

Appraisal of Fresh Fish Marketing in Ondo State, Nigeria

BY

M. L. ADELEKE¹, J.A. AFOLABI²

¹Department of Fisheries and Aquaculture Technology

²Department of Agriculture and Resource Economics

Federal University of Technology, Akure, Nigeria.

Email: mosunmolalydia@yahoo.com, afolabija@yahoo.com

ABSTRACT

This study carried out an appraisal of fresh fish marketing in Ondo-State, Nigeria. It specifically examined the socio-economic characteristics of fresh fish marketers in the study area, determined profitability and examined market structure for fresh fish in the study area. A multi-stage sampling technique was used to select 45 fresh fish marketers and structured questionnaire administered on them. Data collected were analyzed using descriptive statistics, gross margin analysis, Gini-coefficient analysis and marketing function analysis.

The study revealed that 95.6% of the respondents belong to the active segment of the population while the remaining 4.4% were aged. Analysis also showed that fresh fish market was dominated by females which accounted for 73.3% of the sellers.

The profitability analysis showed that an average marketer incurred a total variable cost of N511,185.78 (\$3,195) per year but earned an average revenue of N618875.56 (\$3,867) over the same period. This indicates that an average marketer earned N107,689.78 (\$673) as gross margin per year suggesting that fresh fish marketing is a profitable venture in the study area. A Gini-coefficient of 0.5292 obtained in this study indicates a high level of concentration in the fresh fish market.

The result of the marketing function showed that the estimated coefficient of multiple determination (R^2) indicates that the postulated regressors i.e. included variables in the model explained 72.6% in the variation of the regressand (i.e. sales revenue).

It is therefore recommended that women should be encouraged to join cooperative societies that are gender sensitive.

Key notes: Appraisal, fresh fish, marketing, market structure and profitability.

1.0 Introduction

Fish and fish product are known worldwide as very important diet because of their high nutritional quality and significance in improving human health. The per capita consumption of animal protein in Nigeria is only 9.3g/day as against 34/day recommended by the Food and Agriculture Organization (FAO) to be the minimum requirement for the growth and development of the body (Lamorde, 1977, Shaib *et al*, 1997). This short fall is not because of the non-availability of the resources but due to non maximization and sustainable utilization of these resources .For instance Nigeria has over 12.5 million hectares of inland water capable of producing over 350,000 metric tones annually (Amao *et al*, 2006) .

Animal protein on the other hand is rich in amino acids but is virtually out of reach of the average Nigeria due to its high cost. According to Lawal (2002) fish nutritionally has high quality proteins, fats and vitamins. It is relatively cheaper and more available than other animal proteins. Fish contain the essential amino acids such as lysine, tryptophan and methionine which are lacking in proteins of plants origin (Lawal,2002). Fish in addition contain some fat-soluble vitamins, especially vitamin A and D, considerable amounts of phosphorus and other minerals such as copper, calcium, iron, iodine and magnesium which are necessary for the healthy growth of the human body. Olayide (1977) and Olomu (1995) also said that fish is nutritionally superior to other sources of animal protein. Hence,,the solution for the country's teeming population must be addressed from the perspective of increasing the domestic fish production. According to (Akolisa and Okonji,2005), demand for fish in Nigeria has doubled as other sources of animal protein have become expensive due to ever-increasing population and high production cost of other protein sources such as livestock. Kristyn and Sergio (2005) said that fish is the most heavily traded food commodity and the fastest growing agricultural commodity in the international market. International trade in fish and fish products has provided an important source of foreign exchange to low income and food deficit countries. Literature abound on the various aspects of fresh fish and frozen fish from production and processing but little is known about the marketing of fresh fish particularly in the study area.

This study therefore carried out an appraisal of fresh fish marketing in Ondo State, Nigeria. Specifically, it;

- i. examined the socio-economic characteristics of fresh fish marketers in the study area.
- ii. determined the profitability of fresh fish marketing in the study area
- iiii examined the market structure for fresh fish in the study area

2.0 Theoretical Framework

Marketing margin is the difference between producer and consumer prices of an equivalent quantity and quality of a given commodity (Vanessa and Jonathan, 1992). Adekanye (1988) said that small margin can be regarded as proof that distribution or marketing is efficient but Vanessa and Jonathan (1992) opined that gross marketing margin cannot be treated as an indicator of economic performance as such since low margin may coexist with inefficient use of resources,

poor coordination and poor consumer satisfaction as well as disproportionate profit level. Harris (1993) said that the market structure consist of the characteristics of the organization of a market which seems to influence strategically the nature of competition and pricing within the market. The set-up of the market consists of the degree of concentration of buyers and sellers, integration, product differentiation and the degree of competition between buyers and sellers. According to Afolabi (2004) majority of the sellers of agricultural products including beef used both open display and persuasive methods to draw the attention of customers. Imoudu and Afolabi (2002) posited that market structure for agricultural products in Nigeria is not perfectly competitive due to collusive tendencies of sellers by forming associations for particular product. The market structure can be examined by using the Lorenz curve and Gini-coefficient (Dillon and Hardaker, 1993). According to them, the Lorenz curve is obtained by plotting the cumulative proportion of sellers from the smallest number to the largest against cumulative proportion of their sales earnings. If the distribution is totally equitable, the curve will fall on the 45 – degree line. The greater the inequality, the greater the departure from 45 – degree line. Gini coefficient is the rate of the area between the curve and the 45 – degree line to the area under the 45 – degree line. It is also a measure of inequality. Gini coefficient greater than 0.35 are high indicating inequitable distribution (Dillon and Hardaker, 1993). In other words, higher Gini – coefficient means higher level of concentration and consequently, high inefficiency in the market structure.

3.0 Research Methodology

Study Area : This study was carried out in Ondo State situated in the South-Western Nigeria. Ondo State is one of the six states that made up South-western Nigeria. This State lies between longitude 4⁰30” and 6⁰ east of the Greenwich Meridian and latitude 5⁰ 45 and 8⁰ 15” North of the equator. The state has a population of 3,441,024 (National Population Commission, 2006). The state has a tropical climate with its characteristic high temperature all the year round, heavy rainfall during the rainy season (April to October) and dry wind during the dry season (November to March). This favourable climate account for reason why about 75 percent of the inhabitants are farmers. They grow both arable and permanent crops. Apart from farming inhabitants also engaged in occupations like manufacturing and commerce.

Sampling Technique : A Multi-stage sampling technique was used for this study. At the first stage , Akure South Local Government Area was purposively selected because of the prevalence of fresh fish marketers in the area. At the second stage a random sampling technique was used to select 45 respondents and structured questionnaire administered on them.

Analytical Techniques: Descriptive statistics such as frequency distribution and percentage were used to analyse some socio-economic characteristics of the respondents

Gini coefficient was used to examine the market concentration for fresh fish in the study area. Mathematically, it is represented by

$$GC = 1 - \frac{\sum XY}{n^2} \text{-----Equation 1}$$

Where

X = Proportion of seller

Y = Cumulative proportion of total sales

Gross margin analysis was used to determine the profitability of fresh fish marketing in the study area. The gross margin represented by

$$G.M = G.I - TVC \quad \text{-----Equation 2}$$

Where

G.M = Gross margin

G.I = Gross sales/income

TVC = Total variables cost

Some of the factors that influence the sales revenue of fresh fish marketers was determined quantitatively using marketing function analysis with the use of Ordinary Least Square multiple regression analysis (OLS).

Model Specification: The marketing function postulated for fresh fish marketing in the study area is implicitly presented by

$$Y = f (X_1, X_2, X_3, X_4, X_5, X_6, u_i) \quad \text{-----Equation (3)}$$

Where

Y= Sales revenue

X₁= Age of respondents

X₂= Marketing experience (years)

X₃= Educational status of respondents

X₄= Cost of purchase

X₅= Cost of transportation

X₆= Cost of labour

U_i = error term

4.0 Results and Discussion

Socio –economic Characteristics of Respondents in the Study Area

Table 1 revealed that 17.8% of the respondents had their ages between 20 and 30 years while 46.7% of them were between 31 and 40years .About 20% of them were between 41 and 50 years old. Only 4.4% of them were more than 60 years old while 11.1% of these respondents were between 51 and 60 years old. Analysis indicates that 95.6% of these respondents belong to the active segment of the population which can have positive effect on the business aggressiveness of the respondents. The table also showed that both male and female gender sell fresh fish in the study area with females accounting for 73.3% of these respondents. The dominance of females in the fresh fish marketing may be due to small capital requirement to start the business. Analysis also showed that 13.3% of the respondents were single while 86.7% of them were married out which 2.2% were widow. The result also revealed that 51.11% of the respondents had no formal education while 33.33% of them had primary education. Only 15.56% of these respondents had secondary education.

Table 1: Socio – Economic Characteristics of Respondents

Age (years)	Frequency	Percentage
20-30	8	17.8
31-50	30	66.7
>50	7	15.5
Total	45	100
Sex		
Male	12	26.7
Female	33	73.3
Total	45	100
Marital Status		
Single	6	13.3
Married	38	84.4
Widow	1	2.2
Total	45	100
Educational status		
No formal education	23	51.11
Primary education	15	33.33

Secondary education 7 15.56

Total 45 100

Source: computed Field Data, 2011

The Market Structure for Fresh Fish in the study area

The Gini –coefficient for fresh fish market in the study area shown in table 2 was 0.5292. This result indicates a high level of concentration and consequently high inefficiency in the market structure for fresh fish in the study area. This was in line with Dillion and Hardaker (1993) in their finding that the value of Gini coefficient greater than 0.35 is high indicating inequitable distribution of sales income/ sales.

Table 2: Computation of Gini Coefficient for fresh fish marketing in the study Area

Income sales (N)	Number of sellers	Proportion of sellers (X)	Cumulative proportion of sellers	Total sales (N)	Proportion of sales	Cumulative proportion of total sales (Y)	XY
≤150000	4	0.09	0.09	420,000	0.015	0.02	0.0018
150001-250000	6	0.13	0.22	1178400	0.04	0.06	0.0078
250001-350000	7	0.16	0.38	1970000	0.07	0.13	0.0208
350001-450000	8	0.18	0.56	3090000	0.11	0.24	0.0432
450001-550000	1	0.02	0.58	480000	0.017	0.26	0.052
550001-650000	2	0.04	0.62	1200000	0.04	0.30	0.0120
≥650001	17	0.38	1.00	19269000	0.70	1.00	0.3800
Total	45	1.00		27629400	1.00		0.4708

Source: computed Field Data, 2011

$$\text{Gini co-efficient} = 1 - \sum XY$$

$$= 1 - 0.4708$$

$$= 0.5292$$

Profitability Analysis

The result in table 3 showed that acquisition cost gulped 93.85% of the total variable cost while the cost of labour accounted for 1.91% of the total variable cost. The cost for storage accounted for 0.05% of the total variable cost while cost of equipment accounted for 1.17% of the total

variable cost. Only 3.02% of the total variable cost was expended on transportation. The table also revealed that an average marketer incurred a total variable cost of N511,185.78 but earned an average revenue of N618875.56 over the same period. This indicates that an average marketer earned N107,689.78 as gross margin per year suggesting that fresh fish marketing is a profitable venture in the study area.

Table 3: Cost and Return of the Respondents in Fresh Fish Marketing

Items	Cost (₦)	% of TVC
Cost of storage	11300	0.05
Cost of equipment	269940	1.17
Cost of purchase	21588000	93.85
Cost of labour	440000	1.91
Cost of transportation	694120	3.02
Total variable cost	23003360	100
Total revenue (TR)	27849400	
Gross margin (GM = TR-TVC)	4846040	
Average total variable cost (TVC/n)	511185.78	
Average total revenue (TR/n)	618875.56	
Average gross margin (GM/n)	107689.78	

Source: computed Field Data, 2011

Marketing Function Analysis

The linear, semi log and Cobb-Douglas functional forms of marketing function were tried using Ordinary Least Square Technique (see Table 4). The estimated functions were evaluated in term of the statistical significance of the coefficient of multiple determinations (R^2) as indicated by the F-value, the significance of the coefficients and the magnitude of standard errors. Based on these statistical and economic criteria Cobb Douglas functional form was selected as the lead equation. The result showed that the estimated coefficient of multiple determination (R^2) indicates that the included variables in the model explained 72.6% in the variation of the sales revenue of the respondents. All the estimated coefficient except age of the respondents (X_1) positive signs which means that increase in these variables would lead to an increase in the sales revenue of respondents ceteris paribus. The coefficient of age of respondents that had negative sign implied that an increase in this variable would lead to a decrease in sales revenue of respondents and vice versa. The positive coefficient of education suggest that literate marketers may be more enterprising than their illiterate counterparts because of their ability to use market information to advantage.

Table 4: Estimates of the Marketing function for fresh fish in the study area

Variables	Cob Douglas	Semi – log	Linear
Constant	0.166 (0.374)	-8161106.658 (1050366)	-20406.706 (60056.839)
Age of respondents (X ₁)	-0.061 (0.40)	-103307.774 113149.655	57409.281 (16881.315)
Marketing experience(X ₂)	0.63* (0.26)	-121773.919 (100191.706)	-19148.734 (14794.489)
Education level (X ₃)	0.38 (0.54)	-75045.444 (150460.701)	20123.087 (12886.602)
Cost of purchase(X ₄)	0.58* (.023)	761025.978 (64560.655)	1.195 (.033)
Cost of transportation(X ₅)	0.47* (0.16)	-86459.219 (43775.037)	-0.224 (.699)
Cost of labour(X ₆)	0.043 (0.030)	7657.436 (83628)	9.997 (2.544)
R ²	0.726	0.689	0.607
Adjusted R ²	0.692	0.661	0.594
Standard error	0.08522	0.0000239220	92756.94552
<i>F – value</i>	522.716	30.491	260.099

*Significant at 5%.

Figures in parenthesis are standard error of the coefficients.

Source: computed Field Data, 2011

4.0 Summary and Conclusion

The study revealed that 95.6% of the respondents belong to the active segment of the population while the remaining 4.4% were aged. Analysis also showed that fresh fish market was dominated by females which accounted for 73.3% of the sellers.

The profitability analysis showed that an average marketer incurred a total variable cost of N511,185.78 per year but earned an average revenue of N618875.56 over the same period. This indicates that an average marketer earned N107,689.78 as gross margin per year suggesting that fresh fish marketing is a profitable venture in the study area. A Gini-coefficient of 0.5292 obtained in this study indicates a high level of concentration in the fresh fish market.

The result of the marketing function showed that the estimated coefficient of multiple determination (R^2) indicates that the postulated regressors i.e. included variables in the model explained 72.6% in the variation of the regressand (i.e. sales revenue) .

References

- Adekanye T.O** (1988) The markets for foodstuff in Western Nigeria in T.O.Adekanye (Eds) Readings in Agricultural marketing. Longman Press Ibadan.
- Afolabi J.A** (2004) An Evaluation of Beef Marketing in Osun State, Nigeria. Journal of Agriculture, Forestry and Fisheries 5(2): 29-32
- Akolisa, O and Okonji, V.A** (2005) Increase fish supply through genetically modified fish stock: Need for caution in Nigeria. Proceeding of the 39th annual conference of the Agricultural society of Nigeria. (Eds) Orheruata, A.M, Mwokoro, S.O., Ajayi M.T, Adekunle, A.T and Asumuba G.N, pp 64-67.
- Amao J.O, I.B Oluwatayo and F.K Osuntope** (2006) : Economics of Fish Demand in Lagos State, Nigeria. Journal of Human Ecology, 19 (1):25-30
- Central Bank of Nigeria** (2004) Annual Report and Statement of Accounts for the year ended 31st December 2004.

Dillon J.L and Hardaker J.B (1993) Farm Management Research for small Farmer Development Rome

Harriss, B (1993) There is method in my Madness or is it vice-verser? Measuring Agricultural performance in Agricultural and Food marketing in Developing Countries. Trowbridge Wittishire, Redwood books Limited

Imoudu P.B and Afolabi J.A. (2002) An assessment of the Performance of Plantain Marketing in Ondo state, Nigeria. Journal of Applied Science, 5(2): 2690-2697.

Kristyn, E and Sergio J (2005) Launch initiative to turn the tide of fisheries depletion. News release No. 55/2006/ESSD. www.worldbank.org/fish

Lamorde, A.G (1997): Research Priorities for Sustainable Women Empowerment and Development.. A paper presented at the National Conference on Research as Backbone for Sustainable Development held at Abuja between 11th and 15th August 1997.

Lawal, W.L. (2002) Economic Analysis of fish Culture in Benue State. A Ph.D thesis, Department of Agricultural Economics, University of Agriculture, Makurdi.

Nworgu, F.C (2002) Economics of Utilization of Cocoa (Theobroma Cacao) pod Hushmeal in Cockerel chicks. Moor J, Agric. Res 3(2): 217-222/

Olomu J.M (1995) Monogastric Animal Nutrition Principles and Practices. Jachem Publisher.

Olayide S.O (1977) Economic Survey of Nigeria. Aromolaran Publishing Company Limited

Shaib, B, Aliyu, A and Bakshi J.S. (1997) Nigeria National Agricultural Research Strategic Plan, 1996-2010. Federal Ministry of Agriculture and Natural Resources Abuja

Vanessa, S and Jonathan K (1992) Economic Analysis of Agricultural Marketing. Overseas Development and Administration publishing company.