



CONSTRAINTS ON FISH PREFERENCE AND CONSUMPTION PATTERN IN LAGOS STATE, NIGERIA

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ABSTRACT

Fish is one of the main key ingredients on global menu consumed by rich and poor people. This study examined constraints associated with fish preference and consumption pattern in Lagos State, Nigeria. Multi-stage sampling procedure was used to select 112 respondents for the study. Data were collected on types of fish preferred, respondents' income, constraints and forms of fish consumed using a structured questionnaire. Frequency counts, percentage, mean and Pearson Product Moment Correlation (PPMC) were used to analyze the data. Result revealed that the most preferred frozen, fresh and processed fish were Mackerel ($\bar{x} = 1.46$), *Clarias spp* ($\bar{x} = 0.85$) and fried fish ($\bar{x} = 1.38$), respectively. Most of respondents' income (30.4%) fell between ₦10,001 to ₦20,000. Inadequate power supply ($\bar{x} = 1.69$), high cost of fish ($\bar{x} = 1.58$), and poor income ($\bar{x} = 1.56$) were some of the constraints that affected fish consumption in the study area. Mackerel (94.5%), fried fish (74.9%) and *Gymnarchus niloticus* (37.8%) were the most consumed form of frozen, processed, and fresh fish respectively. Result of PPMC showed that relationship exists between consumers' income level ($\chi^2 = 0.008$; $r = 0.398$; and $P \leq 0.05$) and consumption of fish. Also, there exists a difference ($P \leq 0.05$) in the consumption pattern of fish between rural and urban consumers ($t = -2.109$; $df = 109$; and $P = 0.037$). The study concluded that consumers' income level and access to power supply posed great challenge to consumption and preference for fish in the study area. Government should intensify effort in providing stable power supply.

Keywords: Constraints, Consumers, Consumption pattern, Fish, Preference.

INTRODUCTION

Nigeria is the largest producer of fish in Sub-Saharan Africa and contributes to alleviating poverty, improving food and nutrition security, gives livelihood opportunities for women, youth, adults in fish production value chain, relatively cheaper and readily available (World Fish, 2018; Akinbode and Dipeolu, 2012). Consumption of fish has increased worldwide in the last decade which promotes better economic growth in many parts of the developing world (Herrero *et al.* 2013).

Nigeria has per capita consumption rates well below world averages and those rates are declining, Nigeria consumed 5 to 8 kilograms per capita per year. However, per capita fish consumption between 2003 and 2004 was 7.3% per kg per year as compared to the recommended rate of 12.0% per kg per year (Ozigbo *et al.*, 2014). Despite the nutritional and health benefits, fish consumption is low in some States in Nigeria, compared to beef due to some constraints identified as non-availability of fish, distribution difficulty, poor quality of fish, high price, poor processing and storage methods among others (Tsado *et al.*, 2012). Most



urban low income house-holds in Nigeria are also plagued with inadequate animal protein intake due to lack of financial resources, low profit and high price of fish (Adeniyi *et al.*, 2012)

The general objective of the study was to access constraints on fish preference and consumption in Lagos State. The specific objectives were to: (i) describe the income level of the consumers, (ii) describe the pattern of fish consumption (iii) describe constraints faced by fish consumers. Hypotheses to be tested include; H_0 1: There is no significant relationship between consumers' income level and consumption of fish; and H_0 2: There is no significant difference in consumption pattern of fish between rural and urban dwellers.

MATERIALS AND METHODS

The Study Area

The study was conducted in Lagos State located in the low-lying coastal zone of South Western and lies approximately between longitudes $20^\circ 42'E$ and $30^\circ 42'E$ and latitudes $60^\circ 22'N$ and $60^\circ 52'N$ of the equator. The southern boundary of the state is formed by the 180 km long Atlantic coastline, while its northern and eastern boundaries are shared with Ogun State, western boundary by Republic of Benin. This inhabit size is about 6.2% of the national population of 120 million (National Population Commission [NPC], 2006). Lagoon and waterways occupies 2.17% of the 357,700 hectares area and small and large-scale fisheries are common in many coastal areas of the State including Ibeju-Lekki and Epe (Oluwatayo and Adedeji, 2019).

Sampling Procedure

A multi-stage sampling procedure was used for the selection of the respondents from four (Ikeja, Eti-osa, Ibeju-Lekki and Epe) purposively selected Local Government Areas due to their high predominance of fishing activities and stratified into urban and rural areas (Lagos State Agricultural Development Authority [LSADA], 2012). Four communities were purposively selected from each selected local Government areas based on their predominance fishing production and activities. A total of 112 respondents were randomly sampled from 16 communities in the local government areas selected.

Method of Data Collection and Analysis

A structured questionnaire was used to elicit information from the respondents after it was content and faced validated. Data were analyzed using frequency counts, percentages, mean, standard deviation, chi-square and t-test through IBM SPSS statistics. In terms of measurement of variables, monthly income was measured at ordinal level, consumer constraints were measured at nominal level and fish consumption pattern was measured at ordinal level

RESULTS AND DISCUSSION

Respondents' Monthly Income

Result in Table 1 reveals that half (50.9%) of the respondents earned between ₦10,001 and ₦30,000 per month, while few (24.1%) earned below ₦10,000.00 monthly. This implies that most of the respondents are low income earners. However, they can still afford to purchase fish because it is available and can still be affordable to purchase than other animal protein sources, ultimately increasing fish consumption. This study agreed with Adeniyi *et al.* (2012) that fish consumption is a function of income.



Table 1: Distribution of Respondents' Monthly Income (n = 112)

Income per month (₦)	Frequency	Percentage
Below 10,000	27	24.1
10,001 – 20,000	34	30.4
20,001 – 30,000	23	20.5
30,001 – 40,000	11	9.8
40,001 – 50,000	9	8.0
50,001 – 60,000	5	4.5
Above 60,000	3	2.7

Source: Field survey, 2020

Constraints affecting Consumers' Preference and Consumption of Fish

Inadequate power supply (68.8%) and high cost of fish (67.9%) were the major constraints identified by the respondents as influencing their preference and consumption of fish (Table 2). This implies that stable power supply would reduce deterioration of fresh and frozen fish. Cost of fish determine the quantity of fish that can be bought, if the price of fish is low, then more fishes can be purchased leading to more consumption of fish. This result corroborates with the finding of Sabat *et al.*, 2008; and Dalhatu and Ala (2010) that the major problems in fish consumption were irregular supply, high cost of fish and consumers poor income.

Table 2: Constraints affecting Consumers' Preference and Consumption of Fish (n = 112)

Constraints	Frequency	Percentage	Mode	Ranks
Poor income	62	55.4	1.56	4th
High cost of fish	76	67.9	1.58	2nd
Limited choice of fish desired	66	58.9	1.32	3rd
Spoilage of fish due to inadequate of power supply	77	68.8	1.69	1st
Long time required to process and prepare for consumption	44	39.3	1.39	7th
Poor hygiene	57	50.9	1.51	5th
Inadequate level of nutritional value of fish	48	42.9	1.43	6th

***Multiple responses.

Source: Field survey, 2020

Consumption Pattern of Fish

Table 3 revealed that majority (94.5%) of the respondents consumed frozen fish (Mackerel), 56.7% consumed processed fish (fried fish) and 50.4% consumed fresh fish (*Claria spp*) thrice in a day. Mackerel fish is more palatable, highly nutritious and contain essential mineral for healthy growth. Réhault-Godber (2019) agreed that fish is the cheapest animal protein source containing balanced level of amino acids, vitamin B12, low cholesterol, and macro and micro nutrients. Fried fish is a good preserved fish that prevents spoilage, elongates the shelf life and retain the nutritional value, which is good for both the young and old. This result corroborates Pieniak *et al.* (2010) that fried fish is very digestible and aid health benefits of fish consumers. *Clarias* species are more cultured, available and consumed more than any other fresh fish species. This finding agreed with Olaoye *et al.* (2007) that *Clarias sp.* have higher consumption pattern among fresh fish.



Table 3: Consumption Pattern of Fish

Fish Categories	Never	Once per week	Twice per week	Thrice per week	Four times per week	Five times per week	Six times per week	Once per day	Twice per day	Thrice per day
Mackerel										
Frequency	10	32	8	10	10	7	12	12	6	5
Rate (%)	8.9	28.6	7.1	8.9	8.9	6.3	10.7	10.7	5.4	4.5
Total (%)	8.9	28.6	14.2	26.7	35.6	31.5	64.2	74.9	75.6	94.5
Heering										
Frequency	43	23	17	7	4	3	6	5	2	2
Rate (%)	38.4	20.5	15.2	6.3	3.6	2.7	5.4	4.5	1.8	1.8
Total (%)	38.4	20.5	34.4	18.9	14.4	12.5	32.4	31.5	25.2	37.8
Horse Mackerel										
Frequency	39	26	16	12	5	6	4	1	3	0
Rate (%)	34.8	23.2	14.3	10.7	4.5	5.4	3.6	0.9	2.7	0.0
Total (%)	34.8	23.2	28.6	32.1	13.5	27.0	21.6	6.3	37.8	0.0
Express										
Frequency	34	26	17	11	3	3	5	0	0	1
Rate (%)	30.4	23.2	15.2	9.8	3.6	2.7	4.5	0.0	0.0	0.9
Total (%)	30.4	23.2	30.4	29.4	14.4	13.5	27.0	0.0	0.0	18.9
Sardine										
Frequency	48	31	6	5	7	4	5	4	1	1
Rate (%)	42.9	27.7	5.4	4.5	6.3	3.6	4.5	3.6	0.9	0.9
Total (%)	42.9	27.7	10.8	13.5	25.2	18.0	27.0	25.2	12.6	18.9
Tuna										
Frequency	50	31	10	7	6	1	2	2	0	3
Rate (%)	44.6	27.7	8.9	6.3	5.4	0.9	1.8	1.8	0.0	2.7
Total (%)	44.6	27.7	17.8	18.9	21.6	4.5	10.8	12.6	0.0	56.7
Hake										
Frequency	32	37	16	5	8	7	3	1	1	2
Rate (%)	28.6	33.0	14.3	4.5	7.1	6.3	2.7	0.9	0.9	1.8
Total (%)	28.6	33.0	28.6	13.5	28.4	31.5	16.2	6.3	12.6	37.8
Croaker										
Frequency	31	31	15	14	5	5	8	1	1	1
Rate (%)	27.7	27.7	13.4	12.5	4.5	4.5	7.1	0.9	0.9	0.9
Total (%)	27.7	27.7	26.8	37.5	18.0	22.5	42.6	6.3	12.6	18.9
Claria spp										
Frequency	42	36	14	3	6	2	5	0	3	1
Rate (%)	37.5	32.1	12.5	2.7	5.4	1.8	4.5	0.0	2.7	0.9
Total (%)	37.5	32.1	25.0	8.1	21.6	9.0	27.0	0.0	37.8	18.9
Tilapia										
Frequency	48	36	8	3	7	3	2	4	0	1
Rate (%)	42.9	32.1	7.1	2.7	6.3	2.7	1.8	3.6	0.0	0.9
Total (%)	42.9	32.1	14.2	8.1	25.2	13.5	10.8	25.2	0.0	18.9

Source: Field survey, 2020



Table 3: Consumption Pattern of Fish Cont'd.

Fish Categories	Never	Once per week	Twice per week	Thrice per week	Four times per week	Five times per week	Six times per week	Once per day	Twice per day	Thrice per day
<i>Gymnarchs niloticus</i>										
Frequency	50	34	10	2	6	3	2	1	2	2
Rate (%)	44.6	30.4	8.9	1.8	5.4	2.7	1.8	0.9	1.8	1.8
Total (%)	44.6	30.4	17.8	5.4	31.6	13.5	10.8	6.3	25.2	37.8
<i>Heterotis niloticus</i>										
Frequency	59	22	10	7	2	4	4	6	1	1
Rate (%)	52.7	19.6	8.9	6.3	1.8	3.6	3.6	5.4	0.9	0.9
Total (%)	52.7	19.6	17.8	18.9	7.2	18.0	18.0	37.8	12.6	18.9
<i>Ghana Obscura</i>										
Frequency	68	24	7	3	7	1	0	1	1	0
Rate (%)	60.7	21.4	6.3	2.7	6.3	0.9	0.0	0.9	0.9	0.0
Total (%)	60.7	21.4	12.6	8.1	25.2	4.5	0.0	6.3	12.6	0.0
Processed fish:										
Dried fish										
Frequency	8	44	18	10	9	4	11	4	3	1
Rate (%)	7.1	3.9	16.1	8.9	8.0	3.6	9.8	3.6	2.7	0.9
Total (%)	7.7	39.3	32.2	26.7	32.0	18.0	58.8	25.2	37.8	18.9
Smoked fish										
Frequency	8	40	17	13	10	6+	10	4	2	2
Rate (%)	7.1	35.7	15.2	11.6	8.9	5.4	8.9	3.6	1.8	1.8
Total (%)	7.1	35.7	30.4	34.8	35.6	27.0	53.4	25.2	25.2	37.8
Boiled Fish										
Frequency	24	38	10	10	8	7	6	8	1	0
Rate (%)	21.4	33.9	8.9	8.9	7.1	6.3	5.4	7.1	0.9	0.0
Total (%)	21.4	33.9	17.8	26.7	28.4	31.5	32.4	49.7	12.6	0.0
Fried fish										
Frequency	7	37	20	6	8	10	6	12	3	3
Rate (%)	6.3	33.0	17.9	5.4	7.1	8.9	5.4	10.7	2.7	2.7
Total (%)	6.3	33.0	35.8	16.2	28.4	44.5	32.4	74.9	37.8	56.7

Source: Field survey, 2020

Hypotheses Testing

In testing hypothesis I: There is no significant relationship between consumers' income level and their consumption, a significant ($P < 0.05$) relationship exist between consumers' income and consumption of fish ($r = 0.398$); therefore, the null hypothesis is rejected (Table 4). Consumers' income can afford to buy fish which is a good and cheap source of animal protein source among the people. This finding agreed with Adeniyi *et al.* (2012), who reported that consumer's income is the major function of consumption.

Table 4: Relationship between Consumers' Income Level and their Fish Consumption

Variables	Value	Df	p-value	Decision
Consumption of fish	18.020	10	0.045*	Significant

*Significant at 0.05

Source: Field survey, 2020



Hypothesis II states that there is no significant difference in consumption pattern of fish between rural and urban area. There was a significant ($P < 0.05$) difference between the rural and urban areas in their pattern of fish consumption ($t = -2.109$); therefore the null hypothesis is rejected (Table 5). This could be as a result of usage of alternative power supply like industrial generator, solar and inverter to supply power to preserve or retain fish quality and freshness. Urban dwellers earned higher income and presence of modern and technological methods of fish processing and cold rooms in urban areas are more than the rural areas. This study corroborates the study of Sari (2018) that fish consumption behaviour of the urban family is significantly influenced by household size, marital status, income, infrastructure facilities and presence of modern equipment in the urban areas.

Table 5: T-test Analysis Result showing the Difference between Consumption Patterns of Fish between Rural and Urban Areas

Variables	Respondents	Mean	Std. deviation	t-value	Df	p-value	Remark
Rural	56	29.2364	15.17699	-2.109	109	0.037*	Significant
Urban	56	37.1250	23.31372				

*Significant at 0.05

Source: Field survey, 2020

CONCLUSION AND RECOMMENDATIONS

The study concluded that consumers' income level and access to power supply posed great challenge to consumption and preference for fish in the study area. Government should intensify effort in providing stable power supply by partnering with the private sectors.

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