Economic Analysis of Dried (CAT) Fish Marketing in Oyo State Nigeria

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ABSTRACT

This study compares the profitability of dried fish marketing in Surulere and Ogbomoso South Local Government Areas of Oyo State. It specifically described the socio-economic characteristics of the respondents, identified activities involved in catfish marketing and estimate the cost and return of catfish marketing in the study area. It identifies the factors affecting the quality and quantity of catfish marketed and problem encountered by catfish marketers in the study area. Primary data collected were analyzed using both descriptive and inferential statistical tools from one hundred and twenty (120) respondents through personal interview schedule.
The results from the finding revealed that majority of the respondents in study areas (Surulere and Ogbomoso south) were female which accounted for about 65.6% and 76.3% respectively. The age distribution of the dried fish marketers was within the range of 31-40 years which has the highest number of dried fish marketers in the study areas. In the two LGAs, 60.7% and 62.7% of the respondents were married respectively. More than average (54.1% and 61.0%) respondents had secondary education in Surulere and Ogbomoso South respectively. Their primary occupation is farming with a percentage of 86.9% and 89.8% respectively.

In conclusion, dried fish marketing was found to be profitable with a gross margin of ₦28293.59 and ₦41666.82 respectively. The study confirmed a relative difference of benefit - cost ratio of 1.30 in Surulere and 1.35 in Ogbomoso-South local government area. The major constraints faced by dried fish marketers was poor access to market. Price stabilization and access to credit should be given priorities so as to minimize the risk associated with dried fish marketing in the study area.

Key words: *Catfish, Surulere, Ogbomoso South, Profitability, Inferential analysis*

INTRODUCTION

Background of the study

Fishery in agriculture occupies a very significant position in the primary sector providing employment for over a million people and contributing about 50% of animal protein intake of the Nigerian population, particularly the resource poor (Agbon et al; 2012). Fish, as a food item which has been recognized to contribute greatly to the dietary needs of Nigerians (Etuk, 2010). Globally, fish accounts for about 17 per cent of animal protein intake and 6.7 per cent of all protein consumed

by humans (FAO, 2016). In Nigeria, fishing is an income generating activity and its marketing by women, contributes substantially to raising the living standard of families.
The total fish demand for Nigeria, based on the 2014 population estimate of 180 million persons, was 3.32 million tonnes and the domestic fish production from aquaculture, artisanal fishing and industrial fisheries for 2014 was 1.123 million tonnes (Fishery Committee for the West Central Gulf of Guinea, 2016).
The dried fish product is easily transportable, marketable and storable. A significant portion of the dried fish is exported that earns a good amount of foreign currency. Drying of fish by traditional sun-drying method takes 3-7 days to dry completely. It has been reported that both pre-harvest and post-harvest activities in fisheries can generate significant profits, prove resilient to shocks and crises and make meaningful contributions to poverty alleviations and food security (Davies, 1996). Demand for fish globally and particularly in Nigeria has been on the increase with supplies not meeting up the demand (FAO, 2006). With an annual fish demand in Nigeria of about 2.66 million tonnes, and a paltry domestic production of about 780,000 tonnes, the demand supply gap stands at staggering 1.8 million tonnes (Oyinbo and Rekwot, 2013). Oparinde and Ojo, (2014) noted that fish has high nutritional value with complete array of amino acids, vitamins and minerals for human healthy growth. Fishes are relatively cheaper sources of animal protein compared to beef, pork and other animals. Amiengheme (2005) asserted that nutrient from fish is superior to all terrestrial meats such as beef, mutton, pork and chicken and is a rich source of high quality animal protein that contains highly digestible energy. Fishes are also good sources of lysine, leucine, value and arginine as well as thiamine, polyunsaturated fatty acid and fat soluble vitamins A, D, E, K and water soluble vitamins such as B complex, minerals like calcium phosphorus iron, iodine and selenium (FAO, 2006). Ovie and Raji (2006) also stated that fishes contain Omega III fatty acid which is good in treatment of cardiovascular diseases, such as hypertension and arteriosclerosis and as such is preferred as better source of protein for aged people.
Marketing of fish is not usually on the basis of fishermen consumer (Lawal and Idega, 2004), therefore prices of fish change as it passes through middlemen such that by the time it reaches consumers it becomes expensive.

Statement of problem

Fish marketing in Nigeria is hinged on some basic questions: what do consumers want, which species and at what price, size, form, quality, quantity and grading? Others are: What services do they want? When to sell? Where do people buy? So on. According to (Pikitch *et al*; 2004), it is important to know that the lesser familiar a species is, the greater the risk that it will be rejected or take a long way to build up demand for it, people's taste are formed slowly and strongly influenced by traditional eating habits. As prices rise, less is bought and as prices fall, more is bought and poor people are more likely to look for cheaper substitutes than rich people. Thus, in terms of the price dynamics, marketing costs and the marketing functions inherent in the distribution of fish and in relation to how efficient the marketing system is. Spatial price behavior is an important indicator of overall market performance in terms of marketing efficiency (Flood, 2006). Thus, the present development encountered by the fish traders according to (Godwin, 1991) include: lack of improved technology for the management of fish production, the current method of harvesting are inefficient, wasteful and exploitative. Problem of establishing adequate fishing, production and marketing policies, devoid of sentiments, tribalism and ethnicity the major constraints facing fish

marketing in Nigeria are pronounced in the various pre-harvesting methods of fishery products in Nigeria.

There are lots of factors that affect the marketing of dried fish in Nigeria such as overpopulation, distribution of resources, lack of education and environmental degradation. Also, a lot of factors affect the production and marketing of dried fish. Dried fish easily absorbs moisture during handling and storage especially when the relative humidity is high. This occurs when the dried fish absorbs moisture from its immediate environment, thereby resulting in increased water activity which causes mould growth and spoilage. There is the incidence of insect and rodent attacks on dried fish during handling which causes further contamination by microorganism. This necessitates the application of insecticides to preserve dried fish during marketing. The economic impact of contaminated foods is devastating. Developing countries with limited resources lose foreign exchange as a result of rejected food exports to developed countries (FAO/WHO 2012).

In poor rural communities, aquaculture can be an integral component of development, contributing to sustainable livelihoods and enhancing social well-being. Aquaculture has, therefore, contributed significantly to food security, income generation, trades and improved living standards in many developing countries. On the other hand, poverty is a vicious cycle that keeps the poor in a state of destitution and utter disillusionment. Poverty is the main cause of hunger and malnutrition, which are aggravated by rapid population growth, policy inadequacies and inconsistencies or weak administrative capabilities, unhealthy food storage and processing techniques. Profitability is the positive difference between the total revenue and total cost. Profitability of a business can be analyzed using by either of enterprise budgets and income statements. But income statements (profit and loss statements) are more suitable. A profit and loss statement has a bottom-line that indicates net farm income. The items use in profit and loss statement to analyze profitability includes business revenues, total variable costs or cash expenses and non-cash expenses such as depreciation for a production cycle. A positive value of net farm income indicates a profit while a negative value of net farm income indicates that fish production cycle is at lost (Engle, 2012).

There are many challenges or risks that can limit the potential profitability of dried fish marketers such as the spoilage and storage facilities. Temperature, physical damage and intrinsic factors can cause the reduction in the value of dried fish marketing and this affects the pricing of the dried fish. Low income from the fish marketing can contribute to the poverty status of the dried fish marketers. A study shows that the fresh fish marketers made a higher net returns relative to dried fish marketers. Cost of fish, cost of packaging materials, depreciation cost of marketing equipment, age of the marketers, and their education level were the statistically significant variables that influence the revenue of both marketing categories.

Hence, this study seeks to assess the status of the dried fish marketers with the intent of providing solution for the following research questions:

- What is the socio economic characteristics of the respondents in the study area?
- What are the activities involved in dried fish marketing?
- What is the cost and return of dried fish marketing in the study area?
- What are the constraints affecting the marketing of dried fish?
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Objectives of the study

The broad objective of the study is to determine the profitability of the dried fish marketers in the study area.

The specific objectives are to:

- describe the socio economic characteristics of the respondents in the study area.
- identify the activities involved in driedfish marketing.
- analyze the cost and return of dried fish in the study area.
- identify the constraints of dried fish marketing in the study area.

METHODOLOGY

Study area

Two different study areas was used for this study

- Surulere local government
- Ogbomoso south local government

Surulere is a Local Government Area in Oyo State, Nigeria. Its headquarters is in the town of Iresa-Adu. It has an area of 23 km2 and a population of 142,070 at the 2006 census. Surulere LGA was created in 11th may, 1989 when the former ogbomoso local government was broken into three autonomous local government area namely, Ogbomoso, Surulere and Ogo oluwa. Some of the towns in the local government are Iresa-Adu, Igbon and Iresa-Apa. Each of these towns have their own traditional leader with a given royal titles. The main economic activities of the residents of the towns that make up Surulere local government is farming. And the main produce from there farming activity are: Yam, Cocoa, Palm oil, Maize, Tobacco.

Ogbomoso South local government area is located in Arowomole with the areas council comprising of towns and villages of idi-igba, Gaa-lagelu, Kajola, Kowe, Oke-ola, Adeoye, Onidewure, Molete, Arowomole, Sanuaje, Obandi, Ijeru, Ayegun, Oke Alapata etc. Ogbomso south local government area has its area council headquarters located in Arowomole, Oyo state. Ogbomoso South is a local government withI 10 political wards and total population of 190,681 inhabited by members of the Yoruba ethic division. The Yoruba language is commonly spoken in the LGA while the religions of Christianity and Islam are widely practiced in the area. The study area lies appropriately on latitude 8010' N of the equator and longitude 4010' E of the Greenwich Meridian. It is situated in the derived savannah region and Yoruba ethnic group predominates the area. It has an area of 68 km^2 and has an average temperature of 28 degrees centigrade. The total precipitation in Ogbomoso south LGA is at estimated 1830mm of rainfall per annum while the average wind speed in the LGA is put at 9km/h.

Population of the study

A total of one hundred and twenty (120) respondents was used for this study.

Sampling technique and size

A multi stage sampling technique was used in selecting the respondents in the study area. The first stage involve the purposive selection of two local government area which is Surulere and Ogbomoso south LGA due to the dominance of dried fish marketers in the study area. The second stage involve the random selection of 3 wards in the LGA. The third stage involve the random selection of 2 villages from the 3 wards to make 6 villages selected. And the forth and the last stage was proportionate selection of 120 dried fish seller from the villages which constitute the sample size.

Method of data collection

Primary data collection procedure was use for this study. The primary data was collected using the oral interview and questionnaire technique. The oral interviews technique was adopted because most of the dried fish marketers have low level of education and some did not attend school.

Method of data analysis

Descriptive statistics such as the mean, tabular presentation, frequency and percentage was used to analyze the socio economic characteristics of the respondent and also to know the constraints of dried fish marketers as well as identify the activities involved in dried fish marketing in the study area.

Budgetary analysis was used in analysis the cost and returns of dried fish marketers in the study area.

TC=TFC+TVC

Where;

TFC= Total fixed cost

TVC= Total variable cost

Regression analysis was used to determine the factors affecting the quality and quantity of dried fish marketed in the study area.
The implicit function for the regression analysis was presented in the equation:

$Y = f [X_1, X_2, X_3, X_4, X_5, \mu_i]$

$\mathbf{Y_i = bo + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + \mu_i}$

Y= Income from dried fish marketing
X_1 = Total kilogram of dried fish sold
X_2 = Price per kilogram of dried fish
X_3 = Marketing experience
X_4 = Transportation cost of dried fish
X_5 = Age of respondents in years
μ_i = Error term

PRESENTATION AND ANALYSIS OF DATA COLLECTED

Socio Economic Characteristics of the respondent

This section describes the socio economic characteristics of the dried fish marketers in Surulere and Ogbomoso South Local Government areas of Oyo State.

Socio-demographic Characteristics

The result in Table 1 below reveals that most of the respondents engaged in the marketing of dried fish were females which accounted for about 66.7% and 73.3% in both Surulere and Ogbomoso South LGA respectively. This implies that dried fish marketers in the study area were dominated by female in the two local government areas. Gender describes the position of an individual in terms of masculine and feminine. The sex of an individual influences, to a large extent by the type of occupation the individual performs (Ashley-Dejo *et al;* 2017).

Age range of most of the respondents stood between 31-40 years in both Surulere and Ogbomoso South LGA which happened to be the study areas. This implies that most of the marketers are in there productive ages in the study areas. It shows that most of the respondents were married which accounted for more than 60.0% in the study areas. This shows that high percentage of the dried

fish marketers were married and majority of the respondents shoulders family responsibilities. In the vain, larger proportion of the respondents were Christian in the study areas.

Also, education connotes the formal training an individual obtained so as to enhance reasoning. This is represented by the number of years a person spent in formal school. The table below shows that in both Surulere LGA and Ogbomoso South LGA an appreciable proportion of dried fish marketers had minimum of secondary education. Based on the results of the findings, the percentage of the marketers with secondary education is 5% higher in Ogbomoso South LGA when compared to Surulere LGA. This contribute slightly positively to their marketing enterprise. The results equally reveals that majority of the respondents spent above 10years in school. This implies that majority of the respondents in Surulere and Ogbomoso South LGA also had above 10years educational level. 83.3% of respondents in Surulere LGA had dried fish as their primary occupation whereas Ogbomoso South LGA 90.0% had dried fish marketing as their primary occupation.

The results of the study reveals that 6.7% of the respondents in Surulere LGA had farming as their secondary occupation, 18.3% had trading as their occupation, 60.0% were civil servants while 15.0% were artisans aside from dried fish marketing. However, in Ogbomoso South LGA 3.3% had farming as their secondary occupation, 16.7% had trading as their occupation, 68.3% were civil servants, 3.3%% were artisans while 8.3% had other secondary occupations aside from dried fish marketing. Majority of the respondents in Surulere had less than 10 years of marketing experience. Meanwhile, in Ogbomoso South LGA, majority of the respondents had less or equal to 5 years of marketing experience. Most of the respondents had a household size of less or equal to 5 persons in both Surulere and Ogbomoso South LGA.

Table 1: Distribution of Socio-demographic Characteristics

Variables	**Surulere LGA**	**Ogbomoso South LGA**
	Freq. (%)	**Freq. (%)**
Sex		
Male	20 (33.3)	14(26.7)
Female	40(66.7)	44(73.3)
TOTAL	**60(100.0)**	**60(100.0)**
Age (years)		
≤ 30	14(23.3)	33(55.0)
31 – 40	34(56.7)	21(35.0)
41 – 50	8(13.3)	4(6.7)
> 50	4(6.7)	2(3.3)
TOTAL	**60(100.0)**	**60(100.0)**
Marital Status		
Single	18(30.0)	22(36.7)
Divorced	1(1.7)	0(0.0)
Widow	2(3.3)	0(0.0)
Separated	2(3.3)	0(0.0)
Married	37(61.7)	38(63.3)
TOTAL	**60(100.0)**	**60(100.0)**
Religion		

Christianity	40(66.7)	41(68.3)
Islam	20(33.3)	18(30.0)
Traditional	0(0.0)	1(1.7)
TOTAL	**60(100.0)**	**60(100.0)**
Educational Level		
Informal	4(6.7)	7(11.6)
Primary	11(18.3)	12(30.0)
Secondary	33(55.0)	36(60.0)
Tertiary	10(16.7)	1(1.7)
Adult education	2(3.3)	4(6.7)
TOTAL	**60(100.0)**	**60(100.0)**
Year Spent in School (years)		
≤ 10	26(43.3)	21(35.0)
> 10	34(56.7)	39(65.0)
TOTAL	**60(100.0)**	**60(100.0)**
Primary Occupation		
Dried fish	53(83.3)	54(90.0)
Others	7(11.7)	6(10.0)
TOTAL	**60(100.0)**	**60(100.0)**
Secondary Occupation		
Farming	4(6.7)	2(3.3)
Trading	11(18.3)	10(16.7)
Civil servant	36(60.0)	41(68.3)
Artisans	9(15.0)	2(3.3)
Others	0(0.0)	5(8.3)
TOTAL	**60(100.0)**	**60(100.0)**
Marketing Experience (years)		
< 10	55 (91.7)	56 (93.3)
11 – 20	5(8.3)	4(6.7)
TOTAL	**60(100.0)**	**60(100.0)**
Household Size		
< 5	54(90.0)	37(61.7)
6 – 10	6(10.0)	23(38.3)
TOTAL	**60(100.0)**	**60(100.0)**

Source: Field Survey, 2021

Activities involved in Dried Fish Marketing

Table 2 revealed that 11.7% of the respondents in Surulere LGA sells dried Kote (mackerel) fish, 14.8% sells dried shawa (herring), 46.7% sells dried fish, 6.6% sells Titus fish while 20.0% of the respondents sells panla (Blue Whitings). This implies that a higher percentage of the respondents sells dried fish. In Ogbomoso South LGA, 3.3% of the respondents in Surulere LGA sells dried Kote (mackerel) fish, 11.7% sells dried shawa (herring), 60.0% sells dried fish, and 18.3% sells Titus fish while 6.7% of the respondents sells Panla (Blue Whitings). This also implies that a higher percentage of the respondents in Ogbomoso South LGA sell dried fish.

A higher percentage (66.7) of the customers in Ogbomoso South LGA like dried fish while lower percentage (3.3%) likes dried titus fish. Others were Panla (13.3) and Kote (11.7%). In Surulere LGA, 63.3% likes dried fish, 20.0% likes Panla. 3.3% likes Kote, 6.7% likes Titus while 1.7% likes dried shawa fish. The type of labour employed by the marketers in study areas shows that in Surulere LGA, 25.0% of the respondents employed hired labour in dried fish marketing, 58.3% of the respondents employed family labour while 16.7% of the respondents employed both hired and family labour. Meanwhile, in Ogbomoso South LGA, 13.3% of the respondents employed hired labour in dried fish marketing, 75.0% of the respondents employed family labour while 11.7% of the respondents employed both hired and family labour. This implies that majority of the dried fish marketers employed the service of family labour in the study areas. Majority of respondents in the Surulere LGA and Ogbomoso South LGA source their money for the marketing business via their personal savings which accounted for 41.7% and 65.0% respectively in the study areas., 30.0% started with group contributions, 6.7% started with bank loan, 16.7% started with cooperative loan while 5.0% had other sources of capital. In Ogbomoso South LGA, 65.0% of the respondents in Surulere LGA started the marketing business with their personal savings, 23.3% started with group contributions, 8.3% started with bank loan while 3.3% started with cooperative loan.

Table 2: Distribution of Activities involved in Dried Fish Marketing

Variables	**Surulere LGA**	**Ogbomoso South LGA**
	Freq. (%)	**Freq. (%)**
Type of dried fish sold		
Kote	7(11.6)	2(3.3)
Shawa	9(15.0)	7(11.7)
Dried Fish	28(46.7)	36(60.0)
Titus	4(6.7)	11(18.3)
Panla	12(20.0)	4(6.7)
TOTAL	**60(100.0)**	**60(100.0)**
Type of dried fish list most		
Kote	2(3.3)	7(11.7)
Shawa	1(1.7)	3(5.0)
Dried Fish	38(63.3)	40(66.7)
Titus	4(6.7)	2(3.3)
Panla	12(20.0)	8(13.3)
TOTAL	**60(100.0)**	**60(100.0)**
Sources of Dried Fish		
Hired Labour	15(25.0)	8(13.3)
Family Labour	35(58.3)	45(75.0)
Both	10(16.7)	7(11.7)
TOTAL	**60(100.0)**	**60(100.0)**
Sources of Capital		
Personal Savings	25(41,7)	39(65.0)
Group Contribution	18(30.0)	14(23.3)
Banks	4(6.7)	5(8.3)
Cooperatives	10(16.7)	2(3.3)

Others	3(5.0)	0(0.0)
TOTAL	**60(100.0)**	**60(100.0)**

Source: Field Survey, 2021

Estimation of cost and returns of dried fish marketing

The result from the table 3 below reveals that the total variable cost incurred by the respondents on dried fish marketing in Surulere LGA was ₦93935.92 while in Ogbomoso-south LGA was ₦119214.5. The total revenue of dried fish marketers in Surulere LGA is ₦122230 and in Ogbomoso south LGA is ₦160881.4. The driedfish marketing was found to be profitable both in Surulere and Ogbomoso-south LGA with a gross margin of ₦28293.59 and ₦41666.82 respectively with a benefit cost ratio of 1.30 in Surulere LGA and 1.35 in Ogbomoso-south LGA

Table 3: Cost and Returns [Gross Margin]

Variables	**Surulere LGA**	**Ogbomoso South LGA**
	Mean (₦)	**Mean (₦)**
Total Variable Cost	93, 935.92	119, 214.50
Total Revenue	122, 230.00	160, 881.40
Gross Margin	28, 293.59	41, 666.82
Benefit Cost Ratio	**1.30**	**1.35**

Source: *Computation by Author's*

Factors affecting quality and quantity of dried fish marketing

The result of the multiple regression analysis is presented as follows, from the results, an adjusted R-squared of 0.962 in Surulere LGA and 0.880 in Ogbomoso south LGA revealed that 96.2% of the explained variation in dried fish marketing in Surulere LGA was influenced by all the independent variables specified in the model WHILE 88% of the explained variation in dried fish marketing in dried fish marketing was influenced by the independent variables specified in the model.

The variables that have significant relationship with the profit of dried fish marketing in Surulere LGA include; selling cost of dried fish per kilogram, kilogram of dried fish sold per day and marketing experience which are all significant at 5% significant level. Therefore, the selling cost of dried fish per kg, kilogram of dried fish sold per day, marketing experience have a direct relationship with the profit generated by dried fish marketers in the Surulere LGA. By implication, While in Ogbomoso south LGA, The variables that have significant relationship with the profit of dried fish marketing include; selling cost of dried fish per kilogram and kilogram of driedfish sold per day which are all significant at 5% significant level. Therefore, the selling cost of dried fish per kg, kilogram of dried fish sold per day have a direct relationship with the profit generated by dried fish marketers in the Ogbomoso south LGA.

Table 4: Factors affecting quality and quantity of dried fish marketing

Variables	Surulere LGA	Ogbomoso South LGA
	Coefficient(Standard Error)	**Coefficient(Standard Error)**
Constant	- 57459.71(12545.48)	-2458025.96(61508.72)
Age	-56.69(205.44)	392.72(761.00)
Marketing experience	-2280.29(796.05)	-904.61(2357.93)
Selling Cost/kg	1346.16(38.23)***	1036.32(77.49)***
Kg of dried fish sold/day	70.32(11.46)***	283.16(70.26)***
Transportation cost	-5.53(3.89)	6.80(12.68)
R – square	0.982	0.890
Adjusted R – squared	**0.965**	**0.880**

Source: *Computation by Author's*

Conclusion and Recommendations

The dried fish marketing was found to be profitable both in Surulere and Ogbomoso-south LGA with a gross margin of ₦28293.59 and ₦41666.82 respectively with a benefit cost ratio of 1.30 in Surulere LGA and 1.35 in Ogbomoso-south LGA. The major constraints faced by dried fish marketers is poor access to market.

Based on these findings, it is recommended that:

- Price stabilization programs should be adopted for the dried fish marketers so as to minimize the risk associated with dried fish marketing.
- Providing equal opportunity to access loan and credit because it can arouse dried fish marketing

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