry: A Memorandum Submitted to the Hon. Minister of Agriculture, Water Resources and Rural Development.
- SAHEL (2015). An assessment of the Nigerian poultry sector. <http://an-assessment-of-the-Nigerian-poultry-sector> SAHEL 11: 1-3
- Sanni, S. A. and Ogundipe, S. O. (2005). “Economics of some modules of poultry production in Kaduna State, Nigeria”. *Nigerian Journal of Animal Production*, 32 (1): 102–107.
- Tanko, L (2000) Efficiency of resources use: The case of poultry production in Kebbi State, Book of proceedings, 5th Annual HSAP Conference 19-23 march, P 329.