

**ANALYSIS OF BEEF CONSUMPTION PATTERN AMONG RURAL HOUSEHOLDS IN YEWA SOUTH  
LOCAL GOVERNMENT AREA OF OGUN STATE, NIGERIA**

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**ABSTRACT**

This study analysed the consumption pattern of beef among rural households in Yewa South Local Government Area of Ogun State, Nigeria. A two-stage simple random sampling technique was employed, and with the help of 120 well-structured questionnaires, data were collected from 120 rural households. The collected data were then subjected to both descriptive and econometrics statistics (regression analysis, Marginal Propensity To Consume (MPC), price elasticity of beef). The results indicated that the highest age of the consumers was within the age bracket of 30-39 years. 65% of the population was married. Secondary education takes the dominance with 49.2% having it. Their major occupation was petty trading (45%). The results showed that beef price and monthly expenditure on food items negatively affected beef consumption in the area, while beef preference, fish price, beef availability, total monthly income and major occupation positively affected beef consumption. Price elasticity of beef was found out to be -0.90006. The Marginal Propensity Consume of beef was 0.0017484. The identified major constraint to beef consumption in the area was low availability of beef. It is therefore recommended that large scale beef cattle rearing should be encouraged which will help to increase the production of safe beef for consumption.

**Keywords:** Beef Consumption, Price Elasticity, Regression Analysis, Food, Marginal Propensity to Consume

## **INTRODUCTION**

Globally, over 900 million people are said to be chronically hungry, out of which 800 million are from the developing countries representing 18 percent of the world population. One out of every five persons in the developing countries is able to meet his or her daily needs of life (Lupien and Menza, 2004).

For sustainability, food consumed by man should contain all the nutrients needed for his body development and growth so as to increase his vigour for labour productivity which is a factor for economic growth. Meanwhile, it has been observed that malnutrition and under nutrition are still problems of unacceptable proportion in many developing countries (Abdullahi and Aubert, 2004). Most people consume the minimum level of calorie but fail to get necessary protein and essential vitamins and minerals required for leading a healthy life (Bender and Smith, 1997).

Proteins from plant and animal sources are the major structural components of the cells of the body and amino acids are the building blocks of protein. Proteins can function as enzymes, membrane carriers and hormones (Jensen, 1994) and also required for the growth, maintenance and repair of all body tissues.

Many arguments have ensued concerning the two sources of protein i.e plant and animal as to which is more nutritionally complete. Meanwhile, (Delgado, 2003) submitted that plant proteins are considered inferior to animal proteins because of the fact that the proportion of the essential amino acids is not balanced for tissues within the body. Similarly, (Britton, 2003) and (Oloyede, 2005) also agreed with Delgado's submission. Besides, they also discovered that the insulin produced by animals is just slightly different from that produced by humans. So if introduced into the human bloodstream especially diabetic patients, it helps to sustain life. Unlike plant proteins, diabetic patients cannot be discouraged from consuming animal protein. In a nutshell, animal proteins are more complete than plant proteins.

The alarming increase in the level of protein malnutrition is worth paying quick and immediate attention to. Of the 70 grams of protein required by a person per day in a diet, 35grams of which is to come from animal source, only about 7grams of animal protein is actually consumed (FAO 2003), and this represents only 20% of animal protein requirement. However, it was reported that the average per capita protein intake in Nigeria was 51.7 grams from which only 8.6 came from animal proteins, whereas in developed countries, the average per capita protein intake was over 70grams with more than 55grams of animal protein (Lateef 2004).

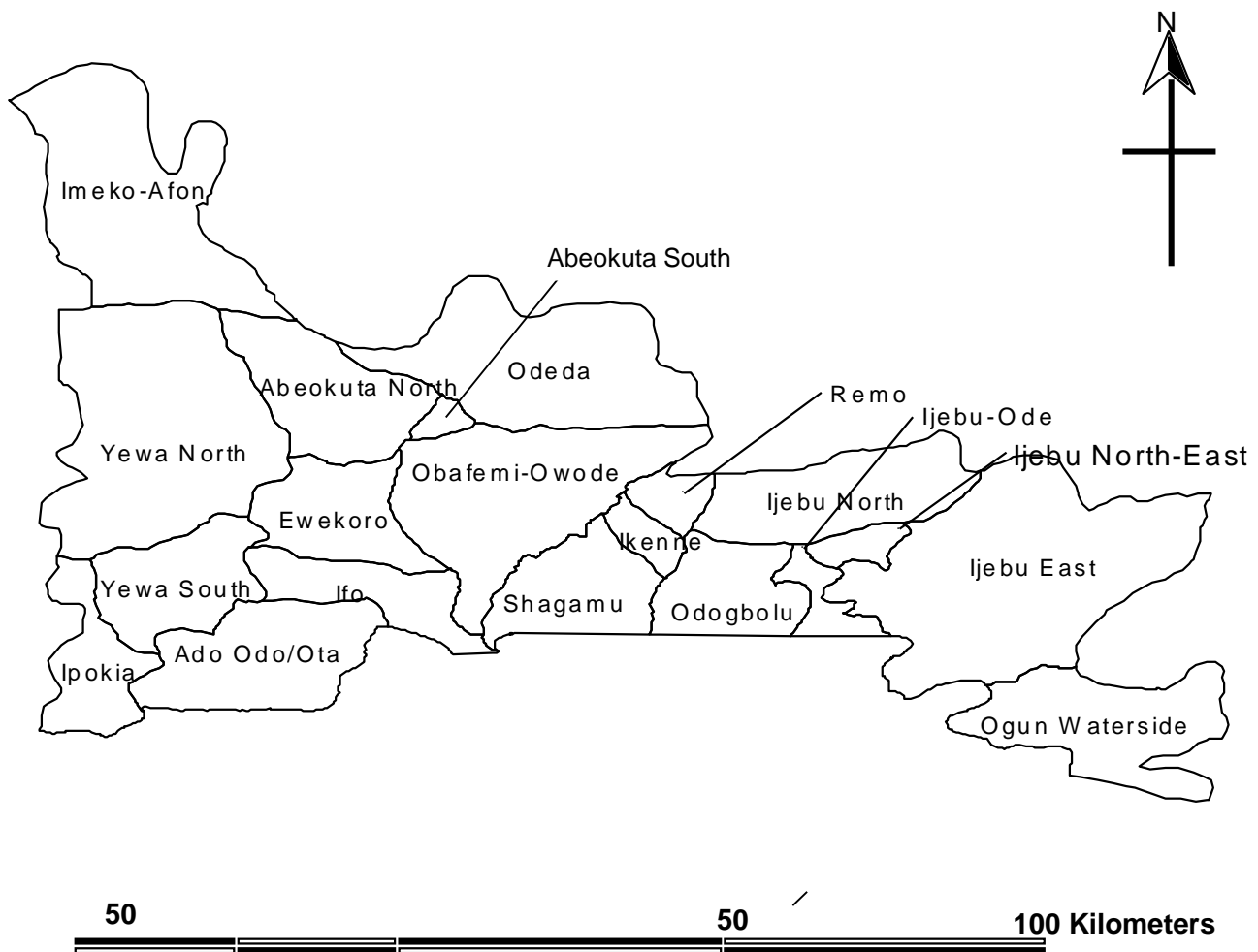
Therefore, beef being a nutritious food containing quantities of essential amino acids in forms of protein, can tend to fill the wide gap and minimise protein malnutrition and by so doing sustain life. This hence, makes the study of its consumption pattern worth doing giving this research the broad objective: Analysis of beef consumption pattern among rural households in Yewa South Local Government Area of Ogun State Nigeria. The specific objectives are to describe the socio economic characteristics of the respondents in the area; analyze the determinants of beef consumption in the area; estimate the price elasticity of beef; estimate the marginal propensity to consume beef in the area; and to identify the constraints to beef consumption in the area.

## METHODOLOGY

### The Study Area

The study was carried out in Yewa South Local Government Area of Ogun State, Nigeria. Yewa South Local Government Area was formerly known as Egbado South bordering the Republic of Benin. Its headquarters are in the town of Ilaro at 6°53'00N, 3°01'00E in the north of the Area. It has an area of 163,720km<sup>2</sup> and a population of 168,850 at the 2006 census (NPC, 2006), while the postal code is 111. The Area has 10 wards namely Ilaro 1, Ilaro 11, Ilaro 111, Iwoye, Idogo, Owode 1, Owode 11, Ilobi/Erinja, Oke Odan and Ajilete with two major blocks which are Ilaro and Ifekowajo. The Local Government Area has a Guinea savanna- like vegetation with a vast arable fertile land which makes mechanized farming possible.

**Map of Ogun State showing Local Government Areas of the State.**



**Figure 1: Map of Ogun State**

### Sources and Methods of Data Collection

Both primary and secondary data were used for this study. Primary data were obtained through the use of well-structured questionnaires and oral interview. While secondary data were extracted from the journals, bulletins, statistical reports and past research works.

### Sampling Techniques and Sample Size

A two-stage random sampling technique was used to draw respondents for the study.

In first stage, the six towns or communities were randomly selected from the local government area; while in second stage, twenty respondents each were randomly selected from the each of the selected towns from the study area. In all, a total number of one hundred and twenty respondents were sampled for the study.

### Methods of Data Analysis

The combination of Descriptive and Inferential statistics were used to analyse the data collected for the study. The descriptive statistics such as frequency table, percentages and means was used to describe the socioeconomic characteristics of the respondents, and also to identify the constraints to beef consumption in the study area. Whereas, inferential statistics such as multiple regression analysis, price elasticity and marginal propensity to consume were used to analyse the determinants of beef consumption and price elasticity of the beef in the study area.

### Model Specification/Analytical framework

#### The regression model

$$Y = \beta_0 + \beta_i X_i + U$$

- Y = Dependent variable
- B<sub>0</sub> = Slope/intercept
- B<sub>i</sub> = Coefficient of X<sub>i</sub>
- U = Error term

Implicit Regression model is  $Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, U)$

Where:

- Y = Amount spent on beef consumption (₦)
- X<sub>1</sub> = Educational Status (yrs)
- X<sub>2</sub> = Household size
- X<sub>3</sub> = Major occupation
- X<sub>4</sub> = Beef price (₦)
- X<sub>5</sub> = Beef preference
- X<sub>6</sub> = Beef availability
- X<sub>7</sub> = Fish price (₦)
- X<sub>8</sub> = Total monthly income (₦)
- X<sub>9</sub> = Monthly expenditure on food items (₦)
- U = Error Term

### Price elasticity

$$\text{Price Elasticity of} = \frac{P_2 - P_1}{P_2} \cdot \frac{Q_2 - Q_1}{Q_1}$$

Where  $P_1$  = Final price of beef (₦)

$P_2$  = Initial Price of beef (₦)

$Q_2$  = Quantity of beef consumed presently (Kg)

$Q_1$  = Quantity of beef consumed previously (Kg)

Marginal propensity to consume (MPC)

$$\text{MPC} = \frac{\text{Change in C}}{\text{Change in Y}}$$

Where: C = amount incurred on beef (₦)

Y = disposable income (₦)

## RESULTS AND DISCUSSION

### Socio-Economic Characteristics of the Respondents

The results in Table 1 revealed the socio-economic characteristics of the respondents. One of the several factors associated with personal financial skills and knowledge, is age, (Joo and Grable, 2004). Age is presumed to have a significant effect on consumption (whether direct or indirect) especially, beef consumption. Although, the effect may vary from one person to another as what obtains for an individual may not obtain for another. The respondents whose age falls within 30-39 have the highest frequency and percentage which means that most of the people living in the area are not really old people but young. This is followed by the age bracket of 20-29 years which takes a percent of 35%, then those who are between 40-49 years up to the age bracket that has the lowest frequency. The ages presented above are presumably favorable going with the belief that aged people should not consume beef. But the area has more of young people who can still consume beef.

In the real world, preferences among people may vary because of differences in gender and composition (Islam & Siwar, 2005). As it occurs in many gatherings, the study area is not an exception. There are more females (57.5%) than males (42.5%) in the area. This may affect the beef consumption pattern in the area in that females (women), take the principal decision on what is to be eaten in the household, though men are to finance such decision.

The respondents in the study area only practices two religions which are Islam and Christianity. The Christian respondents take the highest percentage of 67.5% while the Muslims take percentage of 32.5%. Religion may really have effect on the consumption pattern of beef in the area relative to that which it may have if it were to be pork.

Education, they say is light. This may probably affect the level of consumption in the area although, it may not be general. There is a high level of literacy in the area and this may likely affect the consumption of beef in the area. As a matter of fact, a reasonable percentage of the respondents are educated at least acquiring vocational education. Those without any form of education take 18.3% of the total population while those with secondary education have a percentage of 49.2%, followed by those with Primary school education while those with Tertiary education have a percentage of 10% and lastly,

those who had vocational education have a percentage of 1.7%. It implied that most respondents have appreciable level of education which helped to increase their curiosity to consume more beef and invariably increase their protein intake level.

Marital status could as well affect beef consumption either positively or negatively, as the family size and many people are involved in decision making. It is revealed through the findings that the respondents who are married have the highest frequency and percentage while the divorced takes the lowest percentage. This may likely affect the consumption of beef in terms of the family size. In that the larger the family, the higher the rate of consumption unless, if otherwise in case of some exceptions. It can also be deduced that those who have marital responsibilities are many in the area which could have some positive effects on the upbringing of the children there.

The larger the size of any household, the more the amount of money relatively spent on consumption. As submitted by some scholars that, household size is one of the factors that affect consumption. It was revealed in the Table 1 that the household size having the highest percentage is the one with a size between 4-6, this is a relatively controlled household size as compared to the fact that rural area is been considered. This could therefore imply that the respondents may not be consuming as much beef as would have been expected of them.

The major occupation of the respondents is highly important and relevant to their pattern of beef consumption because that is their major source of consuming power i.e their income. Also, the type of occupation many times, determines the level of exposure to some certain facts of which, nutrition is one.

Data in Table 1 also showed a scaring scenario about the rural area that was studied in that the major occupation is petty trading taking 45% as against what it used to be before when farming used to be the major and dominant occupation, while farming takes the second position with 15% which is a wide margin when compared with petty trading. The next to farming is Artisanship with a percentage of 12.5% while apprenticeship takes a percentage of 8% civil service takes the lowest percentage of 7%. Others such as driving, bricklaying etc fall into the category of 15%. Farming includes animal and crop farming, beef production is a subsidiary of cattle rearing which is an example of animal production. This could have a significant effect on the availability of beef for consumption in the study area.

The finding showed the result of the analysis run to determine the most preferred protein source by the respondents in the area. And it is shown that fish takes the highest percentage of 54.2% followed by beef with 22.5% while eggs and vegetable have the same percentage of 10.8% each, chicken takes the lowest percentage of 1.7% . This means that beef has a relatively high consumption level as compared to other sources except for fish which has the highest consumption level.

The finding revealed that protein source preference by the individual respondents and the area as a whole is mainly informed by their personal taste which takes the highest percentage of 78%, Doctor's advice takes a percentage of 10% which could majorly be attributed to the old people among them, Religious belief takes a percentage of 5.8%, the price of the protein source has 5% while availability takes the lowest percentage of 4.2%. The implication of the above is that personal taste dictates majorly the preferred protein source except if doctor's advice states otherwise but such protein source's availability and price have little or no effect on its consumption level.

**Table 1: Socio Economic Characteristics of the Respondents (N = 120)**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b><u>Age group (years)</u></b>		
20-29	42	35
30-39	46	38
40-49	18	15
50-59	10	8.3
60-69	4	3.3
Total	120	100
<b><u>Sex</u></b>		
Male	51	42.5
Female	69	57.5
Total	120	100.0
<b><u>Religion</u></b>		
Christian	81	67.5
Islam	39	32.5
Total	120	100
<b><u>Educational Status</u></b>		
No Formal Education	22	18.3
Primary Education	25	20.8
Secondary Education	59	49.2
Tertiary Education	1	10.0
Vocational Education	2	1.7
Total	120	100.0
<b><u>Marital status</u></b>		
Single	36	30
Married	78	65
Widowed	4	3.3
Divorced	2	1.7
Total	120	100.0
<b><u>Household size (Number of persons)</u></b>		
1-3	49	40.8
4-6	53	44.2
7-9	16	13.3
10 & above	2	1.7
Total	120	100.0
<b><u>Major occupation</u></b>		
Farming	18	15.0
Civil Service	7	5.8
Petty Trading	54	45.0
Artisanship	15	12.5
Apprenticeship	8	6.7
Others	18	15.0
Total	120	100.0
<b><u>Source of Preference Information</u></b>		
Price	6.0	5.0
Doctor's advice	12.0	10.0
Religious Belief	7.0	5.8
Personal taste	90.0	78.0
Availability	5.0	4.2
Total	120	100
<b><u>Beef Consumption at all</u></b>		
Yes	108	90
No	12	10
Total	120	100

Source: Field Survey, 2015

### Protein source preference and Beef Consumption

The results revealed that 54.2% of the respondents prefer fish as their source of protein while 22.5% only preferred beef. Further information obtained showed that 90% of the respondents do eat beef though in different quantities and periods of time, while 10% do not eat beef at all. Table 2 showed the protein source preference and beef consumption of the respondents.

**Table 2: Protein Source Preference and Beef Consumption**

Variable	Frequency	Percentage
<b>Protein Source Preference</b>		
Beef	27	22.5
Chicken	2	1.7
Fish	65	54.2
Eggs	13	10.8
Vegetables	13	10.8
Total	120	100

Source: Field Survey, 2015

### Determinants of Beef Consumption in the Study Area

In order as to analyze the determinants of beef consumption, four functional models were tried (linear, semi log, double log and exponential). But linear model was picked as the lead model because it had the highest adjusted  $R^2$  of 0.607. The results showed that beef preference, beef availability, monthly expenditure on food items, fish price (the close substitute of beef in the area), beef price and total monthly income are significant to the amount of beef (₦) consumed in the area.

All determinants are directly significant that is, they have positive effect on the amount of beef consumed in the area except and beef preference and monthly expenditure on food items which are indirectly significant. The implication of the above result is that increase in beef preference and availability, monthly expenditure on food items and fish price will increase the consumption of beef in the area while any change in beef price and total monthly income will cause a decrease in the consumption of beef in the area.

In summary, beef preference, beef availability, monthly expenditure on food items, fish price (the very close substitute of beef) are the major determinants of amount of beef consumed in the study area. Furthermore, the implication of the adjusted  $R^2$  being 0.607 means that the independent variables employed in this research can only explain 60.7% of the variations in the amount spent on beef consumption (dependent variable) in the study area while some other variables which are not included in the study are responsible for 39.3% of the variation and this value i.e. 39.3% is attributed to the error term,  $u$ . Also, the F-value is highly positive (21.447) showing the overall significance of the model. Table 3 depicts the determinants of beef consumption.



**Table 3: Determinants of Beef Consumption**

Variable	Coefficient	T-ratio
Constant	20.631	0.700
Educational status	-0.068	-1.050
Household size	0.090	1.333
Major occupation	0.090	1.335
Beef price	0.479	-7.434*
Beef preference	-0.420	6.492*
Beef availability	0.184	2.884**
Fish price	0.172	2.802**
Total monthly income	0.290	2.863**
Monthly Expenditure on Food	-0.380	-3.599**
R <sup>2</sup> = 0.637; Adjusted R <sup>2</sup> = 0.607; F value = 21.447		

Source: Field Survey, 2015

### Price Elasticity of Beef

Data in Table 4 presents the respondents response to beef price change. The result of the price elasticity done on the respondents response to beef gave a coefficient of price elasticity of -0.90006 which represents a fairly inelastic type of price elasticity, meaning that a unit change in price of beef leads to an equal change in the quantity of beef demanded for consumption (Anyaele, 2003).

**Table 4: Respondents' Price Elasticity of beef**

Commodity	Initial Price (₦)	Final Price (₦)	Initial Quantity (Kg)	Final Quantity (Kg)	Price Elasticity
Beef	50250	65250	166	121.4	-0.90006

Source: Field Survey, 2015.

### Marginal propensity to Consume Beef in the Study Area

The results revealed that the MPC is 0.0017484 implying that for every ₦1 increase in the respondents' income, 0.0017484 additional quantity of beef will be consumed by them. This hence depicts that the respondents are not really willing to increase their consumption level of beef probably because of the more preference for fish.

### Constraints to Beef Consumption in the Study Area.

Results obtained from the study informed that low availability of beef is the major constraint (20.8%) to beef consumption in the area as a result of the distance to the beef source (16.7%) which can be traced back to the lack of abattoir (12.5%) in the area. Although health and age (11.7%) also constitute a constraint as shown in Table 5.

**Table 5. Constraints to Beef Consumption**

<b>Constraints</b>	<b>Frequency</b>	<b>Percentage</b>
Lack of abattoir	15	12.5
Distance to the source	20	16.7
Cost price per kg	9	7.5
Low availability	25	20.8
Financial constraint	8	6.7
Age/Health status	14	11.7
None	29	24.2
<b>Total</b>	<b>120</b>	<b>100</b>

*Source: Field Survey, 2015*

## **CONCLUSION AND RECOMMENDATIONS**

Based on the results from the findings, it could be concluded that the people in the area prefer fish more than beef, but all the same, beef still follows fish in consumption level. Also, beef price, preference and availability play a major role in determining the consumption of beef while, others like the price of fish, expenditure on food items also dictate beef consumption pattern in the area. The crown of it all is that only 10% of the population sampled are pure vegetarians. Therefore, there is still a level of safety as touching animal protein deficiency, although not yet adequate but, when all necessary recommendations are considered carefully, the issue of protein deficiency will become a thing of the past.

Therefore, the following are considered to be helpful if well implemented: Government should organize seminars and programmes on nutrition in the study area so as to enlighten the people on the right type of food to be consumed and also, the quantity and quality of such food for individual age brackets. Many people are just leaving on another man's opinions, even though many a times such opinions are not correct, especially with respect to beef consumption. Also, as one of the major determinants of beef consumption in the area, beef availability is highly important. Meanwhile, during the survey, many of the respondents complained about the availability of beef in the area. So in view of this, government should encourage beef cattle production which is the mother of beef availability. Furthermore, adequate rehabilitation of the abandoned abattoirs and construction of new ones should be done while trained beef inspectors and health workers should be employed so as to ensure a good production of safe beef for consumption. Moreover, entrepreneurs such as cattle dealers, butchers and beef hawkers are hereby encouraged to work harder in providing wholesome beef for the community consumption which should not be based just on their envisaged profit, but to also put into consideration, consumers' satisfaction. Also, when many people are involved beef production and selling, it will help to bring the beef price low.

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## REFERENCES

- Abdullahi, A. and D. Aubert (2004): “A Cross Section Analysis of Household Demand for Food” *Agricultural Economics* 31 (2004):67-79
- Aboyade, O. (1998): *Integrated Economy. A Case Study of Development Economics*, Addis and Westley, New York. 1998. Pp 34-57
- Anyaele J.U. (2003): *Comprehensive Economics for Senior Secondary Schools*. A. Johnson Publishers Limited Lagos. Pp 124-125.
- Bender W. and Smith (1997): “Population, food and Nutrition.” *Population bulletin* 51(4). Population Reference Bureau, Inc. pp, 5-25
- Britton A. (2003): *Animal Protein Issues*. Speedway Publishers, 2003 pg (6-9)
- Delgado C. (2003): Rising consumption of meat and milk in developing countries has created a new food revolution. *The journal of Nutrition, America Society for Nutritional Science*, November, 2003; vol. 133:39075-39105
- Food and Agricultural Organization (2003): *FAO Fifth World Food Survey: A Note on the Result, Food and Nutrition*. Vol. 11(2): pp. 55-63
- Ikeme A.I. (1990): *Meat Science and Technology in Africa*, Federal Publishers Ltd Ibadan. Pg 112-113.
- Islam A. O & Siwar F. (2005): Impact of the Financial Crisis on Expenditure Patterns in Malaysia: Special Reference on Low-Income Households. *Journal of Economic Research* 10: 145–173.
- Jensen B. (1994): *Goat Milk Magic: One of Life’s Greatest Healing Foods*. E.S. Candido, California
- Joo S, Grable J.E. (2004): An Exploratory Framework of the Determinants of Financial Satisfaction. *J. Fam. Econ. Issues*, 25(1): 25-50.
- Lateef, B N (2004): *Analysis of consumption expenditure pattern in Iwo town Local Government of Oyo state*. Bsc dissertation in the department of Agricultural Economics, University of Agriculture, Abeokuta.
- Lupien J.R, V Menza (2004): “Assessing Prospects for improving Food security and Nutrition”. *FNA/ANA*,25. Pp. 5-9.
- National Population Commission (NPC 2006): *Nigeria Population Data Sheet Recently Conducted Census in Nigeria, 2006*
- Oloyede H.O.B. (2005): *All for the Love of Nutrients. The Seventy Eight Inaugural Lecture*, Library and Publication Committee, University of Ilorin. pp 1 – 14.

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