



FRESH FISH ATTRIBUTES AND CONSUMERS' PREFERENCE RANKING IN RURAL AND URBAN HOUSEHOLDS IN ONDO STATE, NIGERIA

By

***¹Mafimisebi, T.E., ²Osuntunde, A.O. and ³Mafimisebi, O.E.**

**^{1,2}Department of Agricultural & Resource Economics,
The Federal University of Technology, Akure, Ondo State, Nigeria.**

**³Department of Agricultural Technology,
Rufus Giwa Polytechnic, Owo, Ondo State, Nigeria**

***temafimisebi@futa.edu.ng; temafis@yahoo.com**



INTRODUCTION

Problem Statement and Study Justification

- In Nigeria, fish is an alternative source of rich animal protein
- It is consumed in preference to other animal protein sources with comparatively higher prices.
- Fish has lower cholesterol levels compared with meat and is thus often recommended for adults.
- There is a heightened awareness in the developed world of the nutritional and health benefits of consuming fish (Amao *et al.*, 2006).
- Fish demand far exceeds supply in Nigeria and thus, the protein intake is low.



INTRODUCTION (Cont'd)

- The average per *caput* protein intake of Nigerians per day is estimated at 50.8 g with only 14.5% emanating from animal sources.
- This is grossly inadequate compared with the recommended minimum protein consumption of 70g per *caput* per day; 50% of which should be derived from animal sources (FAO, 2008).
- This portrays a highly promising potential for both increasing production and consumption of fish (Mafimisebi, 2012).
- Increased demand for fish has caused price spiral with potentially serious consequences for consumers.



INTRODUCTION (Cont'd)

- There have been preliminary evidences that fresh fish consumers in Nigeria have the tendency towards preference ranking in the consumption of fresh fish.
- Amao, *et al.*, (2006) in a study reported that 53% of the respondents sampled preferred catfish to any other type of fish while 22% showed preference for tilapia.
- Also, it was further reported that majority of the respondents in the study area preferred fresh fish to frozen fish.
- These findings show that Nigerian fish consumers exhibit the implicit tendency to do a preference ranking for fish when making a purchase decision.



INTRODUCTION (Cont'd)

- In another study, it was reported that some factors exogenous to a fish species such as income may also come into the purchase decision for a fish species (Omu, 1986).
- Based on the information obtained from past studies, it is clearly shown that there is consumers' preference ranking for fish in general and fresh fish in particular, that has not been adequately researched.
- There is therefore the need to identify the quality characteristics internal and external to a fresh fish species that induce people to buy and consume that fish species.



INTRODUCTION (Cont'd)

- It is also worth the while to investigate what the strength of each individual attribute is in influencing the decision to buy and consume fresh fish.
- Thus, the specific objectives of this study were to:
 - i. examine the socio-economic characteristics of the respondents;
 - ii. identify fish and non-fish related quality characteristics that induce people to purchase and consume fresh fish species;
 - iii. estimate the relative importance of each fish- and non-fish related characteristics in determining preference ratings and
 - iv. isolate the key factors affecting consumption of fresh fish by rural and urban dwellers in the study area.



RESEARCH METHODOLOGY

Study Area, Sampling Technique and Data Collection

- This study was carried out in Ondo State, Nigeria. Ondo State is in the South-western part of Nigeria and lies between longitude $4^{\circ}3^{\circ}$ and $6^{\circ}0^{\circ}$ east of the Greenwich Meridian and latitude $4^{\circ}45^{\circ}$ and $8^{\circ}15^{\circ}$ north of the equator.
- The State has eighteen (18) Local Government Areas (LGAs) with a land area of about 13,595 square kilometres. Its population in 2007 was about 4.5 million people.
- Ondo State is an agrarian State but predominant livelihood strategies of riverine people include fishing, fish processing and marketing and brewing of local gin (Mafimisebi, 2013).



RESEARCH METHODOLOGY (Cont'd)

- Primary data used in the study were sourced through the administering of a set of structured questionnaire on selected fresh fish consumers.
- Multi-stage sampling technique was used in identifying the respondents that ventured the data analyzed in the study.
- In the first stage, purposive sampling was used in the selection of two LGAs which are Ilaje and Akure South LGAs.
- Ilaje LGA was considered rural while Akure South LGA was urban.
- In the third stage, the four biggest towns by population in each LGA were selected purposively.



RESEARCH METHODOLOGY (Cont'd)

- Finally, random sampling procedure was used in the selection of 30 respondents per town to give an anticipated total of 120 respondents per LGA.
- However, ninety-one (91) and 101 respondents completely responded to all questions posed in Ilaje and Akure South LGAs giving a total sample size of 192.
- Those interviewed were persons responsible for household food purchases and/or food preparation function and decision (e.g. wives, grown-up daughters or sometimes men).



RESEARCH METHODOLOGY (Cont'd)

Analytical Techniques

- The analytical techniques used in data analysis included descriptive statistics, ordinary least square (OLS) multiple regression and Relative Attribute Model [RAM] (Green and Wind, 1995).
- OLS regression model was used to determine the effects of postulated independent variables on the dependent variable (households' total monthly expenditure on fresh fish).
- The RAM was used to estimate the strength of individual fresh fish characteristics in a consumer's purchase decision space.



RESEARCH METHODOLOGY (Cont'd)

The implicit form of the model is presented thus as:

$$R = f(S, K, B, C, A, e_i)$$

R = Preference ratings for a fresh fish species

S = Sweetness

K = Extent of scale

B = Extent of bone

C = Price

A = Availability (dummy, 1 if rated available, 0, otherwise).

e_i = Error term



RESEARCH METHODOLOGY (Cont'd)

The implicit form of the OLS is represented as

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, e_i)$$

Y = Household's monthly expenditure on fresh fish (in naira)

X_1 = Age of respondent

X_2 = Gender of respondent

X_3 = Marital status of respondent

X_4 = Years of formal Education of respondent

X_5 = Household size of respondent

X_6 = Occupation of respondent

X_7 = Average monthly income of respondent (in naira).

X_8 = Preference ranking scale (varies from 1-5)

e_i = Error term.



RESEARCH METHODOLOGY (Cont'd)

- The relative importance of each fresh fish attributes was attributed to their estimated weights computed using the RAM which is represented by the formula below:

$$RI = \frac{100 \times UR_i}{\sum UR_j}$$

- Where RI = Relative importance

UR_i = Utility range

$\sum UR_j$ = Sum of the ranges over all the attributes.



RESEARCH METHODOLOGY (Cont'd)

- The following steps were followed for the estimation of RAM.
- (a) Utility values for alternative attribute levels were computed by multiplying the specific attribute level by the corresponding estimated parameter.
 - (b) The highest and least utility values for each attribute were identified and their difference, called the utility range (UR) was noted.
 - (c) The sum of the ranges over all the characteristics/attributes was taken.
 - (d) Finally, the relative importance of the i^{th} characteristic expressed in percentage weight was calculated using the RAM.



RESULTS AND DISCUSSION

Socio-economic Characteristics of the Respondents

- **Age Distribution of Respondents:** The age of the sampled respondents ranged between 21 and 70 years.
- The age range covers the population of active fresh fish consumers with the highest percentage being 63.7% for the 31-40 years age bracket and 37.6% for the 41-50 years age bracket in rural and urban households.
- The average age of respondents was 35 years for rural areas and 39 years for urban.
- **Sex Distribution of Respondents** showed that there were more females in the sample for both rural (72.5%) and urban (64.4%) households. This confirms (Mafimisebi, 2012).



RESULTS AND DISCUSSION (Cont'd)

- **Distribution of respondents by marital status** revealed that most of the sampled respondents were married.
- The proportion was 91.2% in rural households while the corresponding figure for urban households was 75.3%.
- **Household Size of the Respondents:** The household size ranged from 1 and 10.
- The average figures was 5 and 4 in rural and urban households, respectively.



RESULTS AND DISCUSSION (Cont'd)

- **Monthly Income of Respondents:** About 11.0% and 2.0% of the respondents received an average monthly income of below ₱10,000 in rural and urban households respectively.
- About 32.0% and 4.0% received an average monthly income of between ₱10,000 and ₱20,000 in rural and urban households, respectively.
- The average monthly income of households was ₱34,240 in urban locations and ₱26,880 in rural areas.



RESULTS AND DISCUSSION (Cont'd)

Identified Fresh Fish and Fresh Fish Attributes

- The fish species identified to be commonly consumed in the study area by respondents of the male and female FGD conducted are listed in Table 1.
- The quality characteristics identified to be watched out for by consumers of fresh fish include:
 - Sweetness;
 - Extent of possession of scale;
 - Extent of possession of bones;
 - Cheapness and
 - Extent of availability.



RESULTS AND DISCUSSION (Cont'd)

Table 1: Names of Identified Fresh Fish

Scientific Name	English Name	Local Name
<i>Clarias gariepinus</i>	Mudfish	Aro
<i>Heterobranchus bidorsalis</i>	Sharp-toothed African catfish	Aso
<i>Tilapia zili</i>	Tilapia	Epiya
<i>Parachanna obscura</i>	Snake-head	Okodo
<i>Gymnachus niloticus</i>	Trunk fish	Eja Osan
<i>Heterotis niloticus</i>	Bony-tongue	Agbadagiri
<i>Sphyræna piscatorum</i>	Barracuda	Kuta
<i>Aethiomastecembelus cryptacanthus</i>	Spiny-eels	Doje
<i>Tetraodon lineatus</i>	Globe-fish	Awo
<i>Pseudotolithus elongates</i>	Croaker	Pokun
<i>Ethmalosa fimbriata</i>	Bonga fish	Efolo
<i>Cynoglossus species</i>	Tongue-sole	Abo

Source: Survey Data complemented with Information from Field Guide to Nigerian freshwater Fishes (1990).



RESULTS AND DISCUSSION (Cont'd)

Results of Regression Analyses

Effects of Fresh Fish Characteristics on Preference Ratings in Rural Households

- Model parameter estimations reported in Table 2 indicated that for mudfish, tilapia, globefish and tongue-sole, none of the stipulated characteristics was found significant at the 0.01 and 0.05 level of significance (α).
- For catfish, sweetness and cheapness were significant at 0.05 α and 98.2% of the variations in preference were explained by postulated characteristics.
- For snake-head, extent of scale, extent of bone and cheapness were significant at 0.01 and 0.05 α , respectively.



RESULTS AND DISCUSSION (Cont'd)

- For trunkfish, extent of bone was significant at 0.01 los and both sweetness and cheapness were significant at 0.05 los.
- About 66.0% of the variations in preference for trunkfish were explained by the stipulated characteristics.
- For bony-tongue, it was only sweetness that was significant at 0.01 los.
- About 83.0% of the variations in preference for boney-tongue was explained by the stated explanatory variables.



RESULTS AND DISCUSSION (Cont'd)

Table 2: Estimated Regression Model Parameter for Rural Households

Variable	Mudfish	Catfish	Tilapia	Snake head	Trunk fish	Bony tongue	Barracuda	Spiny eels	Globefish	Croaker	Bonga fish	Tongue-sole
Intercept	-5.74E-016	-9.07E-017	1.391	-0.817E-016	0.144	0.007	0.009	1.5E-016	0.034	-0.003	0.007	0.090
S	0.390	-0.290*	0.110	-0.091	-	0.950**	0.736*	0.286*	0.138	0.550***	-0.727	-0.209
K	-	-	-0.101	3.243*	-	-0.441	0.201	-	0.194	0.167	0.712	0.656
B	1.880	0.448	0.187	-0.921**	8.675**	-0.164	0.738*	-	0.133	0.453	-	0.087
C	0.383	0.994*	-0.177	-	0.929***	-0.092	0.551***	-	-0.011	0.208	2.095*	0.262
A	-0.324	0.200	0.186	-0.280	-1.179	0.452	-0.253	0.286*	0.041	-	0.444	-0.073
R ²	0.820	0.982	0.463	0.921	0.661	0.831	0.946	0.903	0.758	0.943	0.898	0.713
R ⁻²	0.802	0.980	0.390	0.910	0.626	0.809	0.939	0.884	0.727	0.935	0.885	0.676
Std Error	1.209	0.280	1.282	0.526	1.029	0.680	0.577	0.043	0.481	0.424	0.803	0.626

Source: Survey data, 2012

*, ** and *** mean significant at 0.10, 0.05 and 0.01 respectively.



RESULTS AND DISCUSSION (Cont'd)

Effects of Fresh Fish Characteristics on Preference Ratings in Urban Households

- Results presented on Table 3 indicated as follows:
- For catfish, sweetness and extent of bone negatively influenced preference, and only sweetness was significant at 0.05 level.
 - Sweetness alone explained 34.2% of the variations in preference.
 - The preference for tilapia was influenced positively by sweetness and extent of scale, and negatively by the remaining characteristics.
 - Extent of scale and cheapness of tilapia were significant at 0.05 and 0.01 levels of significance, respectively.
 - For trunkfish and bony-tongue, only cheapness was found to be significant at 0.05 and 0.01 levels, respectively.
 - All the postulated characteristics positively influenced the preference for bony-tongue.



RESULTS AND DISCUSSION (Cont'd)

Table 3: Estimated Regression Model Parameter for Urban Households

Variable	Catfish	Tilapia	Snakehead	Trunk fish	Bony tongue
Intercept	2.317	0.001	-0.092	0.003	0.005
S	-0.468***	0.142	0.085	-0.063	0.212
K	_____	0.829*	0.676*	0.589	0.420
B	-0.312	-0.103	-0.821*	0.402	0.183
C	0.015	-0.391**	-0.920***	0.924*	0.846***
A	0.284	-0.182	0.172	-0.085	1.188
R ²	0.342	0.878	0.863	0.534	0.623
R ⁻²	0.306	0.863	0.851	0.501	0.598
Std. Error	0.718	0.367	0.631	1.083	0.081

Source: Survey data, 2012.

Note: ** and *** mean significant at 0.10, 0.05 and 0.01 levels, respectively.



RESULTS AND DISCUSSION (Cont'd)

Determinants of Expenditure on Fish Species - Rural Households

- **Mudfish:** The R^2 of the estimated regression model showed that 75.9% of the variations in the monthly expenditure were explained by the explanatory variables, which included age, household size, monthly income and preference ranking scale which were all significant at 5% los.
- **Catfish:** The R^2 of 0.845 revealed that 84.5% of the variations in the monthly expenditure on catfish were explained by occupation and preference ranking which were found to be significant at 5% los.
- **Tilapia:** About 38.0% of the variations in the monthly expenditure on tilapia were explained by age and household size. They were statistically significant at 5%.



RESULTS AND DISCUSSION (Cont'd)

- **Trunkfish:** In the estimated regression model for this species, only occupation and preference ranking scale were significant at 5% los
- Postulated explanatory variables jointly explained 72.1% of the variations in monthly expenditure on it.
- **Bony-tongue:** The R^2 of the estimated regression model for bony-tongue revealed that 74.3% of the variations in the monthly expenditure were explained by the exogenous variables.
- Age, education and the preference ranking scale were significant at 5% los.
- Table 4 revealed that preference for fresh fish was significant at 0.05 los for all 11 out of the 12 fresh fish species consumed in the rural households.
- The only exception was tilapia for which it was not significant.



RESULTS AND DISCUSSION (Cont'd)

- This connotes that preference ranking was important in determining expenditure on fresh fish in 91.7% of fresh fish species for which a purchase decision had to be made.
- This means that preference is a strong factor in determining consumers' monthly expenditure on fresh fish in the rural households (Table 4).



RESULTS AND DISCUSSION (Cont'd)

Table 4: Result of Regression Model Rural Households

Variable	Mudfish	Catfish	Tilapia	Trunk fish	Snake head	Bony tongue	Barracuda	Spiny eels	Globefish	Croaker	Bonga fish	Tongue-sole
Intercept	-549.710	-	1823.875	1625.163	-	-3549.320	103.972	81.655	146.030	765.777	389.241	-36.526
		2083.428			2034.315							
X ₁	554.541*	245.046	642.418*	169.348	551.602*	1241.299*	9.148	49.742	208.277	14.642	24.809	-96.201
X ₂	273.057	228.708	-166.067	-369.692	510.555*	-261.236	11.729	-42.010	-135.460	-16.121	-23.611	33.706
X ₃	-228.773	-067.684	-257.203	-35.081	-397.982	-313.355	-18.742	10.690	-229.365	-	-61.294	36.447
										224.243*		
X ₄	144.654	230.570	239.089	42.962	123.270	916.756*	13.776	37.720	279.815	-43.441	-	-28.565
											119.534*	
X ₅	-183.647	60.665	-	-62.717	17.933	-32.859	0.927	-16.866	-14.741	-9.157	-24.564	121.601
			162.519*									
X ₆	-57.784	149.662*	-48.527	-338.318	95.635	198.404	-36.913*	-31.575	-19.045	-49.081*	-21.476	-73.620
X ₇	241.107*	18.128	-45.329	47.639	140.270	126.545	-5.710	-13.219	-78.522	-2.818	60.619	-9.932
X ₈	207.765*	424.219*	-114.140	596.295*	363.828*	834.187*	200.826*	137.743*	646.271*	189.579*	122.472*	463.232
R ²	0.759	0.845	0.380	0.721	0.722	0.743	0.879	0.853	0.558	0.758	0.728	0.512

Source: Survey Data, 2012

* mean significant at 5% level.



RESULTS AND DISCUSSION (Cont'd)

■ **Determinants of Expenditure on Fish Species - Urban Households**

■ **Catfish:** The estimated regression model in Table 5 revealed that of all postulated explanatory variables, only monthly income and preference ranking scale were significant at 5% los.

■ Preference ranking scale was negatively related to the dependent variable and about 56.0% of the variations in monthly expenditure were explained by the explanatory variables.

■ **Tilapia:** For tilapia, 59.1 % of the variations in monthly expenditure were explained by the exogenous variables with household size, occupation and preference ranking scale being significant at 5% los.



RESULTS AND DISCUSSION (Cont'd)

- **Trunk fish:** About 85.6% of the variations in monthly expenditure were explained by the explanatory variables. Only the preference ranking scale was significant at 5% los.
- **Snake-head:** About 97.9% of the variations in the monthly expenditure on snake-head were explained by independent variables but only preference ranking scale was significant at 5% los.
- Preference was significant in four out of the five species of fresh fish considered for urban area (Table 6). Thus, preference ranking was important in 80% of all purchase decision cases.
- This connotes that the role of preference in determining the monthly expenditure on fresh fish is very strong and evident in the study area.



RESULTS AND DISCUSSION (Cont'd)

Table 5: Result of Regression Model for Urban Households

Variable	Catfish	Tilapia	Trunk fish	Snake-head	Bony-tongue
Intercept	-4297.497	-137.131	-63.939	-51.642	8.6E-013
X ₁	145.327	-156.076	-212.853	31.683	-8.61E-014
X ₂	37.373	-52.176	-390.085	-39.172	-3.14E-013
X ₃	774.864	-69.372	-223.701	4.478	9.11E-014
X ₄	354.743	151.737	359.518	65.799	-6.48E-015
X ₅	87.420	125.148*	166.696	-9.610	7.62E-014
X ₆	151.465	80.635*	-120.898	-14.831	-1.39E-014
X ₇	1576.424*	-82.180	74.990	-16.741	-1.65E-013
X ₈	-1019.237*	346.649*	4933.623*	1762.571*	4000.000
R ²	0.560	0.591	0.856	0.982	1.000
R ⁻²	0.469	0.507	0.827	0.979	1.000
Std. Error	1797.689	390.246	887.033	103.832	1.000

Source: Survey Data, 2012

* mean significant at 5% level.



RESULTS AND DISCUSSION (Cont'd)

Table 6: Role of Preference in Consumer's Expenditure on Fresh Fish

Households	Number of fresh fish identified	Number of species in which preference was significant	
		Frequency	Percentage (%)
Rural	12	11	91.7
Urban	5	4	80.0

Source: Survey Data, 2012



RESULTS AND DISCUSSION (Cont'd)

Relative Importance of Fresh Fish Characteristics

- Estimated attribute parameter reported in Tables 4 and 5 do not provide direct measurement of the relative importance of each fresh fish characteristics.
- This is important to consumers in making their purchase decisions.
- Empirical results of these are reported in Tables 7 and 8 for rural and urban households, respectively.



RESULTS AND DISCUSSION (Cont'd)

- The results on Table 7 revealed that - For **rural households**,
- Extent of bone is the number one attribute in order of importance in determining consumers' preferences for mudfish, tilapia, trunkfish and barracuda with 56.0%, 24.6%, 64.4% and 29.8%, respectively,
- Extent of bone took the second position in croaker and bongafish with 20.2% and 26.0%, respectively.
- The extent of bone attribute took the third position in catfish, snakehead and globefish.
- Sweetness took first position in determining consumers' preferences for catfish, bony-tongue and croaker with 63.9%, 45.3% and 49.0%, respectively.



RESULTS AND DISCUSSION (Cont'd)

- In trunkfish, barracuda and globefish, the sweetness attribute took the second position with 20.0%, 29.7 and 18.4%, respectively.
- The position of the sweetness attribute in tongue-sole was third at a value of 13.5%.
- Extent of scale (scaliness) attribute took number one position in the order of importance in determining consumers' preference for snakehead, globefish and tongue-sole with 56.5%, 51.6% and 42.4%, respectively.
- Cheapness only took the number one position in the order of importance in determining consumers' preference for spiny-eels and bongafish with 40.0% and 35.1%, respectively.



RESULTS AND DISCUSSION (Cont'd)

- For the **urban households**,

- Cheapness ranked as number one attribute in importance in determining consumers' preference determination for snakehead, trunkfish and tilapia with 34.4%, 62.7% and 40.7%, respectively (Table 8).
- In catfish and bony-tongue, cheapness took the second position with 38.4% and 29.7%, respectively.
- Sweetness took the third position in order of importance in determining consumers' preference for catfish with 43.4%.



RESULTS AND DISCUSSION (Cont'd)

Table 7: Relative Importance of Fresh Fish Characteristics by Fish Species in Rural households

Fish characteristic	Mudfish	Catfish	Tilapia	Trunk fish	Snake head	Bony tongue	Barracuda	Spiny eels	Globefish	Croaker	Bonga fish	Tongue-sole
S	11.61	63.85	14.45	20.00	1.58	45.26	29.68	20.01	18.35	49.02	12.17	13.49
K	—	—	13.27	—	56.45	21.02	8.11	—	51.60	7.44	11.92	42.35
B	55.95	9.86	24.57	64.36	16.03	7.81	29.77	20.01	17.69	20.19	25.99	5.60
C	22.80	21.88	23.27	6.89	16.19	4.38	22.23	39.97	1.46	9.27	35.06	33.83
A	9.64	4.41	24.44	8.75	9.75	21.53	10.21	20.01	10.90	14.08	14.86	4.73
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 8: Relative Importance of Fresh Fish Characteristics by Fish Species in Urban Households

Fish characteristic	Catfish	Tilapia	Snake head	Trunk fish	Bony tongue
S	43.37	6.97	3.18	4.27	7.44
K	—	40.68	25.28	—	14.74
B	28.92	5.05	30.70	27.27	6.42
C	1.39	38.37	34.41	62.69	29.70
A	26.32	8.93	6.43	5.77	41.70
Total					

Source: Survey Data, 2012



RESULTS AND DISCUSSION (Cont'd)

Problems Faced in Fresh Fish Consumption

- The field survey revealed that a higher percentage (58.2%) of the respondents encountered the problem of high prices of fresh fish as a barrier to more frequent consumption (Table 9).
- This was followed by the problem of difficulty of preparation which accounted for about 24.0%.
- The problem of availability of fresh fish was encountered by about 18.0% of the respondents.



RESULTS AND DISCUSSION (Cont'd)

Table 9: Problems Faced by Respondents in Fresh Fish Consumption

Problems	Frequency	Percentage
Availability	24	17.9
High price	78	58.2
Difficulty of preparation	32	23.9
Total	134	100.0

Source: Survey Data, 2012



SUMMARY, RECOMMENDATIONS AND CONCLUSION

Summary

- The study focused on investigating consumers' preferences for fresh fish characteristics in rural and urban households in Ondo State, Nigeria.
- The average age of the respondents was 35 years (rural) and 39 years (urban), whereas the average monthly income of the households was ₦34,240 in urban areas and ₦26,880 in rural areas.
- Regression estimates revealed that sweetness, extent of bone and cheapness were found to be more frequent determinants of preference for fresh fish species.



SUMMARY, RECOMMENDATIONS AND CONCLUSION

- Also, the preference for fresh fish was found to be a very strong factor determining consumers' monthly expenditure on fresh fish.
- The relative importance of the fish characteristics revealed that extent of bone and sweetness took number one attribute in rural and urban households in preference determination by consumers.
- The highest percentage (58.2%) of respondents faced the problem of high price of fresh fish.



SUMMARY, RECOMMENDATIONS AND CONCLUSION

Recommendations and Conclusion

- Based on the outcomes of this study, the following recommendations were made;
- Fresh fish sellers watch out for fish with the highly treasured attributes for rapid turnover and profitable fish marketing business.
- The results of this study permit the conclusion that preference is a powerful force that pulls a fresh fish consumer towards favourable buying decision for certain fish species more than the others.



SUMMARY, RECOMMENDATIONS AND CONCLUSION

- Fresh fish possess certain attributes which consumers recognize and rate differently and which are considered in their purchase decisions.
- For the study area, these characteristics included sweetness, extent of scale, extent of bone, cheapness and availability.



THANK YOU ALL FOR LISTENING