Analysis of the Influence of Socio-Economic Variables on Fish consumption and Associated Problems in Michika Local Government Area of Adamawa State, Nigeria

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Abstract: This study examined the influence of socio-economic variable on fish consumption and associated problems in the study area. Structured questionnaire was used to generate primary data from 148 respondents. Multistage random sampling techniques were employed in the selection of the respondents. The data was analysed using descriptive statistics and inferential statistics. The result revealed that most of the respondents accounting for about 74% were male with average family size of five (5) persons and most of them were in their active age with a mean age of about 41 years. About 74% of the respondents had one form of formal education or the other with 40% as fish farmers and 34% as Civil Servants. The analysis further shows that 44% of the respondents earned about ₦30,000 per month. The result of the regression analysis also revealed that the coefficient of determination (R^2) was found to be 0.83 with F-value of 3.06 which was statistically significant at 1%.The coefficient of Age, price of fish , marital status, occupation and monthly income positive influence on fish intake in the study area. The major problems associated with fish intake were found to be; low level of income, inadequate supply of fish and small number of suppliers. The study recommends that respondents should engage themselves in various activities that could generate additional income to enable them have more fund that will improve their consumption rate of fish in the study area.
Keywords: Analysis, Socio-economic, Influence, Fish, Consumption, Problems

INTRODUCTION

Capture fisheries and aquaculture supplied the world with about 148 million tonnes of fish in 2010 (with a total value of US$217.5 billion), of which about 128 million tonnes was utilized as food for people, and preliminary data for 2011 indicate increased production of 154 million tonnes, of which 131 million tonnes was destined as food Food and Agriculture Organization FAO [1]. More than half of the world population depend on fish as a principal source of animal protein and is also one of the most important foods available in the tropics Eyo, [2,3]. It is often the most important diet in the world and was termed as poor man's protein especially in rural and fishing communities in Nigeria fish is noted for its significant role in household diet providing about 75% of the total animal protein intake Department for International Development and Food and Agriculture Organization DFID[4] and FAO [5]. Fish products are important source of protein in Korea and their consumption is large compared to meat products. However fish products consumption has declined slightly from the 1980-1998 periods while that of meat has increased [10]. In many countries people derive more than 50% of their daily animal protein requirement from fish; it has been observed that fish is second to rice in the diet of low-income people of many developing countries [11]. Fish and fish products are known worldwide as quality and significance in improving human health [6]. To meet the demand for fish protein in Nigeria, an increase by one million tonnes of fish per annum is required [7]. Fish is economically, socially and culturally important as a global dietary aspect of sustainable food security. Economically, fish provides an important source of food and income for both men and women and fishing has an important cultural and social affiliation to the riverine communities. Nigeria is experiencing deficit of about 2.17 million metric tonnes which is required to meet the ever increasing demand augmented by massive importation in millions of foreign exchange, federal department of fisheries [8]. Also as reported Nigeria spends about ₦100billion on fish importation annually and the current fish consumption in the country stands at over 2.7 million tonnes annually [9]. Food and Agriculture Organization [5] reveals that there is increasing demand for fish and fish products. It further highlighted the projected fish demand for Nigeria between 1991 and 2000which was estimated at about 1.1to 1.2 million tonnes per annum. [12]. The estimated level of domestic fish production of about 500,000 metric tonnes is supplied by artisan fisher folks. This accounted for about 85% of the domestic production.

According to a study conducted by the National Bureau of Statistics [13] on the consumption pattern survey reveals that between 1996 and 2004, the average fish consumed in Nigeria annually is about 104,611 metric tonnes, Out of which about 53% was imported, Aquaculture contributes only 2.7% of the total production .Fish has been recognized to contribute 55% to the protein intake in Nigeria. However, local fish production has been below consumption with imports accounting for aboutUS$48.8m in 2002 [14]. Despite the increase in the major sources of animal protein such as livestock and poultry industries, the problem of protein deficiency still continues unabated. The protein deficiency in diet is equally associated with the inability of fish farming industry to supply the required quantity of fish. The situation causes poor health, low efficiency, low productivity and poor standard of living and decline in the contribution of fishery industry's to the Gross Domestic Product (GDP).The industry now contributes only2.0% of the GDP and accounts for 0.2% of the total global fish production. Nigeria is one of the largest importers of fish with a per capita consumption of 7.52kg and a total consumption of 1.2million metric tonnes with imports making up about 2/3 of the total consumption. This indicates the large deficit in fish supply in Nigeria Olopade and Olaokun [15].

According to Central Bank of Nigeria [16] fish output increased by 6.6%above its level in 2007 to 668.750 tons in 2008 . Amao, *et al.* [17] stressed that over the past 15 years, fish has enjoyed higher increase in demand, associated with good pricing. There is high level of awareness in the developed world about nutritional and health benefit of fish products which is characterized by low fats calories but with high level in protein, vitamins, minerals and polyunsaturated fatty acids. Due to the high level of awareness about the protein and other minerals, vitamins, etc, fish product is gaining more acceptances and this has resulted to steady increase in the prices with consequences on the consumers in the developing countries. Bulk of the harvested fish is still used for domestic consumption. Increased world demand for fish is placing pressure on developing countries to earn exchange.

METHODOLOGY
The Study Area
The study was conducted at Michika Local Government Area of Adamawa State. The area lies between latitude $10^o\ 23^1$-$47^o\ N^1$ and $13^o\ 16^1$ -$13^o\ 36^1$. The area has tropical climate of wet and dry season. The wet season commence in May/June and ends in late October, while the dry season starts in November and ends in May. The annual rainfall of the area is about 1,000 mm, while mean monthly temperature is 27.8 [18]. It shares common boundaries with Madagali Local Government Area to the North, Askira-Uba Local Government to the (Borno State) in the West, Cameroun Republic to the East and to the South by Mubi North Local Government Area. The study area

falls within Sudan Savannah, with land mass of about $1421.99km^2$. It has a projected population of about 188,419National Population Commission [19].

Sampling Techniques
Multi-stage random sampling technique was used. In the first stage, eight (8) out of sixteen (16) wards were randomly selected. In the second stage, villages were purposively selected to obtain a total of twenty four (24) villages while in the third stage, a total of one hundred and forty eight (148) households were proportionately selected.

Analytic Techniques
The analytical tools employed for the study were descriptive and inferential statistics. These include the use of frequency, mean and percentages to analyse the socio-economic characteristics while multiple regression models was employed to examine the influence of socio-economic variables such as; income, family size, level of educational, age, sex, major occupation and price of fish.

The data collected were was expressed in linear functional form as presented below,
$$Y=b_o+b_1X_1+b_2X_2+b_3X_3+b_1X_1+b_2X_2+b_3X_3+b_8X_8+e$$

Where Y= Total amount spent on meat consumption (₦)

X_1=Household size of the respondent (number of individual)
X_2=Age of the respondent (years)
X_3= Gender of the respondent (Male =1, Female=0)
X_4=Marital Status of the respondent (Married=1 otherwise = 0)
X_5= Monthly Income of the respondent (₦)
X_6= Education level (years spent in school)
X_7= Occupation of the respondent
X_8= Price of fish (₦)
b_o= Intercept
b_i= Regression coefficient of the independent variables.
e= Error term

RESULT AND DISCUSSIONS
Evidence from the descriptive analysis of socio economic characteristics of respondents in the study area in table 1 shows that majority of the households (74%) were headed by male. As usual and in most African tradition, family in most cases are being headed by male gender except in some cases when the male household head is dead. Otherwise, in most cases especially in the Northern part of the country. By implication, most decision regarding the family activities are normally being handled by the household head which is invariably the male head. This includes the organization and management of the family. About 71% of the respondents were all found to be married with 11% as widowed, while 18% were found to be

single. It is believed that married family consumed more food among the society because of the larger household size and other dependents that stays with the family. As against the singled households who may not have any dependant under his direct care and hence, less expenditure interms of food supply and consumption. About 45% of the household had less than 5 household members with an average of five persons which is the normal national average of five persons as reported by the National Bureau of Statistics in 2007 as 36% had household size of between 6 and 10 people, while 19% falls within the range of greater than 10people. A large family is expected to consume more food and other animal protein. On the level of educational attainment, less than 16% of the respondents had no formal education with 29% attended primary school while 34% obtained secondary school certificate with the remaining 20%holding post-secondary school certificate.As reported by [20] education plays an important role in the consumption pattern of individual for food as it has to do with decision making in terms of deciding or knowing the type, quantity and quality to be consumed.

Income is one of the determinants of consumption of and individual or household. Analysis of the monthly income of the respondents reveals that majority representing about bout 44%of the respondents earned an income of below N30, 000, while 40% of them earns between N30, 001-N50, 000. The remaining 16% receives above N50001. The analysis further shows that majority of the respondents were low income earners as they lives on less than N30,000 per month., and hence their disposal income will have great influence on the demand for fish and fish products. Similarly, the study indicated that 40% of the respondents are farmers with 34% as civil servants while the remaining 24% been traders. One's occupation plays an important role in determining the income and to some extent respondent's budgetary expenditure. Which in turn, influence the level and determination of the demand for or consumption of a particular product. This shows that the respondent's level of income will play a pivotal role in deciding on the quantity and type of product to purchase, rate or frequency of the purchase since he is constrained by what is available as a disposable income.

Table-1: Socio-Economic Characteristics of the Respondents.

Gender	Frequency	Percentage
Male	109	73.63
Female	39	26.35
Marital status		
Single	27	18.24
Married	105	70.95
Widowed	16	10.81
Household size		
≤ 5	66	44.59
≥ 10	54	36.49
10 and above	28	18.92
Level of education		
Non formal education	24	16.22
Primary	43	29.05
Secondary	51	34.46
Tertiary	30	20.29
Monthly income		
≥30000	65	43.92
30001-50000	59	39.87
≤50001	26	15.18
Occupation		
Farming	59	39.87
Civil servant	50	33.37
Trading	39	26.35
Total	**148**	**100**

Source: Field Survey 2013

The regression analysis was carried out to examine the determinants of factors effecting fish consumption in the study area. The results show that the coefficient of multiple determinations (R^2) was found to be 0.83. This implies thatthe variation in the model reveals that 83% of the variation in fish consumption was explained by the independent variables included in the models. The results further reveals that the coefficients forage, (x_2), marital status (x_4), occupation (x_7) and price of fish (x_8) wereall significant at 10%

except monthly income which was statistically significant at 1%level. The interpretation is that as these factors increase, the amount spent on fish intake increase. Similarly, it means that as these factors were all found to be positive and significant at different probability levels. Therefore, a unit increase in these factors will lead to increase in the level of consumption by the coefficient of the respective variables.

Table-2: Coefficient of Household Expenditure on Fish Consumption

Variables	Coefficient	Standard Error	t-Statistic
Constant	1.798956***	0.594729	3.024831
Family Size	0.057542	0.044192	1.302085
Age	0.042162*	0.024422	1.726436
Gender	8.63E-05	0.043059	0.002004
Marital Status	0.827195*	0.455571	1.815732
Monthly Income	0.001169***	0.000372	3.139392
Education	-0.129052	0.174090	-0.741297
Occupation	0.205859*	0.119812	1.71818
Price	0.111596*	0.060857	1.833740
R^2 0.832 F- value 3.06			

Source: Field Survey 2013.
*** Significant at 1%   * Significant at 10%

PROBLEMS ASSOCIATED WITH FISH CONSUMPTION

Table-3 below shows the problems associated with fish consumption in the study area. From the analysis, it reveals that about 31.23% of the respondents which accounted for 92 persons expressed thatlow income was a major problem that limits their consumption of fish as they cannot afford it due to limited resources available to them. Those that have identified low supply of fish as a major problem for their inability to consume fish accounted for 29.53% and this represents 89 respondents. About 27.83% resulting to 82 respondents reveals that the type of fish available in the study area which happened to be small in nature with occasional supply of big harvest at some periods, though not always was their major problem. Those identified the problem of rapid fish spoilage 63 respondents which resulted 21.39%. The problem of high prices of fish had 57 respondents which amounted to 19.34%. The problem of inadequate number of fish market in the study area accounted for 18.67 with 55 respondents.

On ranking the problems according to the magnitude of the respondents in each categorization of the identified problems in the study area, low income levels of the fish consumers ranked first, with those that reported low supply of fish ranking second while small number of fish as a constraint ranked third. Rapid fish spoilage, high price of fish and inadequate number of fish markets ranked fourth, fifth and sixth respectfully

Capital is needed to purchase fish and sustain productivity. Some of the respondents have identified storage facilities and disease as being a major problem. Livestock diseases remain a veritable threat to meat consumption. Animal products are constantly under threat by disease that affect livestock and their consumption.

Table-3: Problems Associated with Fish Consumption

Constraints	Frequency	Percentage	Ranking
Low income level of fish consumers	92	31.23	1
Low supply of fish	87	29.53	2
Small number of fish farmers	82	27.83	3
Rapid fish spoilage	63	21.39	4
High price of fish	57	19.34	5
Inadequate number of fish markets	55	18.67	6
Total	436	148	

Source: Field Survey, 2013

CONCLUSION

The study examined the influence of fish intake in Michika Local Government Area of Adamawa State, Nigeria. The analysis has shown that households consumed less of fish due to its high demand and high cost. The low level of income of the respondents and

inadequate supply of fish also makes it un affordable and un sustainable. The study also revealed that variables such as; fish price, monthly income, marital status, age and occupation of the respondents are some of the major determinants of fish consumption in the study area. On the basis of these findings, it is imperative that Government at all levels should possibly looks out for ways of supporting citizens to establish small fish ponds and further support them to secure fingerlings and other related inputs that will facilitate increased in quantity and quality of fish being produced. Doing so will help in sustaining the level of fish production all year round and that can meet the demand of the citizens in the short-run and export in the long-run. Furthermore, it will further help in generating additional income through steady supply of fish. The respondents should also be encouraged to explore alternative sources of income generating activities as a means of ensuring steady fund flow for further expansion of their farming activities. The sustainable supply of fish in the study area will as well improve the level of fish consumption. Deliberate efforts to ensure that not only diseases associated with fish production and consumption are treated but generally all animals diseases are handled as well. For the storage problems, fish value chains at all levels are expected to be effectively and efficiently managed especially in the area of fish smoking/drying and refrigeration.

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