Fresh fish (*Clarias gariepinus*) marketing system in major towns of Ibarapa zone, Oyo State, Nigeria

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Abstract

This study was carried out to investigate marketing system, market channel, nature of costs, market margins and the factors determining the marketing profit of fresh fish (Clarias gariepinus) in major towns in Ibarapa Zone, Oyo state. Data were collected through the use of questionnaire administered to the fish traders. Purposive and simple random sampling procedures were adopted in the study. The data were analyzed by descriptive method which involves percentages, frequency distributions, market margin and regression. The study showed that women (85%) formed the highest number of fish traders in Ibarapa zone, women of age 30 years and above formed the bulk of the fish traders (70%), seventy (70%) were married, and ninety- five (95%) of the respondents were educated and their source of capital investment was through personal saving. The fish traders recorded high sale in the evening and determined their market price by size. All fish traded internally moved through the processors, no intermediary was involved in dealing with fish distribution and marketing system. A great amount of profit was made by all the processors in the market. The marketing margin was 24.24 % and marketing efficiency was 22.46%. It was recommended that government should create a more enabling environment for more people to go into aquaculture so as to beat the seasonality of fresh fish supply in the towns.

Key words: *Marketing system, Market channel, and Market margin*

Introduction

There is increasing need for protein in human diet because of increase in population growth. The need for protein is more critical in the tropical region wherein lies most of the developing countries. Fish is a preferred protein source as it supplies essential nutrients which are lacking in other diets and its consumption is not forbidden within religious groups; unlike the eating of dog and pork forbidden in Islam (Agbelege and Ipinjolu, 2003). At present, fish constitutes 40% of animal protein intake (Atanda, 2009). Animal protein sources such as beef, mutton, and chicken are beyond the reach of an average income earner, hence there is increasing demand for other affordable sources of protein (Samson, 1997). In 1981, 384,000 tonnes of

fish were consumed in Nigeria out of which 296,000tones were produced locally and 15,000 tonnes were imported. It is also known that fish contributed 6-8% of the agricultural sector. By this, fisheries sub-sector provides employment to many Nigerians including those involved in direct fishing, processing and marketing. This therefore, requires that efforts should be intensified to boost production and making it available to the people in the market.

Marketing is an integral aspect of fish production because it is only when the fish gets to the consumers that production is said to be complete. Marketing has been defined as all processes involved from the production of a commodity until it gets to the final consumer. Marketing system is one of the main circumstances of socio economic conditions of

the local people and production system of any area. With intra-linkage and inter-linkage from production sector to consumer sector, it is a chain of various systems involved in marketing. As fish and fishery products are highly traded commodities, fish production is a necessary part of the marketing process.

Fish is a major source of protein in the diet of human, hence, the need for this study in Ibarapa zone. The study, therefore, was designed to investigate fish marketing situation in Ibarapa. The study's specific objectives were to identify the existing marketing systems, describing their functions, estimating the costs, revenues and margins of the traders and as well assessing the prospects and constraints of the fresh fish market to promote fishing activities in the town.

Materials and Methods

The study was conducted in Ibarapa zone. Ibarapa zone comprises of three Local Government Areas (LGAs), namely; Ibarapa Central, Ibarapa North and Ibarapa East. Ibarapa East was carved out from the old Ibarapa Local Government while Ibarapa Central and North were carved out of the former Ifeloju Local Government area in 1996.

Ibarapa zone is dominated by the seven famous towns of Lanlate, Eruwa (headquarter of Ibarapa East LGA, Igboora (headquarter of Ibarapa Central LGA), Idere, Ayete (headquarter of Ibarapa North LGA), Tapa and Igangan. Ibarapa zone falls within latitude 7^0 15' N and $7^0$55 ' N and longitude 3^0E and $3^0$30' E. The region is bounded in the north by Oke-Ogun area of Oyo State (Iwajowa, Kajola and Iseyin LGAs), in the East by Ido, and in the West and South by Ogun State of Nigeria.

Preliminary visits to the towns revealed that there were no designated markets where fresh fish was sold. The study used data collected from processors that sell fresh fish at hotels, beer parlours and club houses.

The sampling technique employed for this study was a combination of purposive and simple random sampling. The technique was used to select fish marketers in the study area. All the 6 towns, except Igangan, were sampled. This is because there was no fresh fish market in Igangan.

Data collection

Data for this study were collected mainly from primary source. Primary data were collected from 40 respondents through the use of scheduled interview with the aid of structured questionnaires. . Data collected include the socio-economic characteristics of the marketers like age, sex, level of education, marketing experience, marketing character-ristics such as price, costs, return, and problems associated with fresh fish marketing.

Data Analysis

The methods of data analysis adopted in this study were simple descriptive statistics, market margins and regression analysis.
Descriptive Statistics: - This involves the use of measures of central tendency such as, frequency and percentage to analyze socio-economic characteristics of fish sellers and problems associated with the marketing.
Marketing Margin Analysis: **-** Estimates of marketing margins and marketing efficiency were obtained using the formula given of Kohls (1985). According to Kohls (1985), marketing margin is the difference between selling price and purchasing price expressed as a fraction of the selling price as a percentage. It is expressed as follows:

Marketing Margin =

$\dfrac{\text{Selling price-Purchase Price}}{\text{Selling Price}} \times 100$

The net margin accruing to the wholesaler or the retailer is the difference between the market margin and the marketing costs. Marketing cost is the sum of transport cost, storage cost, labour cost and other costs.

Marketing efficiency was calculated using the formula given of Olukosi and Isitor (1990). The formula specified that:

Marketing efficiency =

$\dfrac{\text{Value added by marketing activities}}{\text{Marketing costs}} \times 100\%$ ……..(1)

In other words, Marketing efficiency =

Net Margin   x 100%

Marketing costs …………(2)

To calculate market margin and market efficiency, the average prices in naira per 10kg of fresh fish was used as by the fish processors in the various towns, i.e., the calculation was based on the price (naira) per 10kg of fish.

Regression Analysis

The regression analysis was carried out to examine the factors affecting marketing profit of fresh fish sellers. In this study, the dependent variable is the profit obtained by the sellers in the market, while the exogenous variables are the factors affecting the level of the profit, such as marketing experience, level of education, quantity of fish purchased, and operational cost (Adesina and Djato, 1996; Squires *et al.,* 1998). Four functional forms were fitted, these were linear, semi log, double log and exponential. The model with the best fit was then chosen as the lead equation following Gujarati (1995), and Olayemi (1998).

Elasticities were computed for each independent variable using the regression coefficients (Olayemi, 1998). These elasticities measure the sensitivity of profit to each independent variable. Elasticity is defined as the proportionate change in dependent variables of the socio-economic values of the sellers to a one percent change in profit. In this study, profit elasticities with respect to variable in the profit model are determined. Where the coefficient is greater than 1, it is elastic; and inelastic, if less than 1.

The least square regression model is specified below:

$Y = F (X_1, X_2, X_3, X_4, X_5, X_6, ei)$

Where P   =   Profit per week (₦)

EXP   =Marketing experience (yrs)

WA   = Wages (₦)

CAP   = Capital (₦)

QTY   = Quantity of fish purchased (kg)

TRAN = Transportation (₦)

EDU   = Education (yrs)

ei = stochastic error term.

The independent variables specified as determinants of profits were identified from the theoretical issues established from literature (Jamison and Lau, 1962; Pudasain, 1983; Adesina and Djato, 1996; Adegeye and Ditto, 1985).

Results and Discussion

Socio-Economic Characteristics of Respondents

Table 1 shows that majority of fresh fish sellers were female (85%) while 15% are male. This means that females engaged in fresh fish selling in Ibarapa zone. This could be as a result of cultural belief of people in the study area that marketing is a business activity of women. Also 30 % of fresh fish sellers were within the age of 21-30 years, 35 % fell within age group of 31-40 while 30 % were within age group of 41-50 years old. The average age among the sellers was found to be 35 years with standard deviation of 8 years. This reveals that majority of the fresh fish sellers were young. Seventy percent of the fresh fish sellers were married while 30% were single. This indicates that married people were the principal participants in fresh fish marketing in Ibarapa zone. Findings further show that 95% of the fresh fish sellers in Ibarapa zone did not have up to tertiary education, 15% had secondary education and 75% of fresh fish sellers had only primary education. All these imply that majority of the respondents had at least basic primary education which enhanced their businesses. This corroborates the report of Pala (1976) that formal education is an important factor in the performance and management of fish marketing and fishery sector in general.

The fish trading experience among the respondents ranged from 5 to 15 years with mean value of 9 and standard deviation of 3 years of experience. Moreover, 37.50 % of the respondents started the business with money collected from relatives, 12.50 % established the business with loans from cooperative while 50.00 % started the business with personal savings.

Table 1: Socio economic characteristics of fresh fish traders n=40

Socio Economics Variables	Frequency	Percent
Sex		
Male	6	15.00
Female	34	85.00
Age		
21-30	12	30.00
31-40	14	35.00
41-50	12	30.00
>50	2	5.00
Marital status		
Single	12	30.00
Married	28	70.00
Education		
No formal	2	5.00
Education	30	75.00
Primary Education	6	15.00
Secondary	2	5.00
Education		
Tertiary Education	6	15.00
Years of	10	25.00
Experience	20	50.00
< 5	4	10.00
5 - 10		
11-16		
>16	-	-
Source of Business	15	37.50
Capital	5	12.50
Bank loan	20	50.00
Relatives		
Co-operatives		
Personal saving		

Source: Field survey, 2012
Marketing system in Ibarapa zone
Sources of Fresh Fish Sold in Ibarapa zone

The fresh fish sold in Ibarapa were from both private and government fish farms. Catfish (*Clarias gariepinus*) constituted the bulk of fish coming from these farms.

The market actors

Generally, the fish processors were the main actors involved in the fresh fish marketing activities in Ibarapa. This could be due to the fact that in Ibarapa, there is no designated market where fresh fish are sold. Fish farmers were observed to sell freshly harvested fish to the processors who processed it into peppered soup and sell them in peppered soup joints, club houses, hotels and beer parlours. The producers were also observed to sell fish to the consumers on demand. There was no law regulating the sale to the

consumers, with the producers selling as little as 1kg of fish to the final consumer. Furthermore, about 70 % of fresh fish traders sold mostly in the evening time while 30 % sold in the afternoon. This means that buyers patronize or purchase fish in the evening due to the structure of the market. Majority of buyers were government workers, bankers, lecturers and medical personnel who patronized the various places for refreshment.

Determination of price at which fish was sold
Price is the amount that the retailer charges for his/her fish. It is, therefore, the ultimate expression of relationship between the buyer and seller. Price is very crucial in any marketing system. It determines the success or failure of all marketing agents. Price is based on the cost of fish bought by the retailer. Sizes of fish play a very important role in costing and pricing in fish marketing. The traders determine the price at which fish was sold to their customers by their respective sizes. Fresh fish that weighed 700g and above, commanded a higher unit price more than 250g or less. The processors valued big fish because it can be easily be cut into two and sold for more than ₦500. The estimated prices for fresh catfish among the processors are as shown in the Table 2 below.

Table 2: Estimated Unit Prices for Fresh Catfish

Size of fish	Weight of fish (g)	Price /kg (₦)
Small	250-350	270
Average	400 -450	350
Medium	500- 650	450
Large	>700	500 and above

Source: Field Survey, 2012

Marketing Channel
A distribution channel can be defined as a sequence of markets or discrete exchanges which a given product passes through under the supervision and control of middlemen from the production location to the final consumer. The chain of distribution of fresh fish is relatively short as compared to other products due to the nature of the product and the conservation methods (CEPID, 1997).

Fresh fish marketing in Ibarapa is largely controlled by processors. Minor intermediaries operate between producers and final consumers. In the study areas, fresh fish marketing was generally characterized by shorter distribution channels. In general, there were four likely places where fresh fish reached before the final consumer in the study areas, namely; the peppered soup sellers, hotels, beer parlours and club houses. No market was found or designated as a fish market. Fresh fish traders bought and sold only *Clarias gariepinus* and obtained their supply from fish producers. The marketing channel is shown in Fig 1:
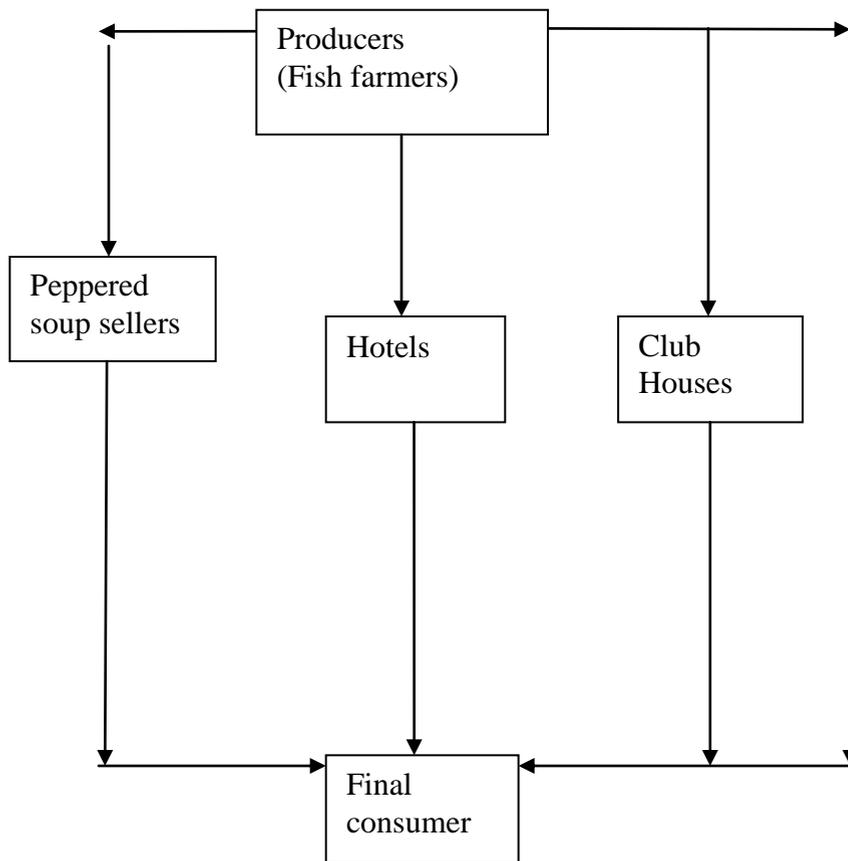
Fig. 1: Marketing channel of fresh fish in Ibarapa zone, Oyo State, Nigeria
Source: Author

Marketing Function

The selling function includes all activities involved in the display of fresh fish at the market. Most of the sellers sold their fish at beer parlours, hotels and club houses. Transportation function was responsible for making fresh fish available for consumers. Most of the respondents made use of bicycles to convey the fresh fish brought to their shops. All the respondents confirmed that they did not perform storage function at all since they bought only the quantity of fish they would sell each day.

Fresh fish traders obtained their fresh fish supply on the average of about1 km away from the trading market. As expected, they sourced their fresh fish supply as near as possible to the market as this had implications for their transport and marketing costs and ultimately for their profit. All the respondents used bicycle to transport the fish from the source to market, as this was the most accessible mode of transport in the study areas. The average cost of transportation among the traders from farms to their sale points was about ₦120 per 10 kg of fish.

Marketing Margin Analysis
Analysis of marketing margin of fresh fish

The marketing margin represents the price paid for a collection of marketing services and its size reflects the structural efficiency of the marketing system (Ahmed and Rustagi, 1987). The marketing margin

analysis as shown in Table 3 reveals a high marketing margin which is also reflective of the exploitative nature of the fish processors at the consumers' end.

The only marketing function carried out in the marketing process is transportation and constituted about 2.20 % of the cost of production. The transportation cost as noted by the marketers was influenced by the lack of motor vehicles to convey fish from sources of supply to the shops where the fish were sold, and the poor rural road net work. Another cost

was 5.50 %, representing the cost of value addition to the fish as a result of processing.

The marketing margin was 24.24 %. The marketing efficiency was 22.46 % and this showed that the market was inefficient. Marketing efficiency ranges from zero (0) to infinity. Scarborough *et al*. (1992) noted that if marketing efficiency is less than 100 % it indicates inefficient market where as if the marketing efficiency is greater than 100 %, there is excess profit.

Table 3: Estimated Marketing margin of 10kg of Fresh fish

Marketing Cost Components	₦/10 kg	% of Total cost
Purchase price	5000.00	91.66
Facilitating cost		
Transportation	120.00	2.20
Storage cost	35.00	0.64
Other cost	300.00	5.50
Total marketing cost	5455.00	100
Selling price	6600.00	
Gross Market Margin	1600.00	
Net margin	1225.00	
Marketing margin	24.24	
Marketing Efficiency	22.46	

Source: Field survey, 2012

Determination of factors determining marketing profit
An analysis of the factors determining the

marketing profit of fresh fish sellers in the study area is as shown in Table 4.

Table 4: Multiple regression result of factors determining marketing profit

Variable	Coefficient	Standard error
Constant	2.489**	1.067
X_1 (Years of experience)	0.197**	0.009
X_2 (Wages)	-0.256***	0.093
X_3 (Quantity of fish purchased)	0.174**	0.098
X_4 (Capital)	1.033***	0.257
X_5 (Transportation)	0.0240	0.040
X_6 (Education)	- 0.024	0.111

Adjusted R^2=0.58; F-ratio=15.18***
***,**,*: Significant at 1%, 5% and 10% respectively, All the variables are as earlier defined.

Double – log function was selected as the lead equation. This was the functional form which performed best out of the four

functional forms experimented with. The results show that the variability in the profit, (Y_i), is explained by all the independent

variables. This is shown by the value of the R^2 of 0.41. Compare the R^2 in table 4.This means that the variables explained only 41% of the total variability in the profit. The F-statistics shows that the joint influence of all these variables on (Y_i), profit, is significant at 1% level.

The year of marketing experience (X_1) and quantity of fish purchased (X_3) were both statistically significant at 5% and had the expected positive sign. On the other hand, wages (X_2), and capital (X_4), were statistically significant at 1% level but were negative. Transportation was not statistically significant at any level and was negative. Education (X_6) was statistically significant at 1%. In consonance with a priori expectation the regression coefficient of the values of years of marketing experience (X_1) and quantity of fish purchased (X_3) had the expected positive sign. This indicates that as these variables increased, profit also increased, indicating a direct relationship to the profit of fresh *Clarias gariepinus* sellers. The coefficient of values of transportation (X_5) and wages (X_2) also had the expected negative sign. Contrary to a *priori* expectation, the coefficient of capital (X_4) was negative. The coefficient of values of education (X_6) was negative. This was also contrary to a priori expectation.

The variable for years of marketing experience (X_1) was positive and significant indicating greater experience increases profit as well as efficiency (Squires *et al* 1998). Marketing experience of sellers often provided better knowledge about the location of fish producers and how to best sell the fish. Sanzidur (2003) found a positive relationship between experience and profit. An experienced marketer will be able to strategize and allocate his resources in a way that will bring high returns. Also, this can be explained by the fact that the longer they stay in business, the more the customers they are likely to make and the more their sales per week would likely be.

The coefficient of wages (X_2) implies that as money spent on the wages increases, it will have a decreasing effect on profit accruing to the sellers. This result agreed with the finding of Adesina and Djato (1996). The coefficient of fish purchased (X_3) is showing that the more the retailers have fish for sale the more money they will realize as profit.

The coefficient of capital (X_4) vividly shows that the fish sellers do not require more capital investment due to the scale of their business. The result is contrary with the findings of Adesina and Djato (1996). The coefficient of transportation (X_6) which was negative and not significant at any level implies that the fish sellers did not spend much money on transportation and had an inverse relationship with profit.

The coefficient of education was significant at 1% level. The coefficient of education with respect to the profit in this analysis was negative this suggest that the level of education is inversely related to the profit. This finding could be justified from the result of level of education of fish seller which showed that most of the fish sellers did have more than secondary education.

Major Constraints to the Fish Marketing System

This research identified a number of constraints to the efficient functioning of the fish marketing system in the study area. The identified constraints are as shown in Table 6.

Table 6: Major Constraints to Fresh Fish Marketing System in the Study Area

Constraints	Freq*	%
Low patronage	40	100.00
Inadequate Operating Capital	31	77.50
Inadequate and High cost of transport	29	72.50
Inadequate market information	28	70.00

Source: Field Survey, 2012

Generally, traders in the fish marketing system of Ibarapa zone are faced with the problem of low patronage. Inadequate operating capital, transport and market information were reported as major constraints to fish marketing system by 77.50 %, 72.50 % and 70.00 % of the sellers respectively.

Conclusion and Recommendation

The importance of fish cannot be over emphasized because of its roles as a rich protein source and income generation for rural households. This study revealed a profitable marketing system for fresh fish across Ibarapa zone with an appreciable net margin. The low patronage of customers is an indication that fresh fish is not popular in the zone. There is need to create more awareness on the importance of fish in diet Moreover, there is a need for establishment of more fish farms either by individuals or the government in order to increase supply to the system and reduce the price. If these constraints could be overcome, fish marketing by the women would provide a good avenue for reducing the level of poverty among rural women. In view of the importance of protein in human diet, financial institutions should aid fish processors and marketers by granting them credit facilities at affordable rates to enable them meet their demands. Marketing facilities like stalls, shops that are well equipped as well as conducive environment should be provided by relevant agencies.

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