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Appraisal of Fresh Fish Marketing in Lagos State, Nigeria

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Abstract

This study was carried out to appraise the socio-economic characteristics, market structure and profitability of fresh fish marketers as well as determinants of income generated from fresh fish marketing in Lagos State. A multi-stage sampling technique was used to select 80 fresh fish marketers in the study area and structured questionnaire administered on them. Data collected were analyzed using descriptive statistics, Gini-coefficient analysis, gross margin analysis and regression analysis. The study revealed that fresh fish market was dominated by female which accounted for 85% of the sellers and 91% belong to the economically age group. The gross margin analysis revealed that a fresh fish marketer incurred an average total variable cost of ₦39,208.62 per month but earned average revenue of ₦63,439.45 and a gross margin of ₦24,230.83. The rate of return on investment value of ₦0.60 is an indication that fresh fish marketing is a profitable venture in the study area. A Gini- coefficient value of 0.4058 obtained in the study indicates a high level of unequal distribution of income in the fresh fish market. The result of the multiple regression analysis revealed that income from fresh fish marketing in the study area was determined by proportion of household members involved in marketing, experience of marketers, unit price of fresh fish, capital, number of sales outlets owned by marketers and cost of transportation. The study concluded that fresh fish marketing in the area was profitable. It was recommended that government should provide more storage facilities to reduce wastage of leftovers in the study area.

Keywords: Appraisal, Fresh Fish Marketing, Market structure, Profitability.

Introduction

FAO (2006) identified fish as a relatively cheaper source of protein especially in developing countries. It is abundant and available in most markets as fresh, smoked, dried, canned or frozen. These fish products are highly nutritional and desirable foods, less tough and more digestible compared to beef, mutton, chicken and bush meat (Eyo, 2001). Although the fisheries industry is largely artisanal, with the majority of the participants operating on a small-scale at all stages of production – catching, processing and marketing, the sector is one of the most important sectors in Nigeria's economy; contributing to a number of socio-economic areas including industry employment, GDP, livelihoods, food security and foreign exchange earnings. For example the Nigerian fisheries industry employed about 26.5 million Nigerians as at 2008 and earned the country approximately US$350 million foreign exchange (FDF, 2008). Fish also contributed about 4.47% of the Agricultural share of the Nation's gross domestic product (GDP) in 2003 according to Ojo and Fagbenro (2004) and 6% in 2006 according to Areola (2007). In addition fish nutritionally has high quality proteins, fats and vitamins. It is relatively cheaper and more available than other animal proteins providing an important complement to the predominantly carbohydrate-based diet of many poor people in developing countries. Fish contains the essential amino acids, considerable amounts of phosphorus and other minerals such as copper, calcium, iron, iodine and magnesium which are necessary for the healthy growth of the human body. (Lawal and Idega, 2004).

According to Akolisa and Okonji (2005), demand for fish in Nigeria has doubled as other sources of animal protein have become expensive due to ever-increasing population and high production cost of other protein sources such as livestock. Current projected fish demand is estimated at 2.66million tonnes based on 2006 national census figure of 140 million (FDF, 2007). However, data on domestic supply of fish was 620,000 tonnes which was augmented by fish importation of about 740,000 tonnes valued at US $54.4million hence, leaving a deficit of 1.3 million tones. This has a resultant negative effect on the economy of Nigeria through a decline in the foreign reserves.

Marketing involves the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchanges that satisfies individual and organizational objectives (Omotunde and Adetunji, 2008). Fish marketing may be broadly defined as all those functions

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involved from the point of catching of fish, to the point of final consumption. It is the performance of activities involved in the flow of fish and fish products from the point of initial production to the final consumers. Fish marketing become effective where there is establishment of markets; therefore markets exist whenever buyers (consumers) and sellers (fish marketers) can be in touch with one another. Availability of fish to the consumers at the right time and right place requires an effective marketing system. Marketing efficiency is defined as the maximization of ratio of output to input in marketing. The marketing inputs are 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. Markets are efficient when the ratio of the values of output to the value of input throughout the marketing system is maximized. The higher the ratio, the greater the marketing efficiency will be (Tweelen, 1997; Arene, 1998).

Fish marketing does not usually involve the fishermen and consumers only but there are other competitive bodies in the fish distribution channels especially the middlemen (Lawal and Idega, 2004). Olukosi et al. (2005) categorized marketing channels 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). Fish marketing and distribution is an integral aspect of fish production because it is only when the fish gets to the final destination (consumers) that production can be complete.

One of the greatest problems confronting millions of Nigerian today is lack of adequate protein intake both in quality and quantity to feed the nations ever-growing population (WHO, 2000). According to Adeleke and Afolabi (2012), the per capita consumption of animal protein in Nigeria is only 9.3g/day as against 34/day recommended by the Food and Agriculture Organization (FAO) to be the minimum requirement for the growth and development of the body. This inadequacy results in problem of malnutrition. The resultant effect of serious deficiency in the amount of protein intake is that people's health is adversely affected; particularly the mental capability, working productivity and eventually, the overall national economic growth (Okoruwa and Olakanmi, 1999). Fish, when readily available and affordable can alleviate the problem of malnutrition as its supply of animal protein is usually of higher quality than that of plant protein. Furthermore, due to the unwieldy nature of fish, fish supply and marketing face some serious problems ranging from shortage of supply, price fluctuations due to drying up of source, poor distribution and length of chain, spoilage in transit etc. (Adeosun and Adebukola, 2012). Thus, the demand - supply gap problem coupled with that of malnutrition makes it imperative to conduct an appraisal of fresh fish marketing in Lagos State, Nigeria. Specifically, it;

- examined the socio-economic characteristics of fresh fish marketers in the study area;
- examined the market structure for fresh fish marketing in the study area;
- determined the profitability of fresh fish marketing in the study area;
- examined the determinants of income from fresh fish marketing in the study area;
- identify the major problems faced by fresh fish marketers in the study area.

Methodology

Study area:

The study was carried out in Lagos state. The state was created on May 27, 1967 and located in the mangrove-swamp forest region of the south-western part of Nigeria. The State lies between latitudes $6^0$35N and 6.58^0N longitude 3^0 45'E and 3.75^0 E. The state has a population of 17 million according to 2006 population census and a land mass of 3,577 square kilometers with a marine shoreline of about 180 km extending inland to a maximum distance of about 32km. The state has a humid tropical climate characterized by distinct dry and wet seasons with moderate mean annual rainfall which varies between 1381.7 mm and 2733.4 mm. Lagos State is Nigeria's most industrialized State. It accounts for over 60% of the Federation's total industrial investment. Primary agricultural production typifies the rural economy of Lagos State with industrial activities. There are a number of other socio-economic undertakings with high employment activities. These include the Federal and State Civil Service, numerous white-collar-job establishments, wholesale and retail trading. The informal private sector also constitutes a significant portion of the economic activities. These include transporters, artisans (carpenters, masons, painters, auto-mechanics, etc) and labourers. While the State is essentially a Yoruba-speaking environment, it is a socio-cultural melting pot attracting both Nigerians and foreigners alike. Indigenous inhabitants include the Aworis, Ijebus, Ilajes and Ogus with the Ogus being found mainly in Badagry. There is also an admixture of other pioneer settlers collectively known as the Ekos. The main religions are Christianity, Islam and Traditional Religion.

Sampling techniques:

A Multi-stage sampling technique was used for this study. In the first stage Alimosho Local Government Area was purposively selected because of the prevalence of fresh fish marketers in the area. In the second stage a random sampling technique was used to select four markets within the LGA. The third stage involved the random selection of 20 fresh fish marketers from each of

the markets making a total of 80 respondents. Data were then obtained using a structured questionnaire and interview guide. Data were collected on the personal 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 socio economic characteristics of the respondents and constraints to fresh fish marketing in the study area.

Gini coefficient:

This was used to examine the market structure for fresh fish in the study area. According to Dillon and Hardaker (1993), the market structure can be examined by using the Lorenz curve and Gini-coefficient. Gini coefficient greater than 0.35 are high indicating inequitable distribution (Dillon and Hardaker, 1993). In other words, higher Gini – coefficient means higher level of concentration and consequently, high inefficiency in the market structure.

Mathematically, it is represented by

$GC = 1 - \Sigma XY$ (1)

Where

X = Proportion of seller

Y = Cumulative proportion of total sales

Gross margin analysis:

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

$G.M = TR - TVC$ (2)

Where

G.M = Gross margin

TR = Total Revenue

TVC = Total variables cost

Regression analysis:

This was used to examine the determinants of income from fresh marketing in the study area. The model was explicitly specified as follows:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \mu$ (3)

Where;

Y = Income (₦)

X_1= Age of the marketer (years)

X_2= Household size (No of people involved)

X_3= Marketing experience (years)

X_4= Educational qualification of the marketer (Years of schooling)

X_5= Unit price of fresh fish (₦)

X_6= Capital invested (₦)

X_7= Number of sales outlets (Number)

X_8= Cost of transportation (₦)

μ = 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 Discussions

Socio-economic characteristics of the fresh fish marketers

Table 1 presents the summary of the socio-economic characteristics of fresh fish marketers in the study area. The table revealed that majority (85%) of the respondents were female, and 15% were male. This shows that the fresh fish market in the study area was dominated by female. Adeosun and Adebukola (2012) reported a female (94.0%) dominated fresh fish marketing in Oyo State. Adeleke and Afolabi (2012) posited that the dominance of females in the fresh fish marketing may be due to small capital requirement to start the business. Majority (51.25%) of the sampled fresh fish marketers fall within the age range of 41-50 years with a mean age of 43.8 years. This implies that the marketers are still within the economically active age and therefore able to cope with the rigours of fresh fish marketing. This is in line with Bello (2000) assertion that age has positive correlation with acceptance of innovation and risk taking. The table further revealed that majority (57.50) of the respondents were married, 56.25% had between 5 and 10 people as their household size with a mean household size of 7 people. This is likely to increase the number of people that are involved in fresh fish marketing within the households and consequently increase profit.

Only 7.5% of the respondents had no formal education, 30% had primary education, 60% had secondary education and 2.5 % had tertiary education. The mean year of schooling was 12.31 years. The respondents' high literacy level would have positive consequences on their capacity to exploit latent opportunities in their marketing activities and also support them in the adoption of improved technology. This is corroborated by Fawole and Fashina (2005) on association of education with the use of technology on organic fertilizer. The marketing experience of the respondents range from 3-22 years with majority (50%) falling within 11-15 years of experience range. The mean year of marketing experience was 13.4 years. Dey *et al.*, (2002) agreed that experience is crucial, reduces management risks and is contributing to the success of Asian aquaculture. Furthermore, majority (55%) of the respondents financed their business through personal savings while 63.75% had only one sales outlet. These clearly indicate that majority of the fresh fish marketers in the study area operate on a small scale. Figure I shows that majority (82.5%) of the respondents belong to fresh fish marketing association. This could have positive impact on their credit mobilization abilities.

Table 1
Socio-economic characteristics of fresh fish marketers

Characteristics	Frequency	Percentage	*N=80*
Gender			
Female	68	85	
Male	12	15	
Age			
Less than 30	11	13.75	
31-40	20	25.00	
41-50	41	52.25	
Above 50	08	10.00	
Mean (years)	***43.8***		
Marital Status			
Single	12	15.00	
Married	46	57.50	
Divorced	13	16.25	
Widowed	09	11.25	
Household Size			
Less than 5	26	32.50	
5-10	45	56.25	
Above 10	09	11.25	
Mean (years)	***7.0***		
Educational Qualification			
No Formal Education	06	7.50	
Primary education	24	30.00	
Secondary Education	48	60.00	
Tertiary Education	02	2.50	
Mean (years)	***12.31***		
Marketing Experience			
≤ 5	11	13.75	
6-10	15	18.75	
11-15	40	50.00	
16-20	12	15.00	
>20	02	2.50	
Mean (years)	***13.24***		
Source of capital			
Personal savings	44	55.00	
Friends and relatives	23	28.75	
Cooperatives	13	16.25	
Sales Outlets			
1	51	63.75	
2	20	25.00	
3	09	11.25	

Source: Field Survey Data, 2015

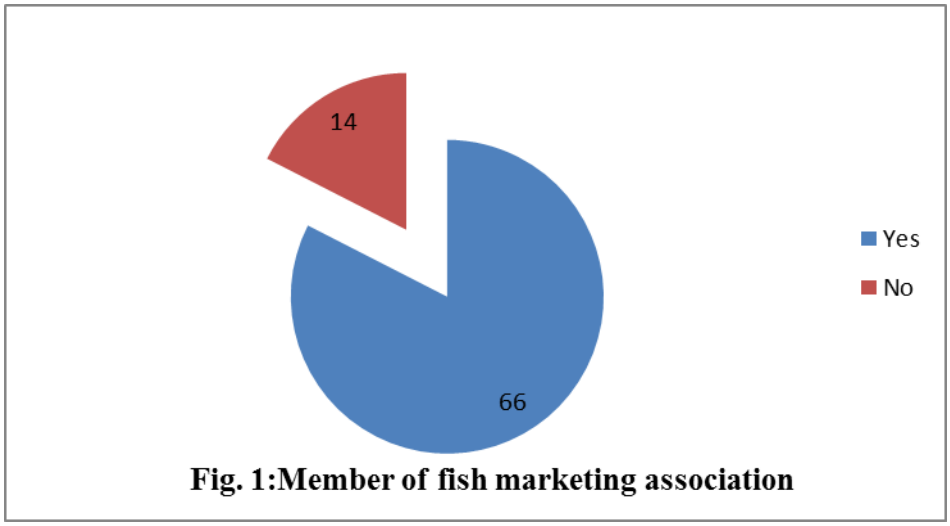

Fig. 1:Member of fish marketing association

The market structure for fresh fish in the study area

Table 2 presents the Gini –coefficient for fresh fish market in the study area within a year. The Gini coefficient value of 0.4058 indicates a high level of concentration and consequently high inefficiency and inequitable income distribution in the market structure for fresh fish in the study area. This result is in agreement with Dillion and Hardaker (1993) who posited that the value of Gini coefficient greater than 0.35 indicated a high level of concentration and inefficiency in the market structure. The result is also in line with Adeleke and Afolabi (2012) who reported a Gini coefficient value of 0.5292 indicating inequitable distribution of sales income in fresh fish marketing in ondo state.

Table 2

Computation of Gini Coefficient for fresh fish marketers in the study area

Sales income (₦)	Number of sellers	Proportion of sellers (X)	Cumulative proportion of sellers	Total sales (₦)	Proportion of sales	Cumulative proportion of sales (Y)	XY
<200,000	3	0.04	0.04	540,120	0.02	0.02	0.0008
200,000-300,000	7	0.09	0.13	1,664,800	0.05	0.07	0.0063
301,000-400,000	9	0.11	0.24	2,225,245	0.06	0.13	0.0143
401,000-500,000	29	0.36	0.60	12,330,780	0.35	0.48	0.1728
>500,000	32	0.40	1.00	18,300,000	0.52	1.00	0.4000
Total	80	1.00		35,060,945	1.00		0.5942

Source: Field Survey Data, 2015

Gini co-efficient = 1 - ΣXY

= 1- 0.5942

= 0.4058

Gross margin analysis

The cost and return analysis is presented in table 3. The result revealed that the cost of purchasing fresh fish (92.84%) accounted for the largest proportion of the total cost of marketing fresh fish in the study area. This is followed by transportation cost (2.15%). The cost of rent and storage constituted 1.21% and 1.07% of the total cost. The total variable cost accounted for 98.98% while the total fixed cost constituted only 1.02% of the total cost. The average total cost incurred by the respondents per month was ₦39,614.49 while total revenue of ₦63,439.45was realized thereby returning gross margin of ₦24,230.83 and net margin of ₦23,824.96. The rate of return on investment of 0.60 implies that for every ₦1 invested in the marketing of fresh fish, a return of ₦1.60 and a profit of ₦0.60 were realized. This implies that fresh fish marketing is a profitable venture in the study area. This result is consistent with the findings of Adeleke and Afolabi (2012) and Adeosun and Adebukola (2012) in their

studies on appraisal of fresh fish marketing in Ondo State and determinants of income from fresh fish marketing in Ibarapa area of Oyo State respectively

Table 3
Total Variable Cost (TVC) row should align with others using the tab keys

Cost items	**Amount (₦)**	**% of Total cost**
Variable costs		
Cost of purchase	36,780.00	92.84
Cost of transportation	850.00	2.15
Rent	480.00	1.21
Cost of storage	425.37	1.07
Cost of labour	398.25	1.01
Local government levies	275.00	0.69
Total Variable Cost (TVC)	39,208.62	98.98
Total Fixed Cost (depreciated)	405.87	1.02
Total Cost (TC)	39,614.49	100
Return		
Total revenue	63,439.45	
Gross margin (TR-TVC)	24,230.83	
Net margin (GM-TFC)	23824.96	
Rate of return (NM/TC)	0.60	

Source: Computed from field survey data, 2015

Determinants of income from fresh fish marketing

The multiple regression analysis was carried out to examine the determinants of income from fresh fish marketing in the study area. The lead equation was the linear regression model in which the sign of the coefficients followed a priori expectations. The F-statistics of 10.121 was significant at 1% level of significance attesting to the goodness of fit of the model. The R^2 value of 0.634 showed that 63% of the variation in the income from fresh fish marketing is jointly explained by the socio-economic variables included in the model. The result presented in table 4 revealed that income from fresh fish marketing in the study area was significantly determined by the proportion of household members involved in the marketing of fresh fish, experience of the marketers, unit price of fresh fish, capital, number of sales outlets and cost of transportation.

The proportion of household members involved in fresh fish marketing had a positive and significant relationship with income from fresh fish marketing in the study area at 0.05 alpha level. This implies that income from fresh fish marketing increases with increase in the number of people that participated in marketing from the household. The number of years of experience ($p<0.1$) the marketers have, was found to have a direct significant influence on income. This indicates that the marketers are able to manage risks well with higher years of experience and therefore increase their income level. The unit price of fresh fish ($p<0.05$) and cost of transportation ($p<0.1$) showed a negative and significant relationship with income as expected. This implies that income from fresh fish marketing decreases with the increase in unit price of fish and cost of transportation and vice versa. Furthermore, capital ($p<0.01$) had a positive and significant relationship with income from fresh fish marketing in the study area. The implication of this is that the larger the investments base of the marketers, the higher the income that they will obtain. Finally, the number of sales outlets ($p<0.05$) owned by the marketers had a positive significant relationship with income. This indicates that marketers who are able to expand their enterprise by owning more than one sales outlet earn more income. In other words income level increases with number of sales outlet.

Table 4
Determinants of income from fresh fish marketing

Variable	Coefficient	T-ratio
Constant	4143.02*(1146.88)*	3.61***
Age (X_1)	-29.87*(49.03)*	-0.61
Household size (X_2)	513.11*(247.35)*	2.07**
Marketing experience (X_3)	80.26*(54.21)*	1.84*
Education (X_4)	-152.53*(174.74)*	-0.87
Unit price (X_5)	-611.28*(500.59)*	-2.61**
Capital (X_6)	1.097*(0.204)*	5.38***
No of sales outlet (X_7)	0.396*(0.165)*	2.40**
Cost of transportation (X_8)	-163.06*(35.67)*	-1.96*
R^2	0.634	
Adj. R^2	0.581	
F- Stat	10.121	

****, **, * indicates significant at 1%, 5% and 10% respectively*
Standard errors are in parenthesis
Source: Computed from Field Survey Data, 2015

Major Problems Faced by Fresh Fish Marketers in the Study Area

Figure II shows that the major problems facing the fresh fish marketers in the study area were capital (76.25%), cost of purchase (42.5%), lack of storage facilities (81.25%), high transportation cost (53.75), lack of market stalls (51.25%), scarcity (47.5%), fees and levies (28.75) A larger proportion of the respondents reported lack of storage facilities as their major problems. This could be attributed to erratic electricity supply which is highly needed for preserving leftovers. The seasonal nature of fresh fish gives rise to the problem of scarcity which in turn leads to the high cost of transporting the fresh fishes to the marketers various sales outlets. Capital was also found to be a great challenge to the fresh fish marketers in the study area. This is because most of the marketers do not belong to any marketing association, which according to them was always clouded with leadership problems and embezzlement

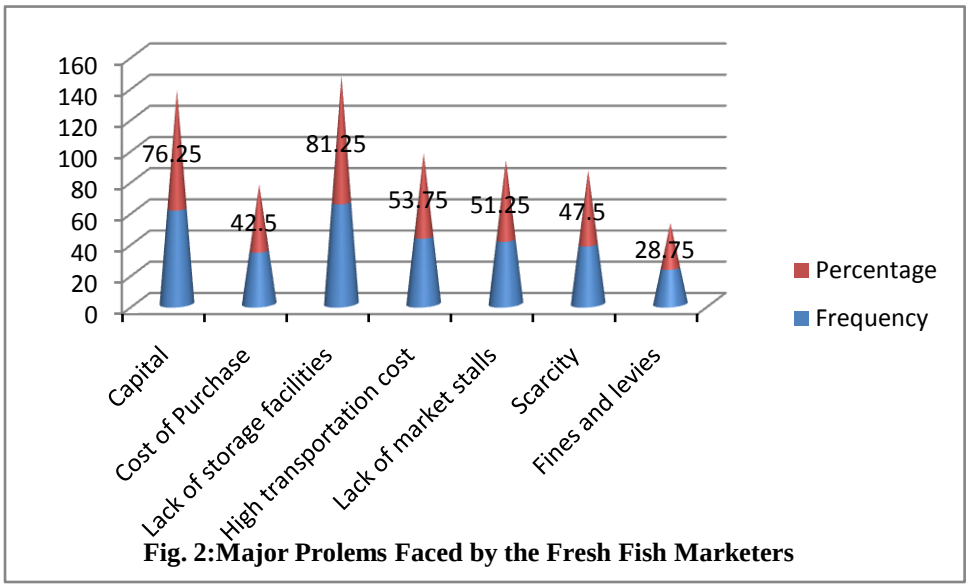

Fig. 2:Major Prolems Faced by the Fresh Fish Marketers

Note: Multiple Responses

Conclusion and Recommendations

Based on the gross margin analysis and the value of the rate of return to investment, it can be concluded that fresh fish marketing in Alimosho Local Government Area of Lagos State is economically rewarding and profitable. It is capable of creating employment, augmenting income and improving the standard of living of the marketers.

The following policy recommendations are made based on the findings of the study:

- There is need to build more storage facilities and increase electricity supply in the study area to reduce wastage due to high perishable nature of fresh fish. Wastage could also be reduced by encouraging fish smoking through the use of cheaper fuel alternatives such as rise husks, wood wastes maize cobs as substitutes for electricity and wood
- Government should create more enabling environment such as loan facilities to encourage more people to go into aquaculture so as to beat the seasonality of fresh fish supply
- The marketers cooperative societies should be strengthened by government into viable and formidable group so that the fresh fish marketers can enjoy economies of scale in the purchase and sales of their products.

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