Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development
Vol. 18, Issue 3, 2018
PRINT ISSN 284-7995, E-ISSN 2285-3952

ANALYSIS OF INCOME AND PROFITABILITY OF CHICKEN EGG MARKETING BUSINESS IN ABIA STATE, NIGERIA

Sylvanus Ibeabuchi OGBONNA[1], Christopher Ogbonna EMEROLE[2]

[1]National Open University of Nigeria, Department of Agricultural Economics and Extension, Faculty of Agricultural Sciences, Phone : +234 8034004788, E-mail: ogbonna101@gmail .com
[2]Department of Agricultural Economics and Extension, Faculty of Agriculture, Abia State University, Uturu Nigeria, Phone: +234 8053289183; E-mail: emerolechriso@yahoo.co.uk

Corresponding author: emerolechriso@yahoo.co.uk

Abstract

This analysis of marketing and profitability of Chicken egg business was done with data collected from egg traders in Abia State, Nigeria. A total of 60 egg traders made up of 30 wholesalers and 30 retailers were involved as a panel and supplied answers to questions in a questionnaire administered fortnightly for two months in their market locations across the Agricultural zones. Data gathered were analysed with both descriptive and inferential statistical tools. Chicken egg farmers, rural egg buyers, wholesalers and retailers constituted marketing stakeholders. Other egg market characteristics are: 65.0% of the egg markets were located in urban centres, 38.0% of them located in semi-urban areas with only 4.0% of the markets located in rural communities. Selling prices of the eggs varied along the distributive channel such that bulk of the share of net marketing margin (58.30%) was enjoyed by the chicken egg farmer and the least (4.81%) received by the wholesalers. These notwithstanding, the marketing of Chicken eggs was profitable to wholesalers as they on average realized ₦ 137,764.80 as monthly net returns. Profitability was determined by egg price, marketing experience, amount of fund invested, quantity of eggs sold and transport costs. The wholesale egg traders should take advantage of bank credits to increase their trade capitals and the Abia State Government should maintain the rural and urban roads to help reduce cost of transporting eggs in the area.

Key words**:** *chicken egg, marketing, profitability, wholesaler*

INTRODUCTION

Poultry products (meat and eggs) marketed in most developing countries especially in Africa remains quite expensive, with their marketing system being informal and poorly developed [5]. Chicken egg marketing commence from farms where farmers sort and grade the eggs in trays and crates and from where egg assemblers pay and take delivery of their purchases to owned or rented stalls. [2] observed that the eggs are packaged in crates of 30 pieces and sold to middlemen (retailers and wholesalers) and some other consumers especially households, fast food centres' and schools. The chicken eggs also find wide uses in eateries, bakeries where they are good food ingredients for cakes and rolls. The demand for Chicken eggs in Nigeria is high and have positively correlated with periods of religious festivals such as Muslim fast (Ramadan) and Christian Christmas when demand for eggs are highest [2]. [10] had noted that protein intake in foods by Nigerians was below universal recommendation. They noted that persons in urban areas in Nigeria took an average of 28 grammes of animal protein per caput per day, with those in rural areas taking an average of 17 grammes of protein per caput per day. These are below the Food and Agriculture Organization (FAO) recommended 35 grammes of animal protein intake per caput per day [4]. Children and persons with acute protein deficiency in their diets are expected to buy more and consume more chicken eggs and by doing so shift more income to chicken egg sellers.

Notwithstanding how people have been convinced to buy more chicken products, the income from chicken egg sales have been highly unequal amongst Chicken egg marketers as it is skewed in favour high scale traders. The inequality was confirmed by an estimated Gini coefficient of 0.82196 in Benin

City Nigeria [6]. This estimated index showed that 82.19% of the accrued income from egg marketing in the area needed to be redistributed to achieve perfect distribution amongst the egg marketers in the city yearly. This scenario replicates in most parts of Abia State with suggestive welfare implications. Wherever income earning is distributed poorly, it manifests in some feel of insecurity and heightens trade competition amongst the relatively low-income earners. The low income earning chicken egg marketers can only save much of their income to accumulate reasonable saving for scale enhancement investment required to push up economic growth in the livestock sub-sector. Afolabi (2007) confirmed the high level of income inequality but revealed that egg marketing business was profitable as the participants in the channel of egg distribution receive different profits from differences in parts of prices paid which they received [3].

This difference in the price paid to a first seller and that paid by the final buyer constitutes what is referred to as marketing margin. Thus, every category of middlemen in the distributive channel of a farm product (including chicken egg) earns a margin for the duties performed in the marketing channel. Many issues (wages, transport costs, hidden costs, and category of marketer) implicate on the margins which over time tend to be fixed and force marketing margins to be stable more than the prices [8]. A trade business is profitable when it yields financial gain to the trader or to the entrepreneur. This study recognized the nexus relationship amongst profit, income and marketing activities and investigated it under the following specific objectives: (i) description of marketing characteristics of Chicken egg traders in Aba Abia State, Nigeria; (ii) estimation of share of gross marketing margins to chicken egg stakeholders (farmers, rural market assemblers, wholesalers, and retailers) in the study area; (iii) analysing net marketing returns (profits) to wholesalers of chicken egg in the study area; and (iv) determining factors influencing profitability of wholesale chicken egg marketers.

MATERIALS AND METHODS

Area of Study

This investigation was conducted in Abia State, Nigeria. The State Abia is located in south eastern Nigeria and is one of the thirty-six (36) states in the Federal Republic of Nigeria. Geographically, Abia state occupies a land area of 7,677.2 square kilometres within Longitudes 7^0 $5^/$ E and 7^0 $3^/$ E of the Greenwich Meridian and Latitudes 4^0 $5^/$ and $6^07^/$ N of the Equator. The State has network of motorable roads that link its three agricultural zones with neighbouring States of Imo to its West, Anambra to its North-West, Ebonyi and Cross River states to its North-East, Akwa Ibom to the East, and Rivers state to the South. There are cosmopolitan markets in each of Aba, Umuahia and Ohafia (the three Agricultural zones) in Abia State, Nigeria. Abia has a population of 2,833,999 made up of 1,434,193 (55.0%) males and 1,399,806 (45.0%) females, with a density of 448 persons per square kilometre [7].

Sampling Technique

This study applied multi-stage random sampling method in selecting chicken egg markets and egg marketers in the Agricultural zones of Abia State, Nigeria. First, the three agricultural zones of the state (Aba, Umuahia, and Ohafia) were recognized and guided the selection of the subjects. Second, two markets (one rural and the other urban or semi urban) were randomly chosen from each of the agricultural zones. This gave a total of 12 markets (6 rural markets and 6 urban/semi-urban markets). The markets chosen are: from Aba agricultural zone, Ngwa road market (urban) and Ekeakpara market (rural); from Umuahia agricultural zone, Orie Ugba market (urban) and Orie Ntigha market (rural); and from Ohafia agricultural zone, Uzuakoli market (semi-urban), Ukwu Nwangwu market (rural). Third, from each of the chosen urban/semi-urban markets, 14 egg traders were randomly selected (7 wholesalers and 7 retailers); and from each of the chosen rural markets, 6 egg traders were also randomly selected (3 wholesalers and 3 retailers). This gave a total of sixty (60) chicken egg traders, made up of thirty (30) wholesalers and thirty

(30) egg retailers that constituted a panel involved in this study.

Data Collection

Primary data were collected with a questionnaire administered monthly in a series of three months of egg market survey. This panel data was gathered on marketing characteristic activities, unit trade prices, quantities of eggs bought and sold, transportation cost, storage/stall charges, cost of packaging material(s), wages to casual and permanent purchasing and sales workers.

Analytical Technique

The data gathered were subjected to a set of multiple analytical techniques. Descriptively, objectives (i) was realized with frequency distribution Table in which percentages, mean, and standard deviation helped in describing trade variables. The Gross marketing Margins - objective (ii) was estimated and shared amongst stakeholders as recommended by [9] and used by [1]. The final consumer price is the base or common denominator for calculating all marketing margins. The price variations at different segments of the market are compared with this final price paid by the consumer.

Total Gross Marketing Margin (TGMM) = $\frac{\text{Consumer's Price – Farmer's Price}}{\text{Consumer's Price}} \times \frac{100}{1}$ **.....(1)**

Share of margin to the farmer (producer)(GMMp) = $\frac{\text{Consumer's Price – GMM}}{\text{Consumer's Price}} \times \frac{100}{1}$ .....…(2)

Net Marketing Margins to wholesaler or Retailer = $\frac{\text{GMM- Marketing Costs}}{\text{Consumer's Price}} \times \frac{100}{1}$ ….....(3)

Net marketing returns, objective (iii) was estimated using the farm budget technique. The model was specified as follows:

$$\mathbf{NMR} = \sum \mathbf{P_i Y_i} - \sum \mathbf{P_{xi} X_j} - \sum \mathbf{Z_k} \quad \text{….....} (4)$$

where:
NMR= Net Marketing Returns (₦'000);
Pi = Price of crate of chicken eggs sold by ith trader (₦);
Yi = Quantity of chicken eggs sold by ith trader (crates);
Pxi = Unit price of marketing variable inputs used in trading on chicken egg (₦);
Xj = Quantity of jth variable marketing inputs used in chicken egg trade.'
Zk = Value of depreciated marketing assets (Fixed Costs) used in chicken egg trade (₦);
∑ = Summation sign/

The factors that influenced profitability of wholesale chicken egg trade were estimated using Ordinary Least Square (OLS) regression of a profit model. This model implicitly was shown as follows:

$$\prod = f(X1, X2, X3, X4, X5, X6, X7, X8, X9, ei)$$

where:
∏ = Monthly profit from chicken egg sales (₦);
X1 = Transportation charges (₦);
X2 = Chicken egg Marketing Experience (₦);
X3= Sales Market location (urban=1; semi-urban =2; rural =3);
X4 = Interest charged on borrowed funds (₦);
X5 = Quantity of Chicken eggs sold (Number of Crates);
X6 = Egg storage charges (₦);
X7 = Amount of fund invested (₦);
X8 = Unit selling price (₦/Crate);
X9 = Other marketing Charges (packaging materials, rent on stalls,) (₦);
ei = Stochastic Error term.

RESULTS AND DISCUSSIONS

Marketing Characteristics of Chicken Egg Trade

Table 1 shows the distribution of attributes associated with trade on chicken eggs as observed in the study area. The Table showed the distribution of 225 identified stakeholders in the marketing of chicken eggs as follows: egg farms (53.3%), rural egg buyers (20.1%), wholesalers (13.3%), retailers (13.3%). It further showed that more than half (63.3%) of the traders on chicken egg business carried out their trade in urban markets, 20.0% of them traded in semi-urban areas and as low as

16.7% of them traded on it in the rural areas. This distribution clearly portrayed chicken egg as a commodity that is supplied and traded more in areas of high population density. The mean monthly number of chicken eggs traded (683.7 crates) was distributed as follows: less than 500 crates was traded by 46.7% of the traders; between 500 and 1,000 crates was traded by 36.7% of the traders; and greater than 1,000 crates was traded by 16.7% of the traders. The mean monthly income from the sales of the chicken eggs was ₦472,700.00.

Table 1. Market Characteristics of Chicken Egg Stakeholders and Trade in Aba, Abia State Nigeria

Trade Attribute	**Number of Stakeholders /Traders**	**Percent (%)**
Chicken Egg Stakeholders:		
Egg farms	120	53.3
Rural egg buyers	45	20.1
Wholesalers	30	13.3
Retailers	30	13.3
Total number of stakeholders	***225***	***100.0***
Business location:		
Urban market traders	38	63.3
Semi-urban market traders	12	20.0
Rural market traders	10	16.7
Total	***60***	***100.0***
Monthly number Crates of eggs traded:		
Less than 500	28	46.7
500-1,000	22	36.7
Greater than 1,000	10	16.6
Total	***60***	***100.0***
Mean 683.3. crates		
Std. Dev. 72.7		
Monthly income from chicken egg		
Sales **(₦'000)**		
300-450	16	26.7
451-650	21	35.0
651-850	18	30.0
851-900	3	5.0
Greater than 900	2	3.3
Total	***60***	***100.0***
Mean monthly 472.70		

Field Survey, 2017.

Share of Marketing Margins to Chicken Egg Stakeholders

The share of the differences in the prices paid on chicken eggs between stakeholders (farmers, rural egg buyers, wholesalers and retailers) are shown in Table 2. The Table revealed that the selling price of a crate of chicken egg varied at different stages of the distributive channel from ₦728.80 at the farm level to ₦900.00 at the final consumer level. However, the chicken egg farmer received the bulk of the marketing margin (81.0%) and the rural egg buyer received the least 5.38% along the channel. In terms of net marketing margins, the wholesaler received the least (4.81). This suggests that the wholesaler incurred much of the trading costs (transportation, packaging, damage and display costs). Chicken egg is a very fragile commodity that attracts high handling charges.

Table 2. Distribution of Mean monthly Shares of Marketing Margins to Chicken Egg Stakeholders in Aba Agricultural Zone, Nigeria

Stakeholder	**Price received/paid ₦/Crate of 30 Eggs**	**Share of Gross Marketing Margin (%)**	**Net Marketing Margin (%)**
Chicken Egg Farmer	728.80	81.00	58.30
Rural Egg Buyer	770.20	5.38	4.80
Egg Wholesaler	800.60	5.81	4.81
Egg Retailer	850.00	7.81	6.76
Consumer	900.00	100.00	100.00
Total GMM = 19.0			

Field Survey, 2017.

Wholesaler Profitability in Chicken Egg Trade

Table 3 revealed that chicken egg wholesale trade was a profitable business in Abia State Nigeria. The Table showed that the trade was one that was executed with less than 1.0% fixed cost investment since the costs involved were mostly variable costs (99.7%). The wholesalers on the average incurred a monthly total cost of ₦3,139,735.20 and were able to post a net return of ₦137,764.80 from a gross margin of ₦138,829.80. The nature of chicken eggs as not storing for long period on shelves, fragile in handling and the fact that consumers demand them fresh require dealers to often be ready with cash (high liquidity) to provide this highly solvent commodity to the stalls. These

could implicate on the skill required and profit realizable from this trade.

Table 3. Analysis of Monthly Profitability of Chicken Egg Wholesaler Business in Abia State, Nigeria

Item	Average Quantity	Unit Price (₦/Unit)	Total Value ₦	% of Total Cost
Purchase of Chicken Eggs	3,450 crates	770.20	2,657,190.00	84.63
Labour cost (loading & off-loading of Eggs)	90 Man-days	1,500.00	135,000.00	4.29
Transportation of Eggs	3,450 crates	60.00	172,500.00	5.49
Storage cost	3,450 crates	50.00	172,500.00	5.49
Cost of Packaging Materials			1,480.20	0.05
Total Variable Cost (TVC) …a			3,138,670.20	99.7
Fixed Cost: …b Depreciation (display counters, tables, chairs, plastic crates)			1,065.00	0.03
Total Cost (a + b)			3,139,735.20	100.0
Revenue:				
Egg Sales	3,450 crates	950.00	3,277,500.00	
Total Revenue (TR) …c			3,277,500.00	
Gross Margin (GM)=(c - a)			138,829.80	
Net Returns (GM – b)			137,764.80	

Computed from Field Survey Data, 2017.

Determinants of Profitability of Chicken Egg Wholesale Business

Positive net returns or profit is one variable that that motivates an investor to remain in business. Chicken egg marketing business which was shown to be profitable (Table 3) was further investigated for factors that determine its profitability with Ordinary Least Square regression model. The estimates of the wholesaler's profitability in chicken egg marketing are shown as Table 4. Four functional forms (Linear, Exponential, Double Logarithmic, and Semi-Logarithmic) were tried, and all fitted the data well as shown by values of their F-statistic ratios. However, on basis of the R-Squared values and the number of revealed significant variables, the Exponential functional form gave a better fit and was used as lead equation in further discussion. The Table showed that experience in chicken egg marketing, amount of fund invested, and unit sales price were variables that positively and very highly determined profitability ($p< 0.001$) in chicken egg marketing. Another positive factor(s) that determined profitability amongst this category of traders at relatively lower probability ($P<0.05$) was the quantity of chicken eggs sold while cost of transportation at that same level of probability had negative and significant influence on profitability of chicken egg business.

These revelations suggest that while efforts should be made to increase every of the factors that had positive significant influence we must make efforts to reduce the cost of transporting chicken eggs amongst the wholesalers to enhance the profitability.

Table 4. Ordinary Least Squared (OLS) Estimates of Factors that Influenced Profitability of Chicken Egg Wholesale Trade in Abia State, Nigeria

Variables	Functional Forms			
	Linear	Exponential +	Double Log.	Semi-Log.
Constant	6168.9 *** (9.44)	10.03*** (4.263)	-27.91*** (-6.30)	-1287*** (-5.04)
Transportation	-6329 (-1.04)	-726** (-2.52)	-0.176 (-0.67)	-2996.7 (-1.71)
Marketing Experience	170.8 (0.730)	0.0349*** (3.89)	-0.255 (-0.713)	-21277 (-0.732)
Market Location	480.9** (2.57)	0.238 (-1.18)	0.147*** (3.38)	262.2** (2.71)
Interest charged on Loans	23.4** (2.72)	0.310 (1.22)	0.068 (0.92)	244.9 (1.17)
Quantity of Eggs Sold	9.072*** (3.94)	0.0031** (2.75)	0.085** (2.51)	212.0** (2,72)
Storage charges	39.89 (0.524)	0.008 (1.32)	3.21 (1.49)	159.7 (0.549)
Amount of fund Invested	124.9 (0.424)	0.611*** (3.72)	0.721*** (2.97)	522,6** (2.53)
Sales Price	8.13 (0.35)	0.003*** (4.23)	0.196 (1.11)	-48.16** (-2.51)
Other costs	-10.7 (-1.09)	-0.004 (-0.927)	0.123 (1.48)	-508.9 (-1.26)
R-Squared	0.668	0.869	0.665	0.728
Adjusted R-Squared	0.642	0.843	0.558	0.706
F-Statistic	71.11***	79.22***	55.22***	72.39***

Level of significance: **= 5.0%; *= 1.0%. Dependent Variable= Monthly profit from chicken egg sales (₦); 1US$ =₦350.00.**

Source:Estimated from Field Survey Data, 2017

CONCLUSIONS

Chicken eggs are traded at the rural, semi-urban, and urban markets with some level of price variations. The farmers relatively received more shares of the marketing margins than the traders from sale of chicken eggs. Chicken egg sales was a profitable but involved use of more cash (liquidity) than items of fixed costs. Many factors

significantly enhanced profitability of chicken egg marketing but the cost of transportation.
We recommended that wholesale egg traders should take advantage of bank credits to increase their trade capitals while Abia State Government should maintain the rural and urban roads to help reduce cost of transporting eggs in the area.

REFERENCES

[1]Adesiyan, O.I., Adeleke, O.A., Salako, B.A., 2007, Economic Analysis of Poultry Marketing in Ido Local Government Area of Oyo State, Nigeria. Research Journal of Poultry Science, 1 (3,4):23 – 25.
[2]Aduku, A.O., 2002, Poultry Processing and Marketing in Nigeria. A Training Manual on National Workshop on Poultry Production in Nigeria. P.136-152.
[3]Afolabi, J.A., 2007, Evaluation of Poultry Egg Marketing in South Western Nigeria. International Journal of Poultry Science, 6(5):362 - 366.
[4]Akanni, I.A., 2007, Effect of Microfinance on Small Scale Poultry Business in South Western Nigeria. Emirate Journal of Food and Agriculture 19 (2): 38 - 47.
[5] Branckeart, R.D S., Gueye, E. F., 2000, Poultry as a Tool in Poverty Eradication and Promotion of Gender Equality. Food and Agriculture Organization (FAO) Programme for Support to Family Poultry Production in Nigeria.
[6]Ekunwe, P.A., Alfohai, G.O., 2009, Economics of Poultry Egg Marketing in Benin City, Edo State, Nigeria. International Journal of Poultry Science 8:166-169.
[7]National Population Commission (NPC) 2007. Preliminary 2006 Census Figures. Nigeria National Population Commission Abuja.
[8]Thomsen, F.L., Foote, R.J., 1952, Agricultural Prices, Second Edition. New York McGraw Hill.
[9]Wohlgenant, M.K., 2001, Marketing Margins: Empirical Analysis. Business Fluent.
[10]Yusuf, S.A., Malomo, O., 2007, Technical Efficiency of Poultry Egg Production in Ogun Ogun State, Nigeria: An Envelopment Analysis (DEA) Approach. International Journal of Poultry Science 6(9): 122 –129 and 622-629.