Socio-economic Characteristics of Consumers on the Intake of Animal Protein in Gombi Local Government Area, Adamawa State, Nigeria

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ABSTRACT--- ***A survey on socio-economic characteristics influencing the consumption of animal protein in Gombi local government areas of Adamawa State was conducted in 2011. The objectives of the study were to describe the socio-economic characteristics of the respondents in the study area, determine the effects of socio-economic characteristics on animal protein consumption and to examine the income distribution of the respondents in the study area. A total of 105 respondents were selected using stratified random sampling technique. Structured questionnaires and interview scheduled were used in the collection of information from the respondents. Descriptive statistics, regression analysis and average propensity to consume were used in data analysis. Results revealed that majority (68%) of the respondents were male and 89% were married with a mean age of 42 years. Most of them (86.70%) had attended formal education. The respondents were mostly (43.86%) low income earner, earning less than ₦20,000 monthly. The per capital consumption of the households heads reveals that lower income earners spend much on animal protein than the high income earners as revealed by their average propensity to consumption (APC) of 0.30, 0,31 and 0.36 respectively to the income levels of less than 20,000, 20001-40,000 and 40001-60,000.The estimated coefficients from regression analysis revealed that the budget share allocation to animal protein consumption is positively influenced by age, expenditure on other foods, approximate monthly income and education. The co-efficient of determination (R^2) of 0.53 reveals that 53% variation in animal protein is accounted for by these variables. It is recommended that corporate bodies and individual should be encouraged to establish family livestock and fish pond for reduced expenditure on animal protein.***

Keywords--- Socio-economic, Consumer, Intake, Animal protein, Gombi, Adamawa State, Nigeria

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1. INTRODUCTION

The trend and the level of per capita of food consumption is one measure of development and welfare, particularly of so-called "superior goods". Superior goods are those that increase as personal and household income increases. Animal protein foods represent a major portion of such goods (Ibrahim Soliman and Nafissa Edi. 1992). As such, these products should be a major element within the social dimension of development strategy. The consumption of all kinds of food determines the welfare and living standard of a country's citizens. A positive resource flow is considered as contributing toward economic well-being if it increases the recipient potential to consume or save and negative flow reduces well-being if it reduces the capacity to consume or save. Income is most often considered a best measure of resource flow, providing individual welfare or utility (Sierminska and Garner, 2005). Both consumption and health are important complementary measure of economic well-being.

In Nigeria, food consumption accounts for a substantial proportion of total household expenditure. Nigeria's agriculture policy has over the years aimed at achieving self-sufficiency in food production for rising human statistic, adequate nutrition requirement for growth and health existence. Various estimates on food have consistently portrayed wide gap

between food production and demand. Agricultural development is particularly crucial because of the vital role it plays in economic growth, good nutrition and health (Ademosun, 2000).

There has been major import of animal products in Nigeria, yet incidence of underweight and protein energy malnutrition is still prevalent among rural and urban dwellers. Their demand has however, been growing due to the nutritional needs of the ever increasing population, which was estimated to be growing at 5.9% per annum. There is also high rate of rural to urban migration, high price of food items and precarious food security situation (Okunmadewa, 2001). Although Nigerian food security program has secured an abundant supply of gross protein, notably cereal (85 %), this was derived mainly from plant sources, (Ane, 2007). Cereals are deficient in certain amino acids, which lower their quality while proper cereal-legume combination can provide good quality protein, they are often bulky and unsuitable for certain population segment known as nutritionally vulnerable group. National and international recommendations for protein intake were based on animal sources of protein such as meat, cow's milk, fish and egg; plant protein may be less digestible because of the intrinsic difference in the nature of the protein and the presence of other factors like fiber which may reduce protein digestibility by as much as 10% (James, 2000). Recommended daily allowance (RDA) for protein for an adult by United states (US) is 0.89/kg body weight and World Health Organisation (WHO) is 0.45/kg body weight although different weight standard and food sources of protein may apply (Ane, 2007).

It has always being difficult for Nigeria to meet its demand for food of animal origin over the years resulting in increased importation of such products (Mohammed *et al.*, 2001). This low consumption of animal protein closely related to low level of income in developing economies since protein products are more expensive than other foods. Many low income earners therefore, consume more of plants and less of animal protein because of its cost despite potential (in terms of utility) of animal protein compared to plant source in the body (Akinbile, 2002). Protein energy malnutrition is still widespread in the country today due to the decline in protein intake accompanied by the scarcity and unaffordable price of animal's protein foods (Asiabaka *et al.*, 1999).

Protein is an essential nutrient for well maintenance, repair, and regulation of a wide range of the bodily function. Protein is widely present in animal food product, such as eggs, milk, meat and fish or from plant, such as vegetables, grains, beans, and rice. Protein from different food source in our diet contain different amino acids some of which are essential and other are non-essential (Ane, 2007). Protein provides 4 calories of energy per gram; the body uses protein for energy only if carbohydrate and fat intake is insufficient. When tapped as an energy source, protein is diverted from the many crucial functions it performs for our bodies (Charles, 2008). However, the prices of animal products are beyond the reach of average Nigerians, owing to the increase in the production and maintenance cost of farm animals (Ohajianya, 2005).

2. METHODOLOGY

The Study Area

The study was carried out in Gombi Local Government Area of Adamawa State. It is situated in the Northern part of Adamawa State, lying between latitude 10^{o} 04' and 10^{o} 40' N and Longitude 12^{o} 12' and $13^{o}10'$. It shares borders with Hong Local Government to the east and Song Local Government to the West, Shelleng Local Government to South and has a state boundary with Borno to the North. Gombi has a projected population of 179,089 people as at 2012 (NPC, 2012). This population is made up of several ethnic groups among which are:- Ngwaba, Whona, Bura, Gaanda, Higgi, Marghi, Fulani and others.

There are two marked seasons in the area, these are the dry and wet seasons. The wet season usually start around April/May and last till October, with an average, annual rainfall of between of 750-1020mm while temperature ranges from 18 – 27^{0}C (Adebayo, 1999). The vegetation cover is sparse and dry season start from November to March. The Local Government is divided into four districts viz: Guyaku, Garkida, Gaanda and Fotta. Farming is the major economic activities in the area and the population is mostly at subsistence level.

Sampling Techniques and data collection

The study covered all the districts of the local government area. The sample households in all the area were selected by stratified random sampling technique and this was achieved by dividing the population into farmers, civil servant and business/trader the household sample was drawn randomly to allow for degree of representativeness. One hundred and five respondents were selected using area random sampling techniques. Data were collected by administering structured questionnaire on both quantitative and qualitative factors affecting animal protein intake and consumer behavior. The animal protein that were considered include; meat, egg, milk, fish and broiler.

Data analysis

The method of data analysis include both descriptive and inferential statistics. The inferential statistics involved the use of multiple regressions to determine the effect of socio-economic characteristics on animal protein food consumption

The multiple regression model

The ordinary least square (OLS) analysis was used in the quantitative determination of the socio-economic characteristics of respondents that determines their animal protein consumption.

The implicit form of regression model specified for this study is:-

$Y=f(X_1, X_2, X_3\text{--------}X_7)$ ---------- (1)

Where;

Y = Total monthly expenditure on major animal protein in naira,

X_1 = Age of the respondent (in years)

X_2 = Household size of respondent

X_3 = Educational level

X_4 = Gender of household head

X_5 = Marital status of the respondent

X_6 = Total income of the household head per month (in naira)

X_7 = Expenditure on other foods per month (apart from animal protein)

e = Error term

The data collected were fitted into four functional forms; linear, semi-log, Exponential and Double-log functions.

The average propensity to consume

This is the ratio of total consumption expenditure to the level of dispensable income it measures the proportion or fraction of income that is spent on consumption. It is given as:-

$$APC = \frac{C}{Yd}$$

APC = Average propensity to consumption

C = Consumption

Yd = Disposable income

3. RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

Socio-economic characteristics of the respondents were analyzed using descriptive statistics, frequency distribution and percentages and regression analysis. The socio-economic characteristics analyzed were age, sex, occupation, education level, and household size. As shown on Table 1, about 65% of the respondents were male, while 35% were female which shows that male constitute the highest percentage of the household heads. The respondents within *less than* 39 years of age class constituted about 67% of the total respondents interviewed, while their mean age is shown to be 42. This indicates that majority of the respondents were middle aged, and in their active and *productive* years. According to Amao *et al.* (2006) people in this category will require more protein that will match their body composition. Majority (43.81%) of the household heads indicated farming as main occupation, while those engaged in business/ trading were the least about 11%. Respondents who were civil servants, private and organization constituted about 25%, 11% and 10% respectively. The implication here is that occupation type determines income level, which in turn determines the demand and consumption level of the various commodities. The educational level of respondents has shown that majority (86.70%) of the respondents had attended one form of formal education or the other. Jide (2001), found that education of household members significantly influence the consumption of relative expensive and qualitative food commodities. Also, Amao *et al.* (2006) precisely stated that consumption of animal product has to do with knowledge and the importance of protein, and the best way is through education. About 47% of the respondents had household size ranging from 1 – 4 persons while 38% have 5-8 and the remaining have more than 9 people in their household. The mean household size is 9 and this is large. This is capable of influencing consumption pattern, increase demand and expenditure on animal protein consumption.

Table 1: Socio-economic characteristics of the respondents

Variable	Frequency	Percentage (%)	Mean
Gender			-
Male	68	64.8	
Female	37	35.2	
Total	105	100	
Age			
≤20-29	37	35.24	
30-39	33	31.43	
40-49	24	22.86	42
50-59	5	4.76	
≥60	6	5.71	
Total	105	100	
Educational level			
No formal education	14	13.30	
Primary education	24	22.90	
Secondary educ.	28	26.70	
Tertiary	39	37.10	
Total	105	100	
Occupation			
Farming	46	43.81	
Civil servant	26	24.76	
Business/trading	11	10.78	
Private	12	11.43	
Organization	10	9.52	
Total	105	100	
House hold size			
1-4	49	46.67	
5-8	40	38.09	9
9-12	13	12.38	
≥12	3	2.85	
Total	105	100	

Source: Field survey, 2011

Approximate income of respondents

Table 2 revealed that almost half of the respondents (about 44%) earn below ₦40,000 and 38% of the total respondents earns between ₦ 60,000 and about 18% earns above ₦60,000. This is an indication that majority earn the lowest income which entails difficulty in meeting the needs of household members, since income serves as a budget constraint. This is in agreement with the study of Simon (1976), who stated that, the amount of spendable income, which a house has, affect consumption.

Table 2: Approximate monthly income of respondents

Income level (₦)	Frequency	Percentage (%)
≤ 20.000	45	43.86
20,001- 40,000	24	22.86
40,001 – 60,000	16	15.24
60,001 – 80,000	6	5.72
80,001 – 100,000	3	2.28
≥100,001	11	10.48
Total	105	100

Source: Field survey, 2011

Socio-Economic Variable on Animal Protein Consumption.

The result of regression analysis model shown on Table 3 indicates that four out of the seven explanatory variables were found to contribute significantly and positively to animal protein food consumption. These are age (X_1), educational level (X_3), income (X_6), and expenditure on other foods (X_7). This indicates that an increase in one variable will increase protein consumption. The coefficient of multiple determination (R^2) indicates that 53.3% of the variation in animal protein food consumption or expenditure is explained by the variables include in the model. Consequently, the overall model is significant at 1% as shown by the F statistics.

In double logarithm function, the coefficient of the explanatory variable is the direct elasticity. Hence, a 1% increase in the significant variables would bring about increase in the protein food consumption rate. The coefficient of income suggests that an increase in household income will increase household expenditure on animal protein food consumption. Therefore, animal protein can be termed as normal commodity, since people may likely increase their consumption when income increases. An increase in income would make the consumer eat more of animal protein. From the coefficient of expenditure on other foods shown on Table 3, it clearly indicated that when expenditure on other food rises, more money will be expended on animal protein and *vice visa*

The coefficient on educational level suggest that the more knowledge you have on animal protein and its importance and also the better your occupation which may greatly increase earnings, in this case, more money is allocated to animal protein. This confirms with the findings of Obasi (2003) who said that amongst other factors educational level is a major determination of the demand for animal protein. Following the coefficient of age, the amount expended on animal protein food may increase depending on the health condition of the consumer.

Table 3: Results of Regression Analysis of Socio-Economic Characteristics as it affect Animal Protein Consumption

Variable	Linear	Exponential	Semi-log	Double-log
Constant	10817.36	3.345	-04226.9	-0.126
	(1.262)	(13.166)***	(-5.295)***	(-0.256)
Age	3.202	0.003	12102.56	0.447
	(0.024)	(0.718)	(1.190)	(1.753)*
Household size	-29.806	-0.004	2216.22	0.027
	(-0.006)	(-0.263)	(0.371)	(0.183)
Education	-1216.34	0.084	-13039.77	0.233
	(-0.803)	(1.874)*	(-1.403)	(3.202)***
Gender	-3412.61	-0.118	-9064.405	-0.293
	(-1.156)	(-1.343)	(-0.906)	(-1.167)
Marital status	1141.98	0.044	10136.601	0.278
	0.562	(0.732)	(1.215)	(1.330)
Income	0.250	(S.46)	23622.083	0.699
	(6.295)***	(4.630)***	(5.388)***	(6.361)***
Expenditure on other foods	-1.187	-1.11	-990.405	0.150
	(-2.375)**	(-.752)	(-0.805)	(2.532)**
R^2	40.1%	39.8%	35.1%	53.3%
F. ratio	9.272	9.150	7.503	15.833***

Source: Field Survey, 2011

The lead equation

$LnY = - 0.12 + 0.447LnX_1 + 0.27LnX_2 + 0.233LnX_3 - 0.293LnX_4 +$
(-0.256) (1.753)* (0.183) (3.202)*** (-1.167)
$0.278LnX_5 + 0.699LnX_6 + 0.150LnX_7$
(1.330) (6.361)*** (2.532)**

*** significant at 1%
**significant at 5%
*significant at 10%
Figures in parenthesis are t-values

Per capital consumption of respondent per month

Table 4 has revealed that those with income level between 20,000 to 60,000 has the highest average propensity to consumption than those with capital income of 60,000 and above which agrees with Jhingan 2001 that people with low income spend more on consumption than those with low income.

Table 4 Approximate per capital consumption of respondent per month

Monthly income level of household heads	Average propensity to consumption per month
≥20000	**0.31**
20001-40000	**0.30**
40001-60000	**0.36**
60001-80000	**0.20**
80001-100000	**0.22**
≥100.001	**0.818**

Source: Field survey, 2011

4. CONCLUSION

The outcome of this study shows that the relevant determinant of variation in the household budget allocation to animal protein in the study area includes age, approximate monthly income, and expenditure on other food and educational level of the respondents. Household will continue to increase consumption of animal protein as their income, and educational level increase.

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