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Structure, Conduct and Performance of Fish Marketing System in IMO State, Nigeria

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Abstract *- The study examined structure, conduct and performance of fish marketing system in Imo State, Nigeria, the problems were the inefficiency in the structure, conduct and performance of fish marketing system and market mechanisms which is not well structured to perform the role for efficient marketing system and non-availability of ready market, the specific objectives were to determine the socio – economic characteristics of fish marketers, determine the marketing system and marketing channels for fish, determine the level of seller concentration in the market for fish, determine the condition for entry and exit into the market, The study covered all the three agricultural zones namely, Okigwe, Orlu and Owerri agricultural zones. From each zone one urban market and one rural market were purposively selected because of concentration of catfish marketers. With the assistance of market authorities of each market visited, list of catfish traders were selected and a total of 60 catfish marketers were used for the study. A well-structured questionnaire was administered to the selected fish marketers. Data were collected and analyzed using descriptive statistical technique such as mean, frequency, Lorenze curve. The result showed the mean age was 46.50 years, 68.33% had tertiary education, 48.33% of the fish marketers purchase fish within Imo state while 28.33 purchase fish from outside Imo State. The mean quantity purchase at once was 93.33kg while the mean unit purchasing price/kg of fish was ₦2,425.42, 73.33% indicated that there were free entry and exit to the fish market, 83.33% do not belong to any marketer's association. The study recommends that fish marketers should form fish marketing cooperative society to enable them pool resources together to buy in bulk, marketers should also think towards building storage facilities to reduce the problem of spoilage of fish.*

Keywords: *Structure, Conduct, Performance, Catfish Marketing.*

I. INTRODUCTION

Globally, fish is one of the most important sources of food and livelihood for many households in Nigeria and other developing countries [(Food and Agriculture Organization (FAO), 2023)]. It has a great impact on the daily activities of most households in Nigeria by provision of job opportunities, income generation and nutrition (Agbakwuru and Osuji, 2024). It is an essential source of protein and it is consumed by every household in Nigeria. Fish consumption has been on the increase in recent years. On a global scale, fish consumption has been increasing at an annual rate of 4.1 percent from 1961 to 2022 (Nigussie et al., 2024). A rate almost twice that of annual world population growth at (1.6 percent) for the same period and higher than the demand of all other animal protein foods (meat, dairy, milk, etc.), which increased by just 2.1 percent per year (Dispesh et al., 2022). In the same manner, per capita fish consumption grew from 9.0 kg (live weight equivalent) in 1961 to 22.38kg/day in 2022 at a steady rate of 1.5 percent per year (FAO, 2019, Achonam et al., 2023). Between 2014 and 2023 the average annual per capita consumption of fish increased slightly from 20.10 Kilograms to 22.50 kilograms (Olagunju et al., 2024). It is a critical protein source in Nigeria accounting for around 40 percent of the country's protein intake (FAO, 2023). It is also a major contributor to the Gross Domestic Product (GDP) of Nigeria. Fish production is practiced all over Nigeria, however, while brackish water fish production is concentrated in the coastal regions with large body of ocean water, production in most of the upland areas are through aquaculture in a system of fishpond (Ragasa et al.,2022). Fishponds may be either concrete or in earthen forms [Fisheries Development in Nigeria FDF, (2021)]. Fish production is practiced all over Nigeria, however, while brackish water fish production is concentrated in the coastal regions with large body of ocean water, production in most of the upland areas are through aquaculture in a system of fishpond (Ragasa et al.,2022). Fishponds may be either concrete or in earthen forms [Fisheries Development in Nigeria FDF, (2021)]. There are basically two methods of fish production in Imo State. The first is the extensive method which involves fish farmers going out to the river or sea to fish. The second is the intensive method, which involve growing in ponds, plastic tanks or Water Recalculating System (WRS), this method of fish production is also referred to as aquaculture. It is a method of rearing aquatic

organisms, including fish, with human intervention in order to increase productivity. This is the most commonly used method of fish production in Imo State, Southeast Nigeria (Sadan and Amuda, 2023). Imo State has over 300 fish ponds and 13 hatcheries, making the State to have advanced over the years to become one of the foremost fish producing States in Nigeria. Farmers in Imo State going into fish farming are either at a subsistent level or commercial enterprise (Obasi, 2004). The most popular and commonly grown fish species in the Imo State is catfish (*clarias gariepinus*) also known as African sharp tooth. Catfish is a species of catfish of the family of clariidae, the air breathing catfishes, which is reputed to be most preferred in terms of adaptability, marketability and feed conversion efficiency (FDF, 2021).

Therefore it becomes compellingly desirable to seek a thorough understanding of the fish marketing system in Imo State, which has not been undertaken in the past (FMARD, 2021, CBN, 2021). Mc Namara, (2011) noted that fish marketing system is a wide range of activities involved in making sure that producers are trying to meet the needs of consumers and at the same time getting appropriate value in return to stimulate enough production and create jobs (World Food Programme (WFP, 2021). Fish marketing in Imo State, Nigeria involves the collection, processing, storage and transportation of fish from fish farms, fishing communities to markets or major consumption centers. According to United States Agency for International Development (USAID) (2023) and Ocholi (2023) structure, conduct and performance is an analytical approach or framework used to study how the structure of the market and the behaviour of sellers of different commodities and services affect the performance of market and consequently the welfare of the country. In this regard, a study of the market structure, market conduct and market performance for fish becomes very relevant including understanding marketing channel. Marketing channel is an outlet or platform through which business connects and communicates with their target audience. Market structure and conduct are seriously linked in fish performance matrix (Beg et al., 2024). Market structure measures degree of buyers/sellers concentration and distribution (Lábaj et al., 2017). It refers to the number of buyers and sellers, their size distribution, the degree of product differentiation, seller concentration and ease of entry and exit of firms into an industry and knowledge about costs, prices and market conditions (Yonas et al., 2020). Market conduct refers to the behaviour of firms or strategies used by firms and the behaviour of middlemen with regard to their pricing and product policies. Market performance is an economic indicator that is reflected by profit and efficiency. It is a reflection of structure and conduct on product price cost and the volume, quantity output. The objectives include to determine the socio – economic characteristics of fish marketers in the study area, determine the fish marketing system and marketing channels, for fish in Imo State, determine the level of seller concentration in the market for fish.

II. MATERIALS AND METHODS

The study was carried out in Imo State, Nigeria. Imo State is located in the eastern zone of Nigeria. Imo State is divided into three agro-ecological zones. They are Owerri, Okigwe and Orlu. The three zones namely Owerri, Okigwe and Orlu were purposively selected for the study to achieve capturing fish marketers in all the three zones of Imo State. With a simple random sampling technique, six markets were selected from the three agro-ecological zones. From each zone one urban market and one rural market were purposively selected because of concentration of fish marketers. From Owerri agro-ecological zone, Eke-Ukwu market, Owerri Municipal and Egbeada market in Mbaitolu LGAs were selected. Orlu agro-ecological zone, International market Orlu LGAs and Orie Amucha Njaba LGAs were selected. Okigwe agro-ecological zone, Eke Okigwe market Okigwe LGAs and Orie Amaraku Isiala Mbano LGAs were selected. With the assistance of market authorities, a list of catfish traders were compiled. From the list, a simple random sampling techniques and snowball sampling technique were used to select ten (10) catfish marketers who were selected from each of the urban and rural markets selected to give us 20 catfish marketers from each agricultural zone, making up a total of sixty (60) catfish traders for the interview because of the characteristics of catfish marketers and the nature of the commodity in question 60 were selected. Descriptive statistical tools such as mean, frequency distribution, flowcharts and percentage distribution of respondents were used in data analysis. (Oke et al., 2021). These were used in analyzing the socio-economic characteristics of respondents as well as marketing system including concentration of buyers and sellers, conditions of

entry and exist. In determining the seller concentration, Lorenze Curve was used. The level of organization and the structure is proxy by the concentration of buyers and sellers and the Lorenze curve, (Girei et al., 2021; Taiwo et al., 2021), the Lorenz curve shows how revenue is distributed within in a certain market. It was designed in 1905 to represent the distribution of wealth by Max O. Lorenz. The total percentage of income earned by various demographic groups is shown on the Lorenz curve (Moses et al., 2023). It is a graphical representation of income inequality or wealth inequality. The graph plots percentiles of population on the horizontal axis according to income wealth and plots cumulative income or wealth on the vertical axis.

III. RESULTS AND DISCUSSION

Socio-Economic Characteristics of Fish Marketers

Table 1 shows the distribution of fish marketers according to age, from the table it indicated that 33.33% of the fish marketers were within the age range of 41 – 50 years, their mean age was 46.5 years indicating that they were young adults, who were active and energetic. The result further indicated that majority of the fish marketers (71.67%) were male. The finding as expected since male fish marketers' tens to have more resources and physical energy to withstand the stress and strain involved in fish marketing, which agrees with Sadan and Amuda (2023) who reported that male dominates fish marketing because they have the energy to withstand stress, access to capital to adequately make profit from sales. The result indicated that majority of the fish marketers 95% were married with family responsibilities indicating that fish marketing in the study area could be a food security business since it was being done mainly by married males and females who had families to cater for, which is in line with the findings of Ekine and Binaebi (2018) who reported that married fish marketers had access to labour, collective financial resources and information from their spouse and family members to increase sales, profit and standard of living. The result indicated that higher proportion of fish marketers 68.33% in the study area. The result indicated that most of the marketers 46.67% had spent between 6 – 10 years in the business with a mean year of experience was 8.5 years. This shows that they are quite experience in fish marketing which will enhance proper conduct of fish market. Experienced fish marketers can identify consumer trends and preferences, guiding the development of new products and services, it is in line with Eze et al., (2023) who asserted that experienced in marketing helps fish market vendors identify and target their ideal consumers more effectively, leading to increased sales. The result shows that more of the respondents 60% were into trading including fish marketing than any other occupations.

Table 1: Socio-economic characteristics of fish marketers

Variable	Frequency	Percentage	Mean ($\bar{x}$)
Age			
21 – 30	9	15.00	
31 – 40	7	11.67	
41 – 50	20	33.33	46.50 years
51 – 60	17	28.33	
61 – 70	7	11.67	
Gender			
Male	43	71.67	
Female	17	28.33	
Marital Status			
Married	57	95.00	
Single	2	3.33	
Widowed	1	1.67	
Educational Level			
Primary Education	5	8.33	
Secondary Education	14	23.33	
Tertiary Education	41	68.33	
Experience in Fish Marketing			

01 – 05	16	26.67	
06 – 10	28	46.67	
11 – 15	10	16.67	8.5 years
16 – 20	5	8.33	
21 – 25	1	1.66	
Major Occupation			
Trading	36	60.00	
Artisan	2	3.33	
Civil Service	3	5.00	
Public Service	4	6.67	
Farming	21	35.00	
Total	60	100	

Source: Field Survey Data, 2025

Fish Purchasing of Fish Marketers

Table 2 shows the place of purchase of fish. The result indicated that 48.33% of the fish marketers were purchasing their fish for sale within Imo State, 23.33% of them obtained their fish for sale from their own fish farms. Places for obtaining stock for sale have some implication on sales prices since transport cost varies with distance which is in line with the findings of Acharjee et al., (2023) who asserted that place of purchase of live fish significantly impacts freshness and quality, consumer trust, variety and availability, pricing, sustainability, convenience, customer service, cultural experiences, safety and environmental impact. The result further indicated that 60% of fish marketers used bus vehicle as their means of transportation. 40% were spending within the range of ₦1,000 and ₦5,000 as cost of transportation. Which Agbakwuru and Osuji (2024) opined quality of transportation infrastructure, including roads, water, affects transport costs. The result further indicated that 66.67% were purchasing fish direct from fish producers. Higher proportion of 35% of fish marketers purchased between 21kg to 40kg of fish. About 21.67% of the fish marketers purchased their fish within unit price per Kg ranging between ₦3,001 - ₦3,500. The result indicated that majority of fish marketers 60% marketed their fish at farm gate indicating that they produced and sold at their farms. The result further indicated that 46.67% of fish marketers spent between ₦5,000 to ₦10,000 to pay for their space or store rent for every month. About 33.33% of the fish marketers spent ₦26,000 and above on hired labour in a month. Majority of the fish marketers 75% sold their fish direct to consumers, the result of Taiwo et al., (2021) asserted that customer behavour and preference, dietary, health concerns and cultural factors drive shift in demand and market strategies. The result further shows that 36.67% of the fish marketers could sell between 1kg and 20kg of fish per day. Higher proportion of the fish

Table 2: Fish purchasing of fish marketers

Place of Purchase of Fish	Frequency	Percentage	Mean
Own farm	14	23.33	
Imo State	29	48.33	
Outside Imo State	17	28.33	
Method of Transportation			
Private Vehicle	16	26.67	
Bus	36	60.00	
Pick up	4	6.67	
Motor Cycle	8	13.33	
Average Cost of Transportation			
1,000 – 5,000	24	40,00	
6,000 – 10,000	22	36.67	₦15,000.50
11,000 – 15,000	5	8.33	
16,000 – 20,000	3	5.00	
21,000 – 25,000	2	3.33	

>26,000	4	6.67	
Point of Purchase			
Fish Producer	40	66.67	
Wholeseller	12	20.00	
Rural Assembler	2	3.33	
Retailer	3	5.00	
Processors	7	11.67	
Average Quantity Purchased at Once (kg)			
21 – 40	21	35.00	
41 – 80	14	23.33	
81 – 120	16	26.67	93.33kg
121 – 160	5	8.33	
161 – 200	4	6.67	
Amount per Unit Price of Fish Purchase			
500 – 1,000	10	16.67	
1001 – 1,500	6	10.00	
1,501 – 2,000	5	8.33	
2,001 – 2,500	8	13.33	₦2,425.42
2,501 – 3,000	6	10.00	
3,001 – 3,500	13	21.67	
3,501 – 4,000	12	20.00	
Places for Marketing the Fish			
Open Space	16	25.00	
Marketing Stall	7	10.00	
Market Shop	4	5.00	
Farm Gate	37	60.00	
Cost of Store or Space			
5,001 – 10,000	28	46.67	
10,001 – 15,000	16	26.67	
15,001 – 20,000	8	13.33	₦12,440.26
20,001 – 25,000	5	8.33	
>25,000	3	5.00	
Labour Expenditure			
6,000 – 10,000	5	8.33	
11,000 – 15,000	16	26.67	
16,000 – 20,000	8	13.33	
21,000 – 25,000	11	18.33	
>26,000	20	33,33	
Types of Consumers / Buyers			
Consumers	45	75.00	
Retailers	25	41.67	
Wholesellers	12	20.00	
Hotels/Restaurants	6	10.00	
Range of Quantity (Kg)			
1 – 20	22	36.67	
21 – 40	11	18.33	
41 – 60	8	13.33	42.83Kg
61 – 80	6	10.00	
81 – 100	13	21.67	
Unit Selling Price (₦)			
1,000 – 5,000	36	60.00	
6,000 – 10,000	22	36.67	₦5,166.67

11,000 – 15,000	2	3.33
Total	60	100

Source: Field survey data 2025

Marketing Channel of Fish

The channels of fish distribution in figure 1 are numerous and sometimes interwoven. The journey starts from producer that sells to wholesalers, retailers, hotelier/ restaurants and even individual consumers. The wholesaler on their turn sell to retailers, individual consumers and hoteliers. The retailer sells to individual consumer and hotelier. The hotelier / restaurants sell to final consumers. Having these numerous outlets indicate that fish marketers in the area could be making good sales and good margins. Effective marketing channels can help in reducing the costs associated with transportation, storage, and handling, thereby lowering the overall cost for both producers and consumers. The study is in line with the result of Nadia et al., (2022); Sinta and Yetty (2024) asserted that an efficient marketing channel ensures that fish are delivered from the point of catch to the consumer quickly and in good condition, which is vital given the perishable nature of fish.

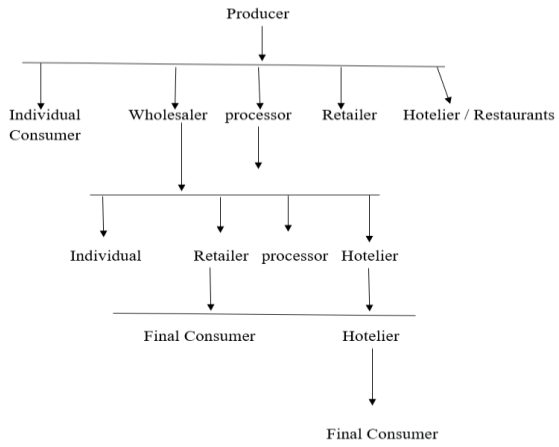

Figure 1: Marketing Channel of Fish

Income of the Fish Marketers

The income of the fish marketers was analyzed using Table and Lorenz curve (Table 3 and Figure 2). The result showed that there was prominent inequality of the income distribution among the fish marketers in the area. There was great variability of the income from the line of equal distribution. However, the variability was in favor of upper income class of the marketers since the curve is below the equality line. In other words, there were inequality in the income of the fish marketers in favor of the upper income class of the marketers. From the result, the Lorenz curve has offered a clear graphical representation of income distribution among fish marketers. It has also showed the visualization of how income is distributed across different segments of the fish marketers' population, showing the proportion of total income earned by various percentiles. The finding tallies with the result of Gutiérrez and Inguanzo (2019); Kumar et al., (2024) who asserted that lorenz curve is a crucial analytical tool for measuring and understanding income distribution among fish marketers as it aids in identifying income inequalities, informing policy and economic decisions, tracking changes over time, and promoting social equity.

Table 3: Income of the fish marketers

Income range (₦)	Midpoint (₦)	Frequency	Cumulative Income	% of cumulative Income	cumulative frequency	% of cumulative frequency
0 – 100,000	50,000	29	50,000	4.0	29	48.33
100,000-200,000	150,000	9	200,000	16.0	38	63.33
200,000-300,000	250,000	8	450,000	36.00	46	76.00
300,000–400,000	350,000	10	800,000	64.00	56	93.33
400,000-500,000	450,000	4	1,250,000	100	60	100.00
Total	1,250,000	60				

Source: Field Survey Data 2025

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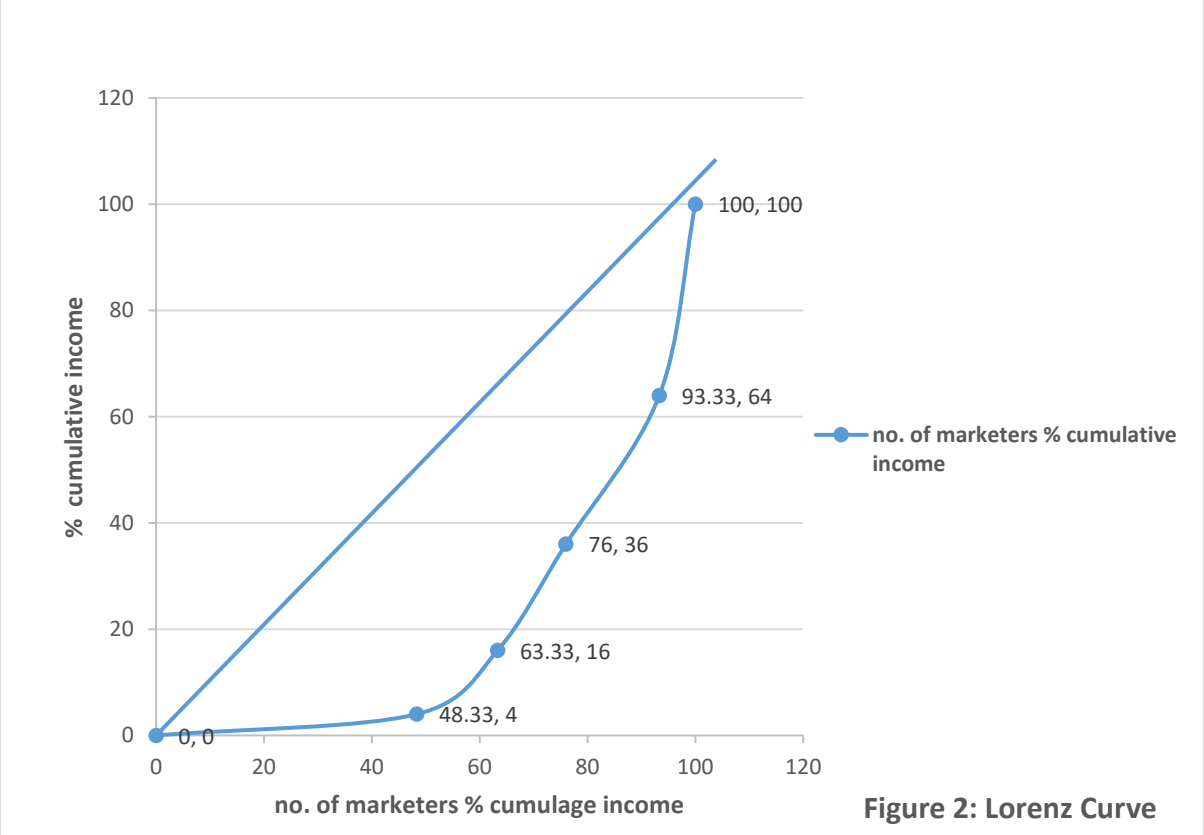

Figure 2: Lorenz Curve

Conditions for Entry and Exit into the Fish Market

Conditions for entry and exit, number of sellers and buyers and their nature were ascertained during the survey. The information is contained in Table 4. It is evidenced that the market was neither perfect competitive model nor monopoly structure but monopolistic. This is because the marketers could differentiate their wares and could decide selling price. The study of Osundare and Adedeji (2018) pointed that the overall economic effect of fish marketing sector is influenced by its market structure. A well-functioning market structure can contribute to economic growth, job creation, and sustainable development in the fisheries sector.

Table 4: Conditions for entry and exit into the fish market

Market Structure of Fish	Frequency	Percentage (%)
There were large buyers	59	98.33
There were large sellers	55	91.67
Sellers set their prices which were subjected to haggling with the buyers.	53	88.33
Fish sold were not of uniform size and type	48	80.00
There were free entry and exit to the fish market	44	73.33
There were no marketers associations.	50	83.33
There were existence of major seller and buyers of fish	30	50.00

*Multiple responses were recorded; *Source: Field Survey Data, 2025*

IV. CONCLUSION

The study which focused on conduct, structure and performance of fish marketing in Imo State has shown the market to be monopolistic in nature. There were many buyers and sellers in the market. Marketers were at the liberty to source for fish, set prices and sell their fish. The market was smooth, no restriction of entry and exit, no collusive agreement on selling price but transportation cost had major

influence on selling price determination due to certain factors such as distance to markets, access to producers, number of buyers etc. there was inequality in income of marketers in favour of heavy marketers.

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