

# Marketing of Fresh Imported Frozen Fish in Ilorin West Local Government Area of Kwara State, Nigeria

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## **Abstract**

*Women, (64.4%) dominated the marketing of imported frozen fish in study area and they were active economically. They were married(81.1%) with a relatively large family(6 or more members) that served as a source of labor; Most of the traders were Muslims(54.4%) while others were Christians showing that fish marketing is not affected by religious bigotry. Most of the marketers, (86.6%) had access to credit gotten from daily contribution collectors and trough cooperatives. Most respondents (74.4%) were in associations, where they paid membership dues and the Herfindahl index was 1.17%, which indicated high market concentration. Frozen fish marketing is profitable in the study area with a Marketing Margin of 47.36 %. Factors affecting profitability of fish marketing in the study area were Age, which is significant at 5% and it is negatively signed, Religion which is significant at 5% but also negatively signed, Household size, which is significant at 1% level and it is highly positively signed. Interest paid although against expectation is significant at 5% and positive; Other Business is positively significant at 1%. Amount paid as dues in the market and Fish type had negative signs.*

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**Keywords:** Religious bigotry, Policy focus, Profitability, Marketing Margin and Herfindahl index

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## **1.0 INTRODUCTION**

### **Importance of women in marketing of imported frozen fish**

Most activities involved in marketing of imported fish are performed by women especially in the Southern part of Nigeria. The urge to market is borne out of the fact that these women are trying free their families from the scourge of hunger and deprivation by improving the family income. They also help in moving the frozen fish to the remotest consumer at a relatively lower cost thereby preventing malnutrition even through hawking. Although frozen fish cost is relatively cheaper, these women through marketing efforts use cartons and other insulating materials to preserve the freshness of the fish until it is delivered to the designated villages and communities in Nigeria. Marketing and distribution of frozen fish become expedient for consumers who are willing to travel short distances to maximize their satisfaction and overcome the problem of malnutrition which is rampant in less developed communities of Africa. In other words, this branch of marketing involves all activities carried out from landing sites to the point of utilization. Such activities include collection of fish, processing and preservation (smoking of fish using regulated oven), transportation to consumers, pricing,

buying and utilization (Crammer et al., 2001). Unlike pork, fish is taken widely in Nigeria without any religious, social or ethnic bias. Foods from the aquatic environment are a complete and unique source of both the macro- and micro nutrients required in a healthy diet. There are benefits as well as potential risks, of fish consumption however, the benefits far outweigh the risks, which may be principally from mercury and dioxins that may be present in the fish (Food and Agriculture Organization/World Health Organization, 2011). The advantages of facilitating local population in Nigeria to consume imported frozen fish cannot be overemphasized in that it helps in reduction of the risk of death from coronary heart disease because it is low in fat, calories, and cholesterol (USAID, 2010). It also improves neurodevelopment in infants and young children when the mother consumes fish before and during pregnancy (FAO/WHO 2011) In 2009, fish accounted for 16.6 percent of the world population's intake of animal protein and 6.5 percent of all protein consumed. Globally, fish provides about 3.0 billion people with almost 20 percent of their intake of animal protein, and 4.3 billion people with about 15 percent of such protein (FAO, 2012). The fish subsector also supplies micronutrients such as irons, iodine, calcium, vitamin A, and Vitamin B in the diets of people (Adebayo and Anyanwu 2013). Fish also contribute 6-8% of agricultural sector total contribution to GDP (FAO, 1989). By this, the fishery subsector provides employment opportunities to many Nigerians including those involved in direct fish processing and marketing. Worldwide, fish along with shrimp and prawn are important agricultural products and is currently contributing to the welfare of people by gainfully employing millions of people (Belton et al., 2011). Fish, especially the imported types are relatively cheaper compared with other protein sources hence it is found in most households in the study area where most people are relatively poor or average in the poverty laden. With the foregoing, the study specifically addressed the following objectives: which were to:

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- \*describe the socio- economic characteristics of the fish marketers
- \* examine the market margins, cost and returns of the fish marketers.
- \* investigate the degree of market concentration of the fish marketers.
- \* examine the market structure, conduct and performance of the fish marketers.
- \* examine the factors affecting the profitability of the frozen fish business.
- \* examine the constraints faced by the fish marketers.

## **2.0 MATERIAL AND METHODS**

### **Methodology**

#### **Area of study**

The study was carried out in Ilorin West Local Government Area of Kwara State and it is one of the three Local Government Areas that formed what is now called Ilorin Metropolis. It has an Area of 105km<sup>2</sup> and a population of 364,666 as at the 2006 Census (National Population Census, 2006). The Local Government falls in the Guinea Savannah vegetation region. It comprises of different Nigerian ethnic groups like the Yorubas Nupes, Baribas, Fulanis and the Ebiras. It is host to the Administrative Headquarters of Kwara State, with major markets like the Mandate, Oja-oba and Oja-tuntun where imported fish marketing is one of the Agribusiness of the populace.

#### **Sampling Techniques and Sample Size**

Three major markets, the Mandate, Oja-oba and Oja-tuntun were purposively selected because of the concentration of imported fish stock in these locations. Thirty marketers were randomly picked in each of the markets giving a total sample size of 90. Structured questionnaire was served to the literate respondents while personal interviews were done with the illiterate respondents. The questionnaire sought information on socioeconomic

characteristics of the fish marketers, quantities of fish purchased, quantities of fish sold, costs associated with fish marketing and the associated problems etc.

### **Method of Data Analysis**

The data obtained from the respondents were subjected to descriptive and inferential analyses. Descriptive statistics such as frequencies, percentages were used to describe the socio-economic characteristics and constraints faced by the fish marketers, market margin analysis, Herfindahl- index (HHI) were used to examine the performance and concentration of the market, the profit function was used to examine the factors affecting the profitability of the business.

### **Model Specifications**

The budgetary technique encompasses the analyses of the gross margin, the cost and return was used to know the performance analysis of fish marketing in the study area. The gross margin formula is stated as follows:

$$GM = TR - TVC$$

Where GM is the Gross margin in naira per kilogram of fish,

TR = the Total revenue in naira and TVC is the total variable cost in naira.

It is computed as the difference between the total revenue and total variable cost.

### **Marketing margin**

This was computed using the formula;

$$MM = \frac{FSP - FBP}{FSP} \times 100.$$

Where;

MM = marketing margin of fish

FSP = Fish Selling price per Kilogram/carton and

FBP = Fish buying price per Kilogram/carton

### **Market structure**

Market structure was determined by assessing market concentration and entry conditions of the markets using HHI as follows

$$HHI = \sum_i^n MS_i$$

Where  $MS_i$  is the market share of seller  $i$ ; and  $n$  is the number of sellers in the market. The market shares were calculated based on quality of fish handled by each seller as follows:

$$MS_i = \frac{V_i}{\sum_{i=1}^n V_i}$$

$V_i$  is the quantity of fish handled by a seller  $i$  in dozen/cartons  $\sum V_i$  is the total quantity of fish handled by the sellers in the market in dozen/cartons..

### **Market conduct and performance**

The model used for marketing margin is given as:

$$MM = \frac{FSP - FBP}{FSP} \times 100.$$

Where; MM = marketing margin of fish

FSP = Fish Selling price per Kilogram and

FBP = Fish buying price per Kilogram

### **Component of fish cost**

Cost refers to the value of inputs used in production and marketing

Revenue is the amount realized from the sales of fish

### **Fixed cost (FC)**

These are cost that exist irrespective of the level of marketing

### **Total variable cost (TVC)**

These are cost that varies or change with the total sales. Examples are transport cost, cost

of purchase.etc.

**Total revenue (TR)**

This is the gross receipt from sales of output when quantity sold is multiplied by price per unit.  $TR = P \times Q$  (Total revenue in naira per kilogram/carton of fish)

**Factors affecting profit of fish marketers**

The postulated relationship between profit and the independent variables is as follows:  $U = (X_1, X_2, X_3, X_4, \dots, X_{10}, e)$  Where  $U$  = Profit,  $X_1$  = Age  $X_2$  = Sex,  $X_3$  = Religion  $X_4$  = Household size  $X_5$  = Education,  $X_6$  = Capital source,  $X_7$  = Interest paid,  $X_8$  = Other business,  $X_9$  = Dues amount,  $X_{10}$  = Fish type  
 $e$  = error term

**3.0 RESULT AND DISCUSSIONS**

**Socio-economic characteristics of the respondents**

Socio-economic characteristics of the imported fish marketers include; sex, age, marital status religion, family size, education level, marketing experience, access to credit, initial source of capital, amount of credit, source of supply and unit of purchase in the study area .All taken together have influence on the overall performance of individual marketers.

**Sex distribution of the respondents**

The result in table 1 shows that 65.4% of the marketers were females while 35.6% of the marketers were males. This indicates that imported frozen fish marketing in the study area was dominated by the females who wrapped their fish in ice-packed containers insulated by carton materials used to pack the fish from the producers. Apart from parading their stock in designated open markets, some of them hawk to carry fish to consumers in the remotest areas.

**Table 1: Sex distribution of the respondents**

Sex	Frequency	Percentage (%)
Male	32	35.6
Female	58	64.4
Total	90	100.0

**Age Distribution of the Respondents**

The result in the table 2 indicates that most marketers 86.4% were less than 55years of age implying that most of imported frozen fish marketers were in their active age economically. This is the time they have the most agile physical and mental abilities to cope with the ever changing market,

**Table2: Distribution of the respondents by age**

Age	Frequency	Percentage (%)
15-25	4	4.4
26-35	31	34.4
36-45	32	35.6
46-55	11	12.2
>55	12	13.6
Total	90	100.0

**Marital Status Distribution of the Respondents**

The result in table 3 shows that most of imported fish marketers 81.1% were married, 13.3% were singles and 5.6% were widowed. This implies that married people were more involved in marketing of imported frozen fish. They did this in order to supplement the family income and provide food for the family.

**Table 3: Distribution of the respondents by marital status**

Marital Status	Frequency	Percentage (%)
Single	12	13.3
Married	73	81.1
Widowed	5	5.6
Total	90	100.0

#### **Religion distribution of the respondents**

The result in the table 4 shows that 68.3% of the respondents were Muslims while 45.6% were Christians. Most of the traders were Muslims. This indicates that fish marketing is not affected by religious bigotry or any religious bias in a Muslim-dominated environment like Kwara State.

**Table 4: Distribution of the respondents by religion**

Religion	Frequency	Percentage (%)
Islam	49	54.4
Christianity	41	45.6
Total	90	100.0

#### **Family size distribution of the respondents**

Table 5 shows that 45.6% of the respondents had between 1-5 family members, 51.1 % had 6-10 family members while 3.3% of the respondents had more than 10 members in their families. This indicates that most of the fish marketers had 6 or more family members in their families. A number which is relatively large. The economic implication of a big family is that it can act as a cheap source of labor if well managed and a devourer of scarce resources if not.

**Table 5: distribution of the respondents by family size**

Family Size	Frequency	Percentage (%)
1-5	41	45.6
6-10	46	51.1
>10	3	3.3
Total	90	100.0

#### **Education Distribution of the Respondents**

The result in the table 6 revealed that 36.6% of the respondents had secondary education, 20.0% had tertiary education, 17.8% no access to formal education. This implies that most of the fish marketers were educated, an attribute that is essential in marketing and in adoption of new innovations.

**Table 6: Distribution of the respondents by education**

Educational Level	Frequency	Percentage (%)
No Education	16	17.8
Primary	23	25.6
Secondary	33	36.6
Tertiary	18	20.0
Total	90	100.0

#### **Marketing Experience Distribution of Respondents**

The result in table 7 shows that 47.8% of the marketers had been marketing fish within the range of 11-15 years, 27.8% of the marketers had been marketing fish within the range of 6-10 years, 23.3% of the marketers had been marketing fish for more than 15 years, and 1.1% of the marketers had been marketing fish within the range of 1 -5 years. This indicates that most of the marketers had a marketing experience between the range of 11-15 years which is long enough and could enable them to predict the movement of price and other market parameters.

**Table 7: Distribution of respondents by marketing experience.**

Marketing Experience	Frequency	Percentage (%)
1-5	1	1.1
6-10	25	27.8
11-15	43	47.8
>15	21	23.3
Total	90	100.0

#### **Access to Credit Distribution of the Respondents**

Table 8 result shows that 86.6% of the fish marketers had access to credit in the study area and 13.4% did not have access to credit. It indicates that majority of the fish marketer in the study area had access to credit. Credit is essential for the starting, maintaining and expanding business units. Although, the sources of these credit facilities may not be formal, respondents made use of the informal and cooperative sources.

**Table 8: Distribution of respondents by access to credits**

Access to Credit	Frequency	Percentage (%)
Yes	78	86.6
No	12	13.4
Total	90	100.0

#### **Distribution of respondents by initial capital sources**

The result in table 9 revealed that 45.6% of the respondents got their initial capital from personal savings through daily contributions, the merchants or daily collectors went from house to house and street to street to reach their clients on motor bikes heralded by special horns to notify their clients of their presence, 6.6% of the respondents got their initial capital from family and friends, 31.1% of the respondents got their initial capital from cooperatives. Initial capital is very essential for startups and a stumbling block for many in less developed countries like Nigeria to form business entities. It also shows that the cooperative societies are a strong and veritable source of getting money for business formation in Nigeria.

**Table 9: Distribution of the respondents by initial capital source**

Initial Capital Source	Frequency	Percentage (%)
Family and friends	6	6.6
Personal Sav/ (Daily contributions)	41	45.6
Banks	15	16.7
Cooperatives	28	31.1
Total	90	100.0

## Structural Design Issues

### Structure

Structure refers to the relatively stable features that influence the rivalry among the buyers and sellers operating in a market (Caves, 1992). Some examples of the elements of structure include the number of buyers and sellers in the market, barriers to entry and exit, and the vertical coordination mechanisms. These concepts can be explored in the marketing of imported frozen fish in the study area:

### Membership of Association Distribution of Respondents

Table 10 indicates that 74.4% of the respondents were in association, while 25.6% were not in any association which explains that most of the fish marketers were members of fish marketing associations where they paid membership dues and where information was collected concerning price, buying from various channels and other marketing parameters that were essential for marketing of fish.

**Table 10: Distribution of the respondent by association they belonged**

Association	Frequency	Percentage (%)
Yes	67	74.4
No	23	25.6
Total	90	100.0

### Market Concentration

Market share was 0.117 and Herfindahl index was 1.17%, which indicates high market concentration in that the share held by the marketers was minimal and that there were many other marketers in the system. In this case, the market is said to be perfectly competitive..

$$\text{Market share} = \frac{q_1}{qn} + \frac{q_2}{qn} + \frac{q_3}{qn} + \dots + \frac{q_{90}}{qn} = 0.117$$

$$\text{Herfindahl index} = S^2_1 + S^2_2 + S^2_3 + \dots + S^2_{90} = 1.17\%$$

Higher values of the index indicate higher market concentration and monopoly power as well as decreased competitiveness whereas when the index decreases, the market is made up of a larger number of firms, each with a smaller market share.

### Conduct Design Issues

Conduct refers to the patterns of behavior that market participants adopt to affect or adjust to the markets in which they sell or buy goods and services (Caves, 1992). Examples of conduct include price-setting behavior and buying and selling practices.

### Market Channel of frozen fish

The result in the table 11 shows that 11.1% of the respondents source of purchase was from cold rooms, 83.4 % of the respondents purchased theirs from wholesalers and large cold-rooms while others got their purchase from retailers (2.2%) and local fish depots (3.3%)..The implication is that the marketers had many buyers to purchase from and with the modern method of interconnectivity, price fixing and transmission to various participants can easily be done. The price of imported fish market was determined based on negotiation and this would make the price range very minimal because of the perfectly competitive structure.

**Table 11: Market channel**

Source of Supply	Frequency	Percentage (%)
From moderate cold-rooms	10	11.1
Wholesalers & large C/rooms	75	83.4
Retailers	2	2.2

Fish Depot	3	3.3
Total	90	100.0

### Performance Features

Performance refers to the extent to which markets result in outcomes that are deemed good or preferred by society (Caves, 1992). Examples of performance include price levels and price stability in the short and long term, profit levels, costs, efficiency, and quantities and quality of goods sold or provided.

### Market performance of imported frozen fish marketers in the study area

The estimation of the market performance in table 12 indicates that the mean value of selling price for mackerel fish was ₦36600 per carton while the purchasing price was ₦25600, for herring fish the selling price was ₦12000 per carton and purchasing price was ₦10000. For horse mackerel fish, the selling price was ₦16000 per carton and purchasing price was ₦15000 for the blue whiting fish, the selling price was ₦11000 per carton while the purchasing price was ₦9500 and for the croaker fish, the selling price was ₦22000 per carton and ₦20000 as the purchasing price.

**Table12: Identification of the market margin per carton of imported frozen fish**

Fish Varieties	Selling Price	Purchasing Price	Marketing Margin
Mackerel	36600	32500	1100
Herring	12000	10000	2000
Horse Mackerel	16000	14000	2000
Blue Whiting	11000	9500	1500
Croaker	22000	20000	2000

### Cost and return to fish marketing

The **cost** and return to fish marketing was done on the average of all the parameters involved. This is presented in the table 13 below. The Total Revenue (TR) was ₦2711211.30 while the Total Variable Cost (TVC) was ₦163828.30 giving a Gross Margin of ₦107383.00. The Marketing Margin is computed as follows:

$$MM = \frac{FSP - FBP}{FSP} \times 100$$

$$MM = \frac{(271211.30 - 142761.1)}{271.211.30} (100)$$

$$= 47.36 \%$$

This shows that frozen fish marketing was profitable in the study area and the margin was good.

**Table 13: Estimates of average cost and return of t fish marketing.**

Variable	Value (₦)
<b>Gross revenue</b>	<b>271211.30</b>
Cost of fish	142761.1
<b>Variable costs:</b>	
Transportation	4544.44
Shop Rent	3956.67
Electricity	1461.11
Storage Cost	5072.22
Packaging Cost	703.89
<b>Total Variable Cost</b>	<b>163828.3</b>



**Gross Margin**

**107383.0**

**Factors Affecting Profitability of fish marketing in the study area**

Table 14 presents the Regression showing the factors affecting profitability of fish marketing in the study area. For a regression analysis to be worthwhile the R-square must be high and there should be some significant variables. The R-square in this instance was 0.676 indicating that 67.6% of the variability in the system was explained while the remainder was not or lies with the error term. Age is significant at 5% and it is negatively signed meaning that as age increases profit goes down because as age goes up energy of the marketers' wanes and may affect the amount of fish they may handle and invariably the profit. The same scenario goes for Religion which is also significant at 5% and also negatively signed. In the study area, older people tend to devote much time to religious activities by observing hourly prayers which in turn may affect the profit made unlike their young and energetic counterparts. Household size on the other side is significant at 1% level and it is highly positively signed. This indicates a larger or bigger household may probably increase the level of profit through the provision of cheap labor. Interest paid although against a-pri-ori expectation is significant at 5% and positive but marketers lamented the unavailability of formal credit sources especially the bank and government agencies and praised the cooperatives and daily collectors who provided them with readily available credit. This they say is helpful and the higher the opportunity, the higher the volume of trade, the higher the interest but also the greater profit. Other Business is positively significant at 1% showing an upward movement with profit. Traders with other business ventures ploughed cash realized into fish marketing, a business that gave daily cash and provided the opportunity of quick replacement. Amount paid as dues in the market and fish type have negative signs meaning they move in opposite direction with profit. While money paid to different association is a direct depletion of profit, fish type can only result to loss if adequate information is not sought and fish type that is not demanded by the customers is stocked.

**Table 14: Factors Affecting Profitability of fish marketing in the study area**

<b>Variable</b>	<b>Co-efficient</b>	<b>Standard error</b>	<b>T-ratio</b>
<b>Constants</b>	<b>158213.3</b>	<b>218821.3</b>	<b>0.723</b>
<b>Age</b>	<b>-0.313</b>	<b>34888.99</b>	<b>-2.613**</b>
<b>Sex</b>	<b>-0.082</b>	<b>64733.574</b>	<b>-0.836</b>
<b>Religion</b>	<b>-0.190</b>	<b>46368.25</b>	<b>-2.593**</b>
<b>Household size</b>	<b>0.568</b>	<b>16356.737</b>	<b>4.600***</b>
<b>Education</b>	<b>0.143</b>	<b>25205.36</b>	<b>1.153</b>
<b>Capital Source</b>	<b>-0.135</b>	<b>14588.36</b>	<b>-1.632</b>
<b>Interest paid</b>	<b>0.284</b>	<b>8054.690</b>	<b>2.822**</b>
<b>Other Business</b>	<b>0.292</b>	<b>23640.14</b>	<b>3.611***</b>
<b>Due Amount</b>	<b>-0.428</b>	<b>40.133</b>	<b>-4.853***</b>
<b>Fish type</b>	<b>-0.063</b>	<b>9962.404</b>	<b>-7.05***</b>

R-Square =0.676

Significant Level at 10 %(\*)

Significant Level at 5 %(\*\*)

Significant Level at 1 % (\*\*\*)

**Constraints Facing Imported Frozen Fish Marketing in the Study Area**

The result in the table 15 below revealed the major challenges faced by the imported frozen fish marketers, 53.3% of respondents faced inadequate storage facilities and 52.2% faced the

problem of transportation. Other major problems faced include price instability 85.5%, 77.7% faced problem of power supply. This issue of power supply is a major problem in Nigeria where there are incessant power disruption and many National Grid collapses. The resultant effect of this is the spoilage of fish suffered by 87.7% of the respondents. The problems of inadequate funding 90.0% and price instability 85.5% were 2 of the most important problems faced by the Medium and Small Scale Enterprises in the study area. While funds meant for the development of small scale businesses were diverted for political patronage and party supporters, there are no strong monetary policies to control or provide succor for business owners who suffered enormous damages from spiral inflation resulting from weak monetary policy by the Central Bank of Nigeria (CBN).

**Table 15: Distribution of the respondents by constraints faced**

Problem	Frequency	Percentage (%)
Lack of preservative facilities	48	53.3
Lack of storage facilities	29	32.2
Scarcity of fish	18	20.0
Transportation problem	47	52.2
Electricity problem	70	77.7
Price instability	77	85.5
Inadequate capital	81	90.0
Fish spoilage	79	87.7
Market fees	6	6.6

#### **4.0 Conclusion and Policy focus**

Since imported frozen fish marketing in the study area was dominated by the females, efforts should be geared towards encouraging women to participate in and enlarge small scale entrepreneurship ventures. Affordable financing through the provision of sustainable financial interventions should be encouraged. Increased investments in infrastructure especially power, transport and chilling equipments would be of help to these marketers. Improved and reinvigorated monetary policies that will prevent economy from collapsing should be pursued vigorously by the monetary authorities.

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