RESEARCH ARTICLE

Investment Analysis of Poultry Egg Production in Edo South, Edo State, Nigeria

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Abstract

The study analysed investment in poultry egg production in Edo South Agro-Ecological Zone of Nigeria. Specifically, it estimated the quantities of inputs and output, costs and returns of poultry egg production and determined its profitability and viability in the study area. A combination of simple random and snowballing sampling techniques was used to obtain data from 100 poultry farmers in the study area over three-year period (2012 - 2014). Data collected were analyzed using descriptive statistics, budgetary and viability analyses. The results showed that the farmers' average stock size (mature layers) for the three-year production period under consideration was 2745 birds per annum while the average eggs produced was 26,636 crates per annum. By-products produced along with the eggs were spent birds, droppings and feed sacks. The cost of feed constituted the highest proportion of the total cost of production (86% on the average). The poultry egg production business in the study area was found to be profitable in all the three years with the average gross margin, net profit and return on investment per annum of ₦5,224,819.99 (US$26,523.28), ₦4,919,670.99 (US$24,974.22) and 0.34 respectively. At 31% discount factor, the benefit-cost ratio (BCR) was greater than unity (1.26), the NPV was positive (₦7,024,689.92 or US$35,660.13) and the internal rate of returns was about 122%, indicating that investment in the poultry egg production enterprise was profitable and viable. Since poultry egg production was profitable and viable, the unemployed youths are encouraged to go into its production.

Keywords: Profitability, Viability, Poultry Egg, Production, Edo State, Nigeria

1. Introduction

The shortage of animal protein in the diet of many people in the developing countries of the world, including Nigeria, cannot be overemphasized. For instance, studies have shown that an average Nigerian is grossly under-nourished. The daily per capita animal protein intake of Nigerians remains less than 10g, which is a far cry from the Food and Agriculture Organization (FAO) recommended minimum requirement of 35g [21, 19]. The gravity of this problem is increasing due to the growing population, urbanization, low productivity in the agricultural sector and decline in productivity of the livestock sub-sector [24]. This calls for urgent need for significant improvement in livestock production, especially poultry egg production which possesses considerable potential in solving this problem [21, 19].

Among the livestock based enterprises, poultry occupies an important position because of its enormous potential to bring about rapid food security, economic growth and development [10]. Poultry production is the easiest, fastest and most economic means of bridging the animal protein deficiency gap, unemployment and poverty in the developing countries [4]. This is because, poultry products are the most widely acceptable form of animal protein to most people in the world due to fewer religious and social taboos associated with them and the low cholesterol content of the meat. The poultry production enterprise provides employment opportunities to both the skilled and unskilled with about 10% of the Nigerian population being employed

in the industry. In relation to other animals, the poultry has short gestation period and hence quick returns on investment. It is highly prolific, good converter of feed into meat and requires low capital and space for investment [5, 3, 4].

The poultry industry as a commercial enterprise comprises egg production, broiler production, hatchery, poultry equipment and feed production. The egg production is one of the most important because of the dual income it generates from eggs and culled layers [4]. The egg is also one of the most nutritious and complete food as it supplies protein, lipids and vitamins of high nutritional significance to man. Chicken egg protein has biological value of 100% and this makes it to have the distinction of being a perfect protein [18].

Poultry egg producers, like investors in the other sectors of the economy, are out to make profit and therefore require the assurance that investment in poultry egg production enterprise is profitable and economically viable. Thus, to justify investment in poultry egg production, there is need to determine its economic viability. This makes this study imperative as investment analysis is useful in determining whether investment in a farm business project is worthwhile. [2] reported that insufficient data on the viability of poultry egg production makes it difficult for most potential poultry farmers to invest in the business.

1.2 Objectives of the study

The general objective of this study is the analysis of investment in poultry egg production in Edo South Agro-Ecological Zone of Nigeria. The specific objectives are to: estimate the quantities of inputs and output of poultry egg production in the study area; estimate the costs and returns to the poultry egg production and determine its profitability; and determine the viability of poultry egg production in the study area.

2. Methodology

2.1 Study area

The study was conducted in Edo South, Edo State of Nigeria. Edo South has a total provisional population of 1,686,041 according to the 2006 national population census [17]. It lies in the tropical rainforest belt between Latitudes 5°49'N and 6°50'N of the Equator and Longitudes 5°E and 6°10'E of Prime Meridian [22]. Distinct vegetations identified in the study area are the mangrove forest and fresh swamp vegetations. The mean annual rainfall in the area is high, ranging from 252-254cm. Relative humidity is also high. The average temperature ranges from 24°C - 33°C [12, 6]. The major occupation of the inhabitants of the study area is agriculture. Agricultural practices carried out include arable and tree crops production, snailry, aquaculture, fishing, poultry and other livestock rearing. The presence of Benin metropolitan city in the study area makes egg production business to thrive well there due to high demand.

2.2 Sampling procedure

The sampling procedure adopted in this study is a combination of simple random and snowballing sampling techniques. Firstly, simple random sampling technique was used to select five blocks (Egor, Ikpoba-Okha, Oredo, Ovia North-East and Uhunmwode) from the seven blocks (others include Orhionmwon and Ovia South-West) that comprise Edo South. Secondly, Snowballing sampling technique was used to identify 20 poultry farmers from each of these five blocks to give a total sample size of 100 poultry egg farmers for the study.

2.3 Data collection

The primary data used for the study were sourced through the use of structured questionnaire. Data were collected on quantities of inputs and output of poultry egg production and their unit prices over the production period of three years (2012 - 2014).

2.4 Data analysis

Data collected were analyzed using descriptive statistics (means, percentages and tables), budgetary and viability analyses.

Budgetary analysis: The budgetary analysis was used to estimate the costs and returns to poultry egg production and hence its profitability. The budgetary tools used are gross margin, net profit and return on investment. These, as used by [3, 11] are discussed as follows:

The gross margin is given as:

$$GM = TR - TVC \dots\dots\dots\dots\dots\dots (1)$$

Where:

GM = Gross margin (₦)

TR = Total revenue (₦)

TVC = Total variable cost which include the costs of day-old chicks, labour, feed, beddings,

medication, disinfectant, transportation, fuel and repairs (₦).

The net profit is given as:

$$\pi = GM - TFC \dots\dots\dots\dots\dots (2)$$

Where

π = Net profit (₦)

TFC = Total fixed cost comprising the sum of rent on poultry land, electricity bill and capital depreciation (₦).

GM is as earlier defined.

The fixed capital assets were depreciated using straight line method as given by [20] as:

$$D = \frac{C - SV}{N} \dots\dots\dots\dots\dots\dots\dots (3)$$

Where:

D = Depreciated value of fixed asset per annum (₦)

C = Cost of the asset (₦)

S = Scrap value of the asset which is assumed to be zero in this study

N = Number of years of life expectancy of the asset (years)

The return on investment (ROI) is given as:

$$ROI = \frac{\pi}{TC} \dots\dots\dots\dots\dots\dots (4)$$

Where: π = Net profit (₦)

TC = Total cost (₦)

Viability analysis: The viability of the poultry egg production enterprise was determined using the Benefit-Cost Ratio (BCR), Net Present Value (NPV) and Internal Rate of Returns (IRR). The viability analysis, according to [1, 9] and used by [3] are discussed as follows:

The BCR is given by:

$$BCR = \frac{\sum_{t=1}^{n} \frac{B_t}{(1+r)^t}}{\sum_{t=1}^{n} \frac{C_t}{(1+r)^t}} \dots\dots\dots\dots\dots\dots (5)$$

Where:

B_t = benefit (₦) from poultry egg production in year t

C_t = cost (₦) of poultry egg production in year t

n = Number of project years

t = 1, 2, 3 years

r = Discount (or interest) rate (31%)

The discount rate is the average sum of the prevailing interest rate (26%) on money borrowed by the poultry farmers and a risk factor (5%). The risk factor was the researcher's estimate which agrees with [16].

The decision rule is that:

If BCR > 1, poultry egg production project is viable

If BCR < 1, poultry egg production project is not viable

If BCR = 1, poultry egg production project breaks even

The NPV is essentially the difference between the discounted benefits and discounted cost of a project. It is given as:

$$NPV = \sum_{t=1}^{n} \frac{B_t - C_t}{(1+r)^t} \dots\dots\dots\dots\dots\dots\dots\dots (6)$$

Where:

NPV = Net present value of poultry egg production project (₦)

All other variables are as earlier defined.

The decision rule is that:

If NPV > zero or positive, the poultry egg production is beneficial

If NPV < zero or negative the poultry egg production is not beneficial

The internal rate of returns, according to [3], is expressed as:

$$IRR = Lr + LHrd \left(\frac{NPVlr}{NPVad}\right) \dots\dots\dots\dots\dots\dots (7)$$

Where:

L_r = Lower discount rate

LH_{rd} = Difference between the low and high discount rates

NPV_{Lr} = NPV at lower discount rate

NPV_{ad} = Absolute difference between the NPV at low and high discount rates.

United States Dollar-Naira Exchange Rate

The study used the average Dollar-Naira Inter-bank Foreign Exchange Market (IFEM) rate of 2015 for any conversion of Naira to Dollar. According to this Exchange rate, US$1.00 = N196.99 [8].

3. Results and Discussion

3.1 Inputs quantities of poultry egg production

Table 1 shows the average input quantities of egg production for the three-year period under consideration (2012 - 2014). The number of day-old chicks stocked by the farmers increased to a peak in 2013 and declined thereafter. The mortality rate of the birds declined continuously over the years. The annual average mortality rate stood at about 11% and this compares favourably with the average standard mortality rate of about 10.33% established for poultry layer industry in the tropics [13] and the mortality rate of 12% reported by [23]. The decline experienced in

mortality over the years could be attributed to the increased use of improved poultry production technologies by the farmers. In a similar vein, the farmers' average mature stock size increased from 2,398 layers in 2012 and peaked at 2,966 layers in 2013 and declined thereafter to 2,870 layers in 2014. The total mature stock size was 8,234 layers for the three-year period and the annual average was 2,745

birds. This indicates that the poultry egg production in the study area was a medium scale business. [15] classified poultry farm size of 1 - 999 layers as small scale, 1000 - 4999 layers as medium scale and 5000 and above as large scale. The results further showed that an average of 136,487kg of feed was consumed while an average of 8,097.85 man-days of labour was used for the egg production per annum.

Table 1: Input quantities of poultry egg production (2012 - 2014)

Items	2012	2013	2014	Total	Average
No. of day-old chicks stocked	2,756	3,296	3,166	9,218	3,073
No. of dead birds	358	330	296	984	328
No. of mature layers	2,398	2,966	2,870	8,234	2,745
Mortality rate (%)	13.00	10.00	9.35	10.68	10.67
Feed (kg)	121,831	146,263	141,366	409,460	136,487
Labour (man-days)	12,304	10,428	1,562	24,294	8,098

Source: Field Survey, 2015

3.2 Output quantities of poultry egg production

The results of the output quantities of the poultry egg production presented in Table 2 show that the egg production increased from 24,821 crates of eggs in 2012 to 28,736 crates in 2014 with the average annual output of 26,636 crates of eggs. This indicates that every mature layer laid an average of about 9.7 crates

of eggs annually which amounted to 291 eggs. This output is close to that of the existing statistics of 279 eggs per layer per annum [25]. The by-products produced along with the eggs (spent birds, droppings and feed sacks) provided additional sources of income to the farmers and this agrees with the report of [14] where poultry farmers generated income from droppings.

Table 2: Output quantities of poultry egg production

Output Items	2012	2013	2014	Total	Average
Eggs (crates)*	24,821	26,351	28,736	77,908	26,636
No. of culled/pent birds	2,398	2,966	2,870	8,234	2,745
Droppings (bags)	641	637	712	1990	663.33
No. of feed sack	4484	4559	4925	13968	4656

Source: Field Survey, 2015

*A crate contains 30 eggs

3.3 Costs involved in poultry egg production

The results of costs involved in poultry egg production are presented in Tables 3. The cost of production increased continuously from 2012 to 2014 despite the slight decline in the stocking rate of birds between 2013 and 2014. This indicates the rising cost of investment operations in the country, a pointer to the need for urgent attention to revise the trend. The average total variable cost of the production per annum was high (98%) while the fixed cost was relatively low (2%) indicating low fixed capital investment in the poultry production industry. These

results agree with the findings of [11] who reported that about 98% of the production cost in raising birds from day old to point of lay were variable costs. The results further compares favourably with the findings of [4] who reported that the total variable cost in poultry egg production accounted for about 64% of the total production cost.

The cost of feed constituted the highest proportion of the total cost of production for all the period under consideration with its average per annum accounting for about 86% of the total cost. This was followed by the cost of birds stocked (4.35%) and labour cost

(4.08%). Thus, to boost poultry egg production, the cost of feeds must be given priority in the policy thrust of the government. Also to be accorded attention is the costs of day-old chicks and labour. These results corroborate the findings of [7, 18, 3] that cost of feed is the highest cost component in poultry production. [24] reported a slightly similar value with cost of feed and labour cost accounting for 80.65% and 5.25% of total cost of production respectively.

Table 3: Average cost involved in poultry egg production (2012-2014)

Cost items (₦)*	2012	2013	2014	Total	Average	% of TC
Variable costs						
Cost of day-old chicks stocked	551,200.00	599,872.00	728,180.00	1,879.252.00	626,417.33	4.34
Labour cost	559,093.76	591,789.00	616,068.42	1,766,951.00	588983.73	4.08
Feed cost	11,658,008.39	12,147,142.15	13,220,548.32	37,025,698.86	12,341,899.62	85.52
Cost of beddings	4,815.00	4,921.00	5,180.00	14,916.00	4,972.00	0.04
Medication cost	318,052.00	339,369.00	350,558.00	1,007,979.00	335,993.00	2.33
Cost of disinfectant	12,969.00	12,699.00	12,450.00	38,118.00	12,706.00	0.09
Transportation cost	146,219.00	148,055.00	151,880.00	446,154.00	148,718.00	1.03
Cost of fuel	11,560.00	12,010.00	10,760.00	34,330.00	11,443.00	0.08
Repairs	54,955.00	53,605.00	56,820.00	165,380.00	55,127.00	0.38
Total Variable Cost	**13,316,872.15**	**13,909,462.15**	**15,152,444.74**	**42,378,779.04**	**14,126,259.68**	**97.89**
Fixed costs						
Rent on poultry land	23,800.00	24,700.00	24,700.00	73,200.00	24,400.00	0.17
Depreciation	177,809.00	177809.00	177809.00	533427.00	177809.00	1.23
Electricity bill	98,415.00	103,670.00	106,735.00	308,820.00	102,940.00	0.71
Total Fixed Cost	**300,024.00**	**306,179.00**	**309,244.00**	**915,447.00**	**305,149.00**	**2.11**
Total Cost (TC)	**13,616,896.15**	**14,215,641.15**	**15,461,688.74**	**43,294,226.04**	**14,431,408.68**	**100.00**

Source: Computed from field data, 2015
*US$1.00 = N196.99

3.4 Returns to poultry egg production

Table 4 shows the returns to poultry egg production in the study area. The average gross margin (₦5,224,819.99 or US$26,523.28), net profit (₦4,919,670.99 or US$24,974.22) and returns on investment (0.34) per annum per 2,745 layers indicated that poultry egg production in the study area was a profitable business enterprise. The business was profitable in all the years with the highest profit realized in 2014. The profitability of the business confirms the findings of [11, 18].

Table 4: Average returns to poultry egg production (2012-2014)

Revenue item (Naira)*	2012	2013	2014	Total	Average
Revenue from eggs	15,786,156.00	16,074,110.00	18,074,944.00	49,935,210.00	16,645,070.00
Revenue from culled/spent birds	2,288,265.00	2,383,358.00	2,965,519.00	7,637,142.00	2,545,714.00
Revenue from droppings/feathers	103,643.00	112,191.00	123,735.00	339,569.00	113,190.00
Revenue from feed sack	45,912.00	44,196.00	51,210.00	141,318.00	47,106.00
Total Revenue (TR)	18,233,976.00	18,613,855.00	21,215,408.00	58,053,239.00	19,351,079.67
Gross Margin (GM)	4,907,103.85	4,704,392.85	6,062,963.26	15,674,459.96	5,224,819.99
Net Profit (π)	4,607,079.85	4,398,213.85	5,753,719.26	14,759,012.96	4,919,670.99
Return on Investment (ROI)	0.34	0.31	0.37	1.02	0.34

Source: Computed from field data, 2015
*US$1.00 = N196.99

3.5 Viability of poultry egg production

The results of the benefit-cost ratio and net present value of the poultry egg production are presented in Tables 5 while the result of the internal rate of returns is shown in Table 6. At 31% discount factor, the BCR was greater than unity (1.26) and the NPV was positive (₦7,024,689.92 or US$35,660.13). These are indications that poultry egg production in the study area was a viable business enterprise. This is confirmed by the result of the internal rate of returns (122.44) which indicated that after paying the interest (31%) on the invested capital, the farmer would be better off by another 91%. [3, 11] in their studies reported that the business of poultry production is a viable business.

Table 5: Benefit-cost ratio and Net present value of poultry egg production (2012-2014)

Year	Cost (₦)*	Benefit (total revenue) (₦)	Incremental benefit (₦)	Discount factor at 31%	Discounted Cost (₦)	Discounted benefit (₦)	NPV at 31% (₦)
2011**	2,160,110.00	-	- 2,160,110.00	1.000	2,160,110.00	-	-2,160,110.00
2012	13,316,872.15	18,233,976.00	4,907,103.85	0.763	10,160,773.45	13,904,893.69	3,744,120.24
2013	13,909,462.15	18,613,855.00	4,704,392.85	0.583	8,109,216.43	10,851,877.47	2,742,661.03
2014	15,152,444.7	21,215,408.00	6,062,963.26	0.445	6,742,837.91	9,440,856.56	2,698,018.65
Total			13,514,349.96		27,172,937.79	34,197,627.72	7,024,689.92

BCR = 1.26

Source: Computed from field data, 2015
*US$1.00 = N196.99
**Investment year and so there was no revenue

Table 6: Internal rate of returns of poultry egg production (2012 - 2014)

Year	Incremental Benefit (₦)*	Discount factor at 220%	NPV at 220% (₦)	Discount factor at 225%	NPV at 225% (₦)
2011*	- 2,160,110.00	1.000	- 2,160,110.00		- 2,160,110.00
2012	4,907,103.85	0.313	1,535,923.51	0.308	1,511,387.99
2013	4,704,392.85	0.098	461,031.00	0.095	446,917.32
2014	6,062,963.26	0.031	187,951.86	0.029	175,825.94
Total	13,514,349.96		24,796.37		-25,978.75

IRR = 122.44

Source: Computed from field data, 2015
*US$1.00 = N196.99

4. Conclusion and Recommendation

The study concluded that poultry egg production in Edo South Agro-Ecological Zone was profitable and viable. Thus, the unemployed youths are encouraged to go into its production. In view of the high cost of the poultry feed, government should subsidize the cost of the feed to make it cheaper and affordable for the investors in the industry.

5. References

1. Adegeye AJ, Dittoh JS: **Essentials of agricultural economics**, Impact Publisher Nig. Ltd., Ibadan, 1985, pp.116–118.
2. Adepoju AA: **Technical efficiency of egg production in Osun State, Nigeria.** International Journal of Agricultural Economics & Rural Development 2008,1(1): 1-9.
3. Ahmadu J, Erhabor PO, Jimoh M: **Investment appraisal of small-scale broiler enterprise in Okene Local Government Area, Kogi State, Nigeria.** Proceedings of 11th Annual National Conference of National Association of Agricultural Economists (NAAE), 30th Nov – 3rd Dec., 2010, pp. 27-33.
4. Ahmadu J, Giroh DY: **Costs and returns analysis of poultry egg production in four selected Local Government Areas of Edo State, Nigeria.** Nigerian Journal of

Agricultural and Development Economics 2013, 3(2): 118-127.

5. Ahmadu J, Ilavbarhe KO: **Analysis of the marketing margin for poultry feed in Benin Metropolis, Edo State, Nigeria.** Journal of Agricultural Research and Policies 2008, 3(1): 107-111.

6. Ahmadu J, Ojogho O: **Economics of snail production in Edo State, Nigeria.** International Journal of Agricultural Science 2012, 4(5): 233-237.

7. Bamiro OM, Shittu AM, Kola-Olutokun AS: **Private feed production as cost reduction strategy: effects on profitability of poultry business in Ogun State, Nigeria.** Ogun Journal of Agricultural Science 2001, 1(1): 37-51.

8. Central Bank of Nigeria (CBN): **Monthly average exchange rates of the naira per unit of foreign currency,** 2017. Access at: https://www.cbn.gov.ng/ rates/exrate.asp?year=2017&months=2

9. Ebong VO: **Agribusiness management in a developing economy: the Nigerian perspective.** Robertminder International Publishers, Uyo, Akwa Ibom State, Nigeria, 2007, Pp. 192-218.

10. Ekunwe PA, Soniregun OO, Oyedeji JO: **Economics of small scale deep litter system of egg production in Oredo Local Government Area of Edo State, Nigeria.** International Journal Poultry Science, 2006, 5(1): 81 – 83.

11. Emokaro CO, Erhabor PO: **Comparative analysis of profitability of layer production in Ovia North East Local Government Area of Edo State, Nigeria**. Journal of Applied Science and Environment, 2014, 18(1): 121- 126.

12. Erhabor PO, Emokaro CO: **Relative technical efficiency of cassava farmers in the three Agro-Ecological Zones of Edo State, Nigeria.** Journal of Applied Science, 2007, 7(19): 2818-2823.

13. Food and Agriculture Organization (FAO): **Egg production. In: Egg marketing: A guide for the production and sales of eggs.** FAO of the United Nations Agricultural Services Bulletin No. 150, Rome, 2003. Access on 26th February, 2014 at: https: //www. fao.org/ docrep/ 005/y4628e/y4628e03.htm.

14. Henri-Ukoha A, Ekunwe PA, Oshaji IO, Anyanwu A, Oladejo E: **Determinants of profitability of broiler enterprise in Owerri North LGA, Imo State, Nigeria.** Agricultural Economics and Extension Research Studies 2016, 4 (2): 12 – 19.

15. Ikheloa EE, Inedia G: **Analysis of survival rate of chicks in poultry farms in Edo State.** Proceedings of the 39th Conference of Agricultural Society of Nigeria (ASN) on *agricultural rebirth for improved production in Nigeria* held at the University of Benin, Benin City, Nigeria, 9th – 13th October, 2005, pp. 43 – 45.

16. Ironkwe MO, Ajayi FO: **Profitability analysis of broiler production in Oyibo LGA of Rivers State, Nigeria.** Global Journal of Agricultural Science 2007, 6(2): 195 – 200.

17. National Population Commission (NPC): **Population census figure of the Federal Republic of Nigeria, Abuja**, 2006. Retrieved from www. npc. org/ populationcensusdata on July 5th, 2015.

18. Olagunju FI: **Cost and Returns on Egg production in South western Nigeria**. Research Journal of Applied Science 2007, 2(2): 160-164.

19. Olufemi AY, Adeolu BA: **Economic analysis of factors affecting the profitability of broiler processing in south western Nigeria.** Learn. Publication Journal of Agriculture and Environmental Studies 2013, 3(2): 1-19.

20. Olukosi JO, Erhabor PO: **Introduction to farm management economics: principles and applications**. AGITAB Publishers Ltd, Zaria, Nigeria, 2005.

21. Onoja AO, Achike AI: **Resource productivity in small scale catfish farming in Rivers State, Nigeria**. Journal of Agriculture and Social Research 2011, 11(2): 139-146.

22. Osawaru ME, Daniel-Ogbe FM: **Crop diversity and utilization pattern in home garden from southern Edo State, Nigeria**. *Afri. Sci.* 2012, 13(1): 23- 39.

23. Shittu A, Raji AA, Madugu SA, Hassan AW, Fasina FO: **Predictors of death and**

production performance of layer chickens in opened and sealed pens in a Tropical Savannah environment. Biomedicine Central Veterinary Research 2014, 10(214). Available online at: https: //www. ncbi.nim.nih.gov/pmc/articles/PMC4173064/

24. Tijjani H, Tijani BA, Tijjani AN, Sadiq MA: **Economic analysis of poultry egg production in Maiduguri and Environs of** **Borno State, Nigeria**. *Scholar Journal of Agricultural Science* 2012, 2(12): 319-324.

25. United States Department of Agriculture (USDA): **Chicken and eggs 2016 summary**. USDA, National Agricultural Statistics Service, February, 2017. Access on 17th December, 2017 at: https://usda.mannlib cornell. edu/usda/current/chickenEgg-02-27-2017pdf.