

PROFITABILITY AND MARKETING EFFICIENCY OF FISH PROCESSING AMONG SMALL HOLDER FISH PROCESSORS AND MARKETERS IN OJO LOCAL AREA, LAGOS, NIGERIA.

Kaine, A.I.N

Department of Agricultural Economics and Extension, National Open University of Nigeria, Km 4 Kaduna-Zaria Rd, Kaduna, Kaduna, Nigeria.

Email: akaine@noun.edu.ng, kainatonne@gmail.com +2348038822372

ABSTRACT

The study examined the profitability and marketing efficiency of fish processing among small holder fish processors and marketers in Ojo Local Government Area, Lagos State, Nigeria. Specifically, the study examined the socioeconomic characteristics of respondents, marketing channels used and profitability of fish processing and marketing in the study area. Multistage random sampling technique was used to select five (5) communities and sixty (60) respondents used for the study. Data for the study were collected using well-structured questionnaire administered to the respondents. Descriptive statistics, Return on Investment(ROI) and inferential statistics were used to analyse the result of the study. The result showed that twenty one (35%) of the respondents was within the age bracket of forty five to fifty four with a mean age of 43 years. The result also showed that majority of the respondents were married (81.67%), educational level was high as 96.67% had formal education, majority of the respondents were female (86.67%) and house hold size was high (a mean of six persons). The result further showed that respondents were well experienced with a mean processing and marketing of 8 years with an average income of two hundred and fifty two thousand, five hundred and forty (=N=252,540) naira. Profitability analysis showed that fish processing and marketing was a profitable venture. The result also established that respondents were economically efficient in the use of resources. It is recommended that fish processors and marketers should form cooperative society to enjoy economies of scale. Government-private sector participation was recommended. Enlightenment campaign to educate the youth on the need to venture into fish processing and marketing was also recommended.

Keywords: Efficiency, processing, marketing, cost, return, marketing margin.

INTRODUCTION

Fish and fish products are important in the daily diet of rural and urban households. They are significant in improving human health status. Fish contributes to the increased employment, foreign exchange capacity and health among others. Food and Agricultural organization (FAO) (2006), observed that employment generation in the past decades has increased from thirteen million people recorded in 1971 to more than forty-one million in 2004. Faturoti *etal.*, (2010) recorded the contribution of fish to Nigeria Gross Domestic Product (GDP) to be one

billion US dollars (\$1billion) dollars. This accounts for 3.5% of total GDP.

Fish production, processing and marketing is an important source of foreign exchange. FAO (2006) pointed out that fish is an important component in areas of trading and added that thirty percent (30%) of fishery commodity produced in developing countries is exported for foreign exchange. This is important in boosting investment and economic development of the various countries.

Protein is essential for human development. A complete protein is said to have a high amino acids in the right quantity and proportion. Fish provides the much needed essential quality, easily absorbable protein, vitamins and minerals that are essential for human development. Fish protein contains twenty-two (22) essential amino acids and the energy released to the body from the protein can be up to 4kcal per gram (Cerny and Harold (2001). They added that this energy contributes significantly up to 10% to 15% energy required in endurance exercise in a situation where the glycogen stored in the muscle is used up.

Processing and marketing are vital components of post-harvest operations in agricultural production. Kaine (2011) reported that processing is the conversion of agricultural produce (input) to a finished and transformed product (output). He added that it leads to size and weight reduction. Processing offers opportunity for employment generation adds value to products, reduces waste resulting from spoilage, improve acceptability, extend storage life, provide form, time, place as well as possession utility and encourage development of technical and marketing skills in villages. Increased processing of agricultural produce could result to substantial benefits for national economy. The quantity of agricultural produce processed into food products affects marketability and availability of food to consumers (Kaine, 2010).

Marketing involves all activities concerned in movement of produce from area of production to the final consumer. It involves all legal, physical and economic services that are essential to make produce available from point of production (farm) to the consumer (Olukosi and Isitor, 1990) and creating place form, time and possession utilities (Okoh *etal.*, 2008). Marketing ensures that producers and middlemen earn income used for purchase of other goods and services.

Fish market is a place where fish and fish products of commercial importance are sold (Mohini *etal.*, 2004).

The measure of effectiveness of competence to which physical aspects of marketing are performed is referred to marketing performance. Marketing performance include transportation, processing, storage and various activities that give different forms of utilities to the consumers (Elewa, 2012).

Marketing efficiency is the maximization of the ratio of output to input. It is the effectiveness of which marketing agents' uses available resources to attain maximum revenue. It could be economic efficiency, operational or technical efficiency when profit maximization is taken into consideration (Ugwumba, 2011). Unai (2004) observed that factors affecting technical efficiency are due to specific demographic characteristics.

It is not certain that fish processors and marketers in the study area are efficient and maximizing profit. It is against this background that the study was undertaken to determine the profitability and marketing efficiency of fish processors and marketers in the study area. Specifically, the study examined the socio economic characteristics of fish processors and marketers, identified the marketing channels used and determined the cost and returns in fish processing and marketing among small holder fish processors and marketers in the study area.

RESERCH METHODOLOGY

The study was conducted in Ojo Local Government Area, Lagos State, Nigeria. The total population of the study area is six hundred and nine thousand, one hundred and seventy three (609,173) people comprising of three hundred and ten thousand, six hundred and ninety-three (310,693) males and two hundred and ninety-eight thousand, four hundred and eighty (298,480) females (National Population Census, 2006). Ojo town was a sublet of the old Amuwo Odofins which was upgraded to a Local Government in the year 1989. The Local Government Area was carved out of the old Badagry Local Government Council. It is comprised of the upland and riverine areas. Total landmass of the study area is 180sq kilometre out of which thirty percent (30%) is riverine area. Agriculture is the major occupation of the people. Major foods produced include oil palm, coconut, pawpaw, plantain vegetables, maize and yam. Fishing forms the major activity of the people in the riverine part of the Local Government Area.

Multistage random sampling technique was used to select communities and respondents used for the study. First stage involved the selection of communities Five (5) communities were randomly selected and used for the study. The second involved the selection of the respondents. Twelve (12) respondents each were selected given a total of sixty respondents that were used for the study.

Data were analysed using descriptive statistics such as frequency distribution, means and tables. Socio-economic characteristics of fish processors and

marketers as well as marketing channels were determined using descriptive statistics. Net profit margin analysis, return on investment and marketing efficiency model were used to capture the profitability and marketing efficiency.

MODEL SPECIFICATION

Determination of Net Profit Margin and Profitability

To determine the profitability of fish processors, the gross margin was used. Gross Margin (GM) is the difference between total revenue (TR) and Total Variable Cost (TVC). Net revenue (profit) margin is the difference between Gross Margin and depreciation. Gross Margin and net profit is expressed:

$$GM = TR - TVC$$

$$TC = TVC + TFC$$

$$NPM = GM - \text{Depreciation}$$

Where

GM = Gross Margin

TR = Total Revenue (N)

VC = Variable Cost (N)

NPM = Net Profit Margin

Return on investment (ROI)

Return on investment was used as a proxy of processors and marketers. ROI was obtained based on the ratio of net profit of fish processors and marketers divided by the total cost of production and multiplied by 100. It expresses revenue as total investment (Nwaobiala and Kaine 2016). The equation is expressed as

$$\text{Return on Investment (ROI)} = \frac{\text{Net profit (revenue) per annum}}{\text{Total Cost incurred per annum}} \times \frac{100}{1}$$

Marketing Efficiency (ME)

Marketing efficiency (ME) was used in this study to ascertain how efficient processors and marketers were in the use of available scarce resources. It was obtained by dividing the value of output with the value of input and expressed as ratio. A higher efficiency ratio, is an indication of a higher marketing efficiency. Marketing efficiency is expressed as:

$$ME = \frac{\text{Output of processed fish}}{\text{Input used in processing}} \times \frac{100}{1}$$

$$ME = \frac{\text{Value of output}}{\text{Value of input}} \times \frac{100}{1}$$

$$ME = \frac{\text{Value added by marketin}}{\text{Cost of marketing services}} \times \frac{100}{1}$$

RESULTS AND DISCUSION

The socio-economic characteristics of the processors and marketers such as age, marital status, educational attainment, gender and house hold size were determined in this study. The result (Table 1) showed that twenty one (35.00%) of the respondents

was within ages ranging from 45-54 with a mean age of 43 years. This implied that the respondents were relatively young and active. This also implied that processing and marketing activities in the study area were mostly done by active minds that can take rational decisions and withstand any business shock. Kaine and Chukwuma (2017) observed that farmers within the active age are more receptive to technological change and adoption. The mean age of 43 years observed in this study was however not inconsonance with the mean age of 39 years observed by Kaine and Chukwuma (2017) in their study on technical efficiency and profitability of backyard poultry farming in Ika South Local Government Area, Delta State, Nigeria.

The result of the marital status as indicated in Table 1 also showed that forty-nine (81.67%) of the

respondents were married while eight (13.33%) were single. Further investigation revealed that literacy level was high as fifty-eight (96.65%) of the respondents had formal education. Table 1 also revealed that females dominated the business enterprise as fifty-two (86.67%) of the respondents were females.

House hold size analysis of the respondents indicated that twenty-five (41.67%) of the respondents had a household size range of six to ten (6-10) persons with a mean house hold size of six (6) persons. This implied a large house hold size. Large house hold size could have a negative impact on the household income. Mean household size of six (6) is in consonance with the result obtained by Nwaobiala and Kaine (2006).

Table 1: Distribution of Respondents According to Socio-economic Characteristics S(n=60).

Variable	Frequency	Percentage	Mean
Age			
25-34	8	13.33	
35-44	17	28.33	
45-54	21	35.00	
55-64	9	15.00	
Above 65	5	8.33	43years
Marital Status			
Single	8	13.33	
Married	49	81.67	
Divorced/Separated	2	3.33	
Widow/Widower	1	1.67	
Level of Education			
No Formal education	2	3.33	
Primary education	28	46.67	
Secondary education	20	33.33	
Post-Secondary education	10	16.67	
Gender			
Male	8	13.33	
Female	52	86.67	
Household size			
1-5	4	6.67	
6-10	25	41.67	
11-15	19	31.67	
16-20	12	20.00	6 person

Source: Field survey, 2017.

Enterprise statistics of fish processors and marketers

Distribution of respondents according to business enterprises was shown in Table 2. The result revealed that the respondents were well experienced with a mean business enterprise experience of eight (8) years. The processing and marketing experience indicated that thirty-five (58.33%) of the respondents had six (6) to ten (10) years' experience, fourteen (23.33%), had 11-15 years, while seven (11.67%) had sixteen (16) to twenty (20) years experiences respectively. The sources of finance of the respondents, indicated that majority, fifty four (90.00%) of the respondents financed their business

through personal saving, 4 (6.67%) of the respondents obtained loan to finance their business while 2 (3.33%) obtained assistance from friends and relatives. The result also revealed that forty-one (68.33%) of the respondents were engaged in the business on full time basis while nineteen (31.67%) of them were on part time. Further investigations revealed that majority thirty nine (65.00%) of the respondents travelled to other communities to obtain their inputs (fish). The income level of the respondents as indicated in Table 2 showed a mean income level of two hundred and fifty-two thousand, five hundred and forty (₦252,540.00) naira.

Table 2: Enterprises statistics of fish processors and marketers (n=60)

Variable	Frequency	Percentage	Mean	
Processing / marketing experience (years)				
1-5		7	11.67	
6-10		35	58.33	
11-15		14	23.33	
16-20		4	6.67	8years
Source of finance				
Personal savings		54	90.00	
Loan		4	6.67	
Assistance from friends and relative		2	3.33	
Status of fish processors/marketers				
Full time		41.40	68.33	
Part time		19.14	31.67	
Cosmopolitans				
Travelled to farm gate		13	21.67	
Travelled to other communities outside L.G.A		39	65.00	
Travelled to other communities outside L.G.A		4	6.67	
Travelled to other parts of the country		2	3.33	
Income level (Naira)				
Below ₦100,000		4	6.67	
₦101,000-200,000		23	38.33	
₦201,000-300,000		13	21.67	
Above ₦300,000		19	31.67	
				=N=252,540

Source: Field survey, 2017.

Determination of cost and return of fish processing and marketing

Profitability of fish processing in the study area is indicated in Table 4. The results showed the various cost items used in fish processing. The analysis showed that the total cost of processing was ₦129514.8 with variable cost items (₦98328.44) accounting for 76% of the total cost of processing while the total fixed cost (₦31186.4) accounted for 24% of the total cost of production. Further analysis

showed a net profit of ₦96585.13, with an average of 266kg of fish processed by each small holder fish processors. The net profit margin showed a positive sign. This implied that the processors were maximizing profit. A detailed analysis of the return on investment (Table 4) indicated a positive value of 0.75. This showed that for every ₦1.00 invested in fish processing enterprise in the study area, there was a return of ₦0.75. This further implied that fish processing in the study was profitable.

Table 3: Average Depreciated Values of fixed inputs used in fish processing

Inputs	No	Unit cost	Total cost	Life span (yrs)	Depreciated Value
Processing structure	3	12000	36000	5	7200
Tables	3	4000	12000	5	2400
Basin	5	4000	128000	5	25600
Cutlass/knives	32	1200	38400	3	12800
Tripod stand/wire gauze/wire mesh	38	800	30400	5	6080
TOTAL					54080

Source: Field Survey 2017

Table 4: Profitability of fish processing

Variables	Amount (₦)
A. Variable cost (VC)	
Fish cost (100kg)	6500.00
Labour	117660.0
Fuel for processing	5850.89
Water	5880.95
Transportation	8106.85
Miscellaneous	1729.75
Total variable cost (TVC)	98328.44
B. Fixed cost (FC)	
Processing structure	12350.20
Tables	4870.74
Basins	4350.36
Cutlass/knives	3150.50
Tripod stand/wire gauze/wire mesh	5127.85
Interest on loan	1336.78
Total fixed cost (TFC)	31186.43
C. Total cost (Depreciated)	54080.00
Total cost (TC): (TVC + TFC)	129514.87
D. Total output	
Quality of processed fish (kg):266 Sales (266 x 850)	226100
Profit	226100.00
Sale – total cost	- <u>129514.87</u>
	96585.13
Profit Margin (NPM): Gross Margin (GM) – Depreciation	96585.13
	- <u>54080.00</u>
	42505.13
Return on investment (ROI)	0.75

Source: Field Survey, 2017

Marketing Efficiency of fish processors and marketers

The Marketing Efficiency of fish processors and marketers in this study were determined to ascertain how efficient fish processors and marketers were in the use of resources. This was determined by using input-output relationship as calculated below.

$$ME = \frac{\text{Output of processed fish}}{\text{Input used in processing}}$$

$$ME = \frac{96585.13}{129514.87} \times \frac{100}{1}$$

$$= 75\%$$

The marketing efficiency analysis revealed that fish processors and marketers were 25% inefficient in the use of resources. This implied that resources were well utilized and maximized, indicating that the processors and marketers were 75% efficient in use of resources.

Marketing channels used by small fish holder processors and marketers

Figure 1 showed the marketing channels used in the study area. The result revealed that processed fish were sold to wholesalers who were involved in bulk purchasing, transporting and packaging. The result also revealed that consumers obtained their processed fish from retailers. It also showed that fish processors and marketers sold directly to consumers.

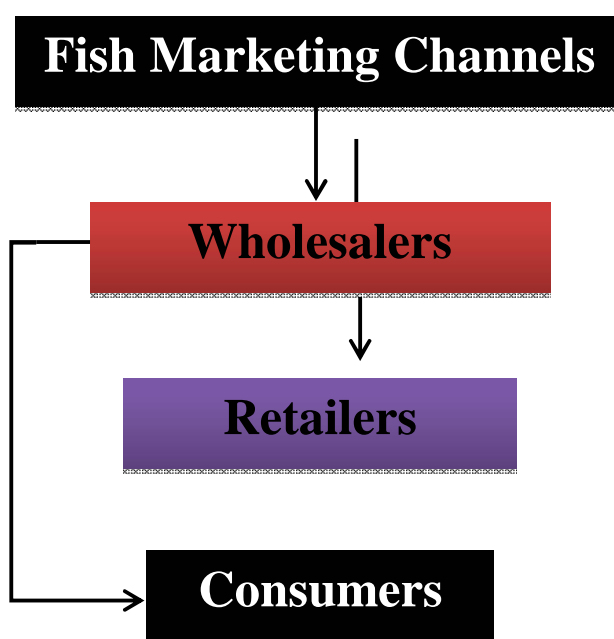


Figure 1: Identified marketing channels in the study area

Source: Field Survey, 2017

CONCLUSION

The study determined the profitability and marketing efficiency of fish processing among small holder fish processors and marketers in Ojo Local Government Area, Lagos State, Nigeria. The result established that fish processors sold processed fish to wholesalers who buy in bulks, retailers and directly to consumers. It also established that processors and marketers in the study area were efficient in the use of resources.

RECOMMENDATIONS

Since the study established that fish processing and marketing was profitable and that processors in the study area were low income earners who majorly sourced their finance from personal savings, it is recommended that processors and marketers should form cooperative society. If it this done, the benefits of economies of scale will be achieved. The study revealed too that processors and marketers were 25% economically inefficient in the use of resources. The recommendation here is that fish processors and marketers in the study area should thrive to maximize the use of resources and increase their efficiency to the level above that (75%) obtained in this study. It is also recommended that government – private sector participation should be encouraged. Since the result also established that fish processing and marketing in the study area is a profitable enterprise, it is recommended that government intervention in carrying out

enlightenment campaign to educate the youth on the need to go into fish processing and marketing. If this is done, it will have multiplier effect(s) on the economy.

REFERENCES

- Eleiwe, E. (2012). Snail Marketing as a means to combating Poverty and Hunger: The Case of Edible Land Snail (*Achachatina Marginats*) in Des, Nigeria, (50):3512-35k.
- Faturoti, Y. T., Dey, M. M. and NAvarez, S. M. (2010). Demand for Fish in the Philoppines. A disaggregated Analysis. *Aquaculture Economics and Management*. 9(1-2):141 – 168.
- Food and Agricultural Organisation (FAO) (2006). Fisheries Technical Paper no 480/1. Promotion of Sustainable Commercial Agriculture in Sub-Saharan African. Vol. 1. Policy Framework.
- Olukosi, J.O and Isitor (1990). Introduction to Agricultural Marketing and Prices, Principles and Application: Living Book Series. G.U Publications, Abuja. Pp 37-47.
- Kaine, A.I.N (2011). Investigation of Factors Affecting Technical Inefficiency of Akpu Processing in Delta State, Nigeria. *Journal of Human Ecology. International*,

- Interdisciplinary *Journal of Man-Environmental Relationship*. 33(2):133-137
- Kaine, A.I.N (2010). Application of Stochastic Frontier Production Function in Estimating the Technical Efficiency of Gari Processing in Delta State, Nigeria. *International Journal of Social Sciences* 2(4): 7-13.
- Kaine, A.I.N. and Chukwuma, E.E (2017). Technical Efficiency and Profitability of Backyard Poultry Farming in Ika South Local Government Area, Delta State, Nigeria. *Journal of Agriculture and Food Sciences*. 15(1): 28-38
- Kudi, T. M., Baka, F. P. and Atala, T. K. (2008). Economics of fish Production in Kaduna State Nigeria *Journal of Agriculture and Biological Sciences* (3): 30 – 38.
- Mohini, G. and Nikarik, J. (2013). Study on Wholesale Fish in Sure Gujarat in India, *Research Paper* (2): 40 – 45.
- National Population Commission(2006). National population commission provisional census figure Abuja NPC.
- Nnabuife, E. C., Ugwumba, C. O. A. and Uzuegbunem, C. O. (2012). Smoked Dried Fish Marketing and Consumption in Akwa South Local Governemnt Area, Anambra State, Nigeria. In Chiegboke, A.B.C., Okudo, A. I., Umezina, E. C. and Umeanolue, I. L. (eds). *A Bountiful Harvest. Festschrift in Honour of Very Rev. MSGR Prof. Nzomiwu*. Pp 444 – 451.
- Nwaobiala, C.U and Kaine, A.I.N., (2016). Determinants of Cassava Performance among Graduates of National Directorate of Employment in Imo State, Nigeria. *Journal of Farm Management* 15(1):92-98
- Okoh, R. N., Ugwumba, C. O. A. and Elue H. O. (2008). Gender Roles in Food Stuff Marketing in Delta North Agricultural Zone. The Case of Rice. Inleme, J. C., Obinne, C. Pand Lawal Celel Prospect and Challenges of Adding Value to Agricultural Production. Proceedings of the 22nd Annual National Conference of Farm Management Association of Nigeria (FAMAN), Markudi, Nigeria. Pp 114 – 123.
- Ugwumba, C. O. A. (2011). Technical Efficiency and Profitability of Catfish Production in Anambra State, Nigeria. A Ph.D Dissertation, Faculty of Agriculture, Delta State University, Asaba Campus, Asaba, Delta State, Nigeria.
- Unai, P. (2001). Soil Degradation and Technical Efficiency in Shifting Cultivation. The Case of Yucatan (Mexico). Poverty and Land Degradation in Traditional Agro-ecosystem. Environment Department, University of New York. Centre for Food, Agriculture and Resource Economics, University of Manchester.