

# Socioeconomic determinants of profitability of fresh fish marketing in Ogun State, Nigeria

Socioeconomic determinants

871

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## Abstract

**Purpose** – The purpose of this paper is to examine the socioeconomic determinants of profitability of fresh fish marketing in Ogun State, Nigeria.

**Design/methodology/approach** – The study was a cross-sectional survey of 120 fresh fish marketers selected randomly from four major fish markets in Ado-Odo Local Government area of Ogun State, Nigeria. Data were collected using structured questionnaire which was designed to solicit information on the marketers' socioeconomic and marketing characteristics, operating costs and returns, and problems associated with fish marketing in the study area. A combination of descriptive statistics, marketing margin, budgetary and ordinary least square regression analyses were employed to analyze the study data.

**Findings** – The study showed that female (85.8 percent) dominated fresh fish marketing. The percent marketing margin of fresh fish was 34.55 percent. The percent marketing investment of ₦20,906.03, ₦20,453 per month and 1.43 were realized, respectively. The result of the regression analysis revealed that profit from fresh fish was significantly determined by education, proportion of household members involved in fresh fish marketing, marketers experience, capital, number of sales outlet and purchase price.

**Research limitations/implications** – The findings was based on information supplied by the fresh fish marketers in the study area based on the authors memory recall since most of the respondents do not have diary where records of activities were kept before the survey.

**Practical implications** – This study contributes to the existing literature in fish marketing and will provide empirical information to policy makers in the formulation of appropriate policies. It will also serve as a guide to practicing and prospective fresh fish marketers and to researchers who may investigate further into the subject matter.

**Social implications** – The social implications from the findings on the return on investment of 1.43 implies that for every one naira invested by fresh fish marketers, a return of ₦1.43 and a profit of ₦0.43 were obtained. The study concludes that fresh fish marketing is an economically rewarding and profitable venture in the study area. It also recommends the need to provide credit facilities to finance storage facilities of this group of marketers.

**Originality/value** – The study is original in nature and revealed the economic status of fresh fish marketing in Ogun State, Nigeria.

**Keywords** Nigeria, Marketing, Profit, Fresh fish

**Paper type** Research paper

## Introduction

Fish is defined as an aquatic animal caught by man since the early times for food value (Spore, 1986). Fresh fish is the most important fish product for direct human consumption (Delgado *et al.*, 2003; FAO, 1995). The maximum potential fish production from current marine fisheries is estimated to be around 80 Mt per year (FAO, 2010), two-thirds of global fisheries production consumed directly by humans and a third is processed as feed for aquaculture and livestock industries (Smith *et al.*, 2011). Fish was



long termed the “doorman’s protein” as it is often the most popular diet in the world (Falodun, 2011). Fish is one of the most important sources of animal protein in developing countries such as Nigeria (Teutscher *et al.*, 1990). According to Eyo (1992) and Olatunde (1998) fish constitutes 40 percent of the animal protein intake in Nigeria and the figure had risen to 60 percent (FAO, 2007). Fish is the cheapest source of animal protein (Samson, 1997; Amao *et al.*, 2006) compared to other animal protein sources such as beef, pork and chicken and is often referred to as “rich food for poor people.” Fish provides essential nourishment, especially quality proteins and fats (macronutrients), vitamins and minerals (micronutrients), providing an important complement to the predominantly carbohydrate-based diet of many poor people in developing countries. It also serves as a source of income for those involved in fisheries, aquaculture and fish trade which can be used to purchase other additional food items. Fish and fish products contributed about 4.47 percent to the agricultural share of the nation’s gross domestic product (GDP) in 2003 (Ojo and Fagbenro, 2004) and an average of 6 percent to Nigeria’s GDP in 2006 (Kainga and Adeyemo, 2012).

The demand for fish globally and particularly in Nigeria has been on the increase with supply not meeting up with demand (FAO, 2004). Tall (2004) observed that Nigeria’s fish production volume is 0.5 million tonnes as against the annual demand of 1.3 million tonnes. Inter Academic Council (Inter Academy Council, 2004) also posited that future projections indicate a wider supply demand gap. Federal Department of Fisheries (1995/2007) estimated fish demand based on a population of 140 million in 2006 at 2.66 million tonnes while the domestic production was 620,000 tonnes. This leaves a deficit of 1.3 million tonnes which was augmented by fish importation of about 740,000 tonnes valued at US\$54.4 million. This has a resultant negative effect on the economy of Nigeria through a decline in the foreign reserves. Marketing is a method of bringing the forces of demand and supply together regardless of the location of the market (Adekanye, 1988). An efficient marketing system is one that ensures the supply of goods all year round irrespective of its seasonality with little variation in prices, which can be attributed to high cost of marketing functions such as storage. This is a situation that makes both the producers and consumers better off (Adegeye and Dittoh, 1985). Fish marketing may be defined as the performance of activities involved in the flow of fish and fish products from the point of initial production to the final consumers. The relevance of fish marketing is to ensure the flow of fish and fish products from the fish farmers to the consumers in the form, time and place that will be convenient.

Malnutrition is one of the most devastating problems facing the majority of the world’s poor and needy; it continues to dominate the health of the world’s poorest nations (WHO, 2000). Currently, about 30 percent of humanity, including infants, children, adolescents, adults and elderly within the developing world including Nigeria, are suffering from one or more of the multiple forms of malnutrition. Malnutrition impedes health, work-efficiency, productivity and general economic progress of the populace. Adewuyi *et al.* (2010) posited that the average protein intake of 19.38 g/output/day in Nigeria is quite low and far below FAO requirement of 65 g/output/day needed for the development of the body. This could further worsen the problem of malnutrition faced by millions of the rural dwellers. It has been recognized by many people that fish as a veritable source of animal protein (which is usually of higher quality than plant protein) (Adeyemi *et al.*, 2015) and if readily available and affordable can alleviate the problem of malnutrition (Anandan *et al.*, 2014). Thus, the demand-supply gap problem coupled with that of malnutrition makes it imperative to conduct a study on the marketing of fresh fish to ensure that this source of protein is continuously

made available to the poor and vulnerable households and groups. Analysis of fresh fish marketing is important considering the fact that fish and fish products contributed 6 percent to the GDP of Nigeria in 2006 (Areola, 2007) and fish is also made up 40 percent of dietary protein consumption in the country. About 90 percent of fresh fish produced in Nigeria are sold in the local markets as a cheap source of protein to the growing population (Baba *et al.*, 2015).

Specifically, the study sets to; describe the socioeconomic and marketing characteristics of the fresh fish marketers, estimate the marketing margin on fresh fish, determine the profitability of fresh fish marketing, examine the determinants of profitability of fresh fish marketing and as well as investigate the constraints to fresh fish marketing in the study area.

### Literature review

A market is defined as an area over which buyers and sellers negotiate the exchange of a well-defined commodity (Olayinka and Aminu, 2006). According to Gregory *et al.* (1994) marketing is the process of planning and executing the concept, pricing, promotion and distribution of ideas, goods and services to create exchanged that satisfies both the individual and organizational objectives. It includes all the processes (assemblage of goods, storage, transportation, processing, grading and financing) involved from the point of production of a commodity to the point of final consumption (Crammer *et al.*, 2001). These processes ensure that the right product is available at the right place, at the right price and at the right time to fully satisfy the consumer (Beierlein and Woolverton, 1991; Okoh *et al.*, 2008).

Efficiency of agricultural marketing can be assessed in terms of marketing structure and performance, marketing margin and market channels (Giroh *et al.*, 2010). Market structure is defined as those characteristics of an organization of a market which strategically influence the nature of competition and pricing within the market (Olukosi *et al.*, 2005). Market structure is influenced by a number of factors which include among others; the number and relative size of buyers and sellers, the degree of product differentiation, the ease of entry and exit of sellers into and out of the market and the status of knowledge about cost, price and the conditions among the participants in market (Mejeha and Ifenkwe, 2007). On the other hand, market performance is the appraisal of the extent to which the interactions of buyers and sellers in a market stimulate result that is consistent with social purposes (Adegeye and Dittoh, 1985; Olukosi *et al.*, 2005). It is the assessment of how well the marketing process is carried out and how its aims are successfully accomplished.

Marketing efficiency is defined as the maximization of ratio of output to input in marketing (Olukosi *et al.*, 2005). The marketing inputs includes the costs of providing marketing services while outputs are the benefits or satisfaction created or value added to the commodity as it passes through the marketing system. An efficient market is one which maximizes the ratio of the values of output to the value of input throughout the marketing system. The higher the ratio, the greater the marketing efficiency is considered to be (Tweelen, 1997; Arene, 1998).

Marketing margin as defined by Haruna *et al.* (2012) is the price paid for utilities addition and functions performed by the marketing systems. The size of the marketing margin is influenced by a number of factors including the degree of processing of the commodity in question, its bulkiness and unit values as well as perishability (Haruna *et al.*, 2012). Olukosi *et al.* (2005) defined marketing channel as the pathway through which a commodity passes from its raw form to the finished

form. It is the sequence of intermediaries and market through which goods find their way from producers to the consumers. Marketing channels according to Olukosi and Isitor (1990) can be classified into centralized and decentralized channels. A centralized channel has agents who serve as middleman between producers and consumers while decentralized channel is a kind of channel where both consumers and agents can buy directly from the producers (Madugu and Edward, 2011). The centralized marketing channel is typical to fish marketing in most developing countries including Nigeria with series of middlemen between producers and consumers (Moses, 1992).

## Methodology

### *Study area and data collection*

The study was conducted in Ado-Odo Ota Local Government; a veritable industrial second largest Local Government in Ogun State with its headquarters at Ota. It came into being in 1989 following the demand for more local government in the state. It is located within the tropical zone lying between 60°47'N of the equator and 20°33'E and 30°18'E of the Greenwich Meridian, covering a land area of 1,263 square kilometers. The Local Government shares boundaries with Lagos State in the South, Yewa South and Ifo Local Government in the West and Ipokia Local Government in the North East. Ado-Odo Ota Local Government has an estimated population of 527,242 (male 261,523 and female 265,719) (National Population Commission, 2006) with about 450 towns, villages and settlements. The Local Government is populated mainly by the Aworis (the original owner of the land), Eguns and Yewas (Egbados) and other ethnics groups like Egba settlers in Iju, Atan, Ijoko and Sango – Ota. Expatriates and other ethnics group have equally found the entity a congenial place for settlement. Apart from Ota, Ado-Odo, Igbesa and Agbara, other major towns are Iju-Ota, Owode, Ilogbo, Iyesi, Ijoko, Ajibode, Abule Iroko and host of others. To a greater degree, the Local Government is agrarian in nature. This study area was chosen because of the dominance of fresh fish marketers in the area.

The study made use of primary data obtained from a cross-sectional survey of 120 fresh fish marketers drawn by a multistage sampling procedure. In the first stage, the four major markets in the study area including; Ogba Iyo, Sango, Atan and Lusada were selected. In the second stage, 30 fresh fish marketers were randomly selected from each of the markets. The data were obtained using a structured questionnaire and interview guide. Data were collected on the socioeconomic and marketing characteristics of the fresh fish marketers, costs and returns and problems encountered by fresh fish marketers.

### *Analytical procedures*

*Descriptive statistics.* This involves the use of tables, frequencies and percentages to describe the socioeconomic characteristics of the respondents, marketing channel and constraints to fresh fish marketing in the study area.

*Marketing margin analysis.* Following previous studies by Olukosi and Isitor (1990) and Gaya *et al.* (2006), market margin is the difference between the price that is paid by fish consumers and that received by fish marketers. It is computed as:

$$\text{Marketing margin} = \frac{\text{consumer price} - \text{supply price}}{\text{consumer price}} \times 100$$

*Budgetary analysis.* This was used to determine the costs and return of fresh fish marketing in the study. The models used are: Socioeconomic determinants

$$GM = \sum TR - \sum TVC \quad (1)$$

$$TR = P_y \times Y \quad (2)$$

$$TVC = P_x \times X \quad (3)$$

$$TC = TVC + TFC \quad (4)$$

$$NM = GM - TFC \quad (5)$$

where GM is the gross margin (₦), TR the total revenue (₦), TVC the total variable cost (₦), TC the total cost (₦), NM the net margin (₦),  $P_y$  the unit price of output produced (₦),  $P_x$  the unit price of input (₦),  $Y$  the quantity of output (kg), and  $X$  the quantity of input (kg).

*Regression analysis.* This was used to examine the determinants of profitability of fresh marketing in the study area. The model was explicitly specified as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \mu$$

where  $Y$  is the profitability of fresh fish (total revenue–total cost) (₦),  $X_1$  the age of the marketer (years),  $X_2$  the marketing experience (years),  $X_3$  the educational qualification of the marketer (years of schooling),  $X_4$  the unit price of fresh fish (₦),  $X_5$  the number of sales outlets (Number), and  $\mu$  the random sampling error term.

Three functional forms including linear, semi log and double log were fitted into the model and the lead equation was chosen based on econometric and statistical criteria.

## Results and discussion

### *Socioeconomic characteristics of the fresh fish marketers*

Table I summarizes the socioeconomic characteristics of fresh fish marketers in the study area. The table revealed that female (85.8 percent) dominated fresh fish marketing in the study area with only 14.2 percent male. This is at variance with Taiwo *et al.* (2013) who revealed that the fresh fish marketer were mostly male in Ogun State, Nigeria but in agreement with Baba *et al.* (2015) who reported that majority of fresh fish marketers were male in Ngaski Local Government Area of Kebbi State. Majority (80.8 percent) of the fresh fish marketers were below the age of 40 indicating that they were still relatively young and economically active to engage in marketing. The table further revealed that the majority (81.7 percent) of the marketers were married with a mean household size of seven persons. Only 7.5 percent of the marketers had no formal education, this implies that the majority of the fresh fish marketers were literate which is of significant importance in their marketing decision-making process.

The table further revealed that both Muslims (51.7 percent) and Christians (44.2 percent) participate in fresh fish marketing in the study area. This is because there is no religious bias associated with fish. The major income generating activities of the respondents was found out to be fish marketing (80.1 percent), 8.3 percent of the respondent were farmers while 11.6 percent were engaged in wage employment such as

IJSE 43,8	Characteristics	Frequency	%
	<i>Gender</i>		
	Female	103	85.8
	Male	17	14.2
<b>876</b>	<i>Age</i>		
	Less than 40	97	80.8
	41-50	21	17.5
	51-60	1	0.8
	Above 60	1	0.8
	Mean (years)	36.4	
	<i>Marital status</i>		
	Divorced	8	6.7
	Married	98	81.7
	Separated	6	5.0
	Single	8	6.7
	<i>Household size</i>		
	Less than 5	44	36.7
	6-10	61	50.8
	Above 10	15	12.5
	Mean (number)	7.0	
	<i>Educational qualification</i>		
	No formal education	9	7.5
	Primary education	65	54.2
	Secondary education	27	22.5
	Tertiary education	18	6.7
	Mean (years)	9.2	
	<i>Religion</i>		
	Christianity	53	44.2
	Islamic	62	51.7
	Traditional	5	34.1
	<i>Major occupation</i>		
	Fish trading	96	80.1
	Farming	10	8.3
	Wage employment	14	11.6
	<i>Source of capital<sup>a</sup></i>		
	Personal savings	65	54.2
	Cooperatives	46	38.3
	Friends and relatives	39	32.5
	Average capital (₦)	12,595.8	

**Table I.**  
Socioeconomic  
characteristics of  
fresh fish marketers

**Note:** <sup>a</sup>Multiple responses  
**Source:** Data from field survey, 2013

teaching and house cleaning job. Majority (54.2 percent) of the fresh fish marketers sourced their capital from personal savings, 38.3 percent sourced from cooperatives and 32.5 percent sourced from friends and relatives with an average amount of ₦12,595.8 This shows that starting fresh fish marketing required small amount of capital even though about 13 percent of the respondents still viewed such capital base as been high thereby constraining them (Table II).

### *Marketing characteristics of fresh fish marketers*

The marketing characteristics of the fresh fish marketers are presented in Table III. The table revealed that most (53.3 percent) of the fresh fish marketers have only one sales outlet with an average monthly market of 340 kg. It could therefore be concluded that most of the fresh fish marketers operates on a small scale. About 36.7 percent have two outlets, 8.3 percent have three outlets while only 0.8 percent have four outlets. The table further revealed that majority (82.7 percent) of the fresh fish marketers do not have a fish farm of their own which could lead to increase in their marketing costs such as transportation and cost of purchase. Only about 13.3 percent of the fresh marketers own a fish farm. This implies that they have a high tendency of generating more profit than those that does not have a fish farm. This is so because they do not need to go far distances to purchase fresh fish thereby reducing the amount spent on transportation

Socioeconomic  
determinants

877

Factors	Frequency	%
High transportation cost	69	57.5
High initial capital base	16	13.3
Shortages in supply	18	15
Lack of market stall	8	6.7
Fines and levies	9	7.5
Total	120	100

**Source:** Data from field survey, 2013

**Table II.**  
Major constraints  
faced by fresh  
fish marketers

Characteristics	Frequency	%
<i>Sales outlets</i>		
1	64	53.3
2	44	36.7
3	10	8.3
4	1	0.8
Mean (number)	1.53	
<i>Ownership of fish farm</i>		
No	104	82.7
Yes	16	13.3
<i>Market association</i>		
No	10	8.3
Yes	110	91.7
<i>Marketing experience</i>		
≤ 5	18	15.0
6-10	73	60.8
11-15	15	12.5
16-20	8	6.7
> 20	6	5.0
Mean (number)	10.24	

**Note:**  $n = 120$

**Source:** Data from field survey, 2013

**Table III.**  
Marketing  
characteristics of  
fresh fish marketers

and other marketing cost such as cost of purchase compare to others that do not have fish farm. The table also showed that majority (91.7 percent) of the respondents belongs to fresh fish marketers association in their respective market.

*Marketing margin.* Table IV presents an analysis of the marketing margin of fresh fish. The percentage marketing margin was 34.55 percent which implies that the fresh fish marketers realize a margin of 34.55 percent of the producer price.

#### *Budgetary analysis*

The costs and return to fresh fish marketing is presented in Table V. The table revealed that the variable costs constitute the majority (99.06 percent) of the total cost of marketing fresh fish in the study area. Fixed costs constitute only about 1 percent. The results further indicated that the cost of purchase (93.35 percent) and transportation cost (2.54 percent) were the major variable costs incurred in fresh fish marketing. The average purchase and selling price per kg of fresh fish was 373.17k and 244.25k. An average of 180.46 kg of fresh fish was sold per marketer per month. This gives total revenue of ₦68,532.50/month and a gross margin of ₦20,906.03/month. The return per naira invested was 1.43 indicating that; for every one naira that was invested into fresh fish marketing, 43 kobo was realized. This implies that fresh fish marketing in the study area was a profitable venture.

**Table IV.**  
Marketing margin  
on fresh fish

Price	Amount (₦/kg)
Consumer	373.17
Supply	244.25
Marketing margin (%)	34.55

**Source:** Field survey, 2013

**Table V.**  
Costs and return to  
fresh fish marketing  
in ₦/month

Cost items	Amount (₦/month)
<i>Variable costs</i>	
Cost of purchase	44,880.00 (93.35)
Rent	516.67 (1.07)
Local government due	380.00 (0.79)
Transportation	1,180.00 (2.54)
Labor	412.30 (0.86)
Association due	257.50 (0.54)
Total variable cost (TVC)	47,626.47 (99.06)
Total fixed cost (TFC) (depreciated)	452.785 (0.94)
Total cost (TC)	48,079.26 (100)
<i>Return</i>	
Gross Revenue (GR)	68,532.50
Return/naira invested (GR/TC)	1.43
Gross margin (GR-TVC)	20,906.03
Net margin (GM-TFC)	20,453.25

**Note:** Figures in parenthesis shows the percentage of the total

**Source:** Data from field survey, 2013



*Determinants of profitability of fresh fish marketing*

The multiple regression analysis was carried out to examine the determinants of profitability from fresh fish marketing in the study area. Based on the econometric and statistical criteria, the semi logarithm function was chosen as the lead equation and the result was presented in the Table VI. The result revealed that the level of profit of fresh fish marketers in the study area was significantly determined by years of education of the fresh fish marketers, proportion of household members involved in fresh fish marketing, marketing experience, capital, number of sales outlets and cost price. The coefficients are in line with the a priori expectation. The  $F$ -ratio of 19.088 significant at 0.01 probability level, provided the evidence that the chosen model was appropriate and fit for analysis. The  $R^2$  value of 0.55 showed that 55 percent of the variation in the level of profit from fresh fish marketing is jointly explained by the independent variables specified in the model. The education of the fresh fish marketers measured by years of schooling showed a significant positive relationship with the level of profit from fresh fish marketing at 0.01 probability level ( $p < 0.01$ ). This implies that with increase in the years of schooling by fresh fish marketers, more profit will accrue to them. The proportion of household members involved in fresh fish marketing negatively and significantly ( $p < 0.05$ ) influenced the level of profit that accrue to fresh fish marketers in the study area. This might be as a result of household members consuming the fresh fish which ought to have been sold leading to more profit. Marketing experience was significant ( $p < 0.05$ ) and positively related to the profit from fresh fish marketing. This implies that the more the experience acquired by the fresh fish marketers, the higher the level of profit that will accrue to them in line with Ume and Okoronkwo (2013). This finding support that of Bassey *et al.* (2015) who reported that marketing experience has a positive and significant influenced on the profit made by fresh fish marketers in Akwa Ibom State, Nigeria.

Furthermore, capital showed a positive and significant relationship with the level of profit from fresh fish marketing. The higher the capital the fresh fish marketer is able to invest into the business, the higher the profit that will accrue to them. The number of sales outlets used for fresh fish marketing has a positive and significant ( $p < 0.01$ ) influence on the level of the profit that accrue to the fresh fish marketers in the study area. This shows that the more the outlet used for fresh fish marketing, the more the

Variable	Coefficient	$t$ -ratio
Constant	9.812 (0.291)***	31.546
Age	0.045 (0.007)	0.615
Education	0.297 (0.009)***	4.422
Proportion of household members involved in fresh fish marketing	-1.54 (0.028)**	-2.158
Marketing experience	0.188 (0.012)**	2.569
Capital	0.465 (0.000)***	6.277
Sales outlet	0.194 (0.061)***	2.646
Purchase price	-0.233 (0.001)***	-3.269
$R^2$	0.546	
$R^{-2}$	0.518	
$F$	19.088***	

**Notes:** Standard errors are in parenthesis. \*\*, \*\*\*Significant at 5 and 1 percent, respectively

**Source:** Data from field survey, 2013

**Table VI.**  
Determinants of the  
level of profit from  
fresh fish marketing

level of profit that will accrue to the marketers. The purchase price of fresh fish as expected showed a negative relationship with the profit from fresh fish marketing at one percent significant level ( $p < 0.01$ ). This implies that with increase in the purchase price per unit of fresh fish, the lower the level of profit that will accrue to the fresh fish marketers will make, *ceteris paribus*. Conversely, if the price of purchase per unit decreases, the level of profit that will accrue to the fresh fish marketers will increase, *ceteris paribus*.

#### *Constraints to fresh fish marketing*

Fish supply and marketing suffer so many obstacles ranging from shortage of supply, price fluctuation and spoilage in transit (Baba *et al.*, 2015). In this study area, several constraints were found to militate against fresh fish marketers. They include relatively high cost of transportation (57.5 percent), high initial capital base (13.3 percent), shortages in fresh fish supply (15 percent), lack of market stalls (8.3 percent) as well as fines and levies from local government agencies (7.5 percent) on fish marketers. The results confirmed that majority of the marketers in the study area are faced with the problem of high cost of transportation. Increased transportation cost could be attributed to the need of sourcing around for new fresh fishes at far distanced farms due to shortages in supply as majority of the marketers do not own a fish farm.

#### **Conclusion and recommendations**

It can be concluded that fresh fish marketing in the study area is economically rewarding and profitable. It is capable of creating employment, augmenting income, improving the standard of living of the people as well as alleviates the problem of malnutrition typical of the developing countries including Nigeria.

Based on the findings of the study, the following policy recommendations were suggested:

- (1) markers should also be encouraged to acquire formal education as this will contribute to efficient marketing system;
- (2) good transportation channel or road network leading to more market outlets should be put in place by government;
- (3) the proportion of household members involved in fresh fish marketing should be reduced to make the business more profitable; and
- (4) the negative and significant effect of purchasing price of fresh fish on the level of profit can be minimize by subsidizing the cost of input used by the marketers by government.

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