Determinants of Demand for Meat among Farming Households in Ekiti State, Nigeria

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Abstract: The study focused on demand analysis for meat among farming households in Ekiti State, Nigeria. A multi-stage sampling procedure was adopted in selecting the sample size of 90 farming households from three Local Government Areas (LGAs) in Ekiti State for the study. Descriptive statistics and regression analysis were used to analyze the data. The study described the socio economic characteristics of the respondents and constraints to meat demand. Also, factors affecting meat demand among farming households were determined. The result of the study showed that 52 percent of the farming households were headed by women with a mean age of 42years. It was also reported that 82.2 percent of the respondents were married and majority (57.8%) had a household size of 3-6 persons. Result also revealed that 77.8 percent of the households' heads had formal education, and 55.6 percent of them earned between ₦20,000 and ₦50,000 as monthly income while 60 percent indicated beef as their most preferred meat. The majority preferred the meat of their choice to be prepared through moist heat cooking methods. Demand for meat is faced with constraints such as price fluctuations, religion and taboo and market availability. The main determinants of demand for meat in the study area were the educational level of the household heads and monthly income of the households. It is recommended that in order to guide against meat price fluctuation, government at all levels should regulate the prices of meat.

Introduction

Meat is regarded as a single term that embraces a wide range of species and describes the consumable tissues that make up a host of safe, nutritious, and desirable products for human consumption. The definition of meat varies from author to author. The Offline Advance English Dictionary (2017) defined meat as the flesh of animals (including birds, fishes and snails) consumed as food. Meat is the flesh of birds, fishes and animals eaten as food. According to the American Meat Science Association (AMSA) meat is the skeletal muscle and its associated tissues derived from amphibian, avian, mammalian, reptilian, and aquatic species harvested for human consumption. Edible offal consisting of organs such as the liver, tongue, ear, esophagus, hearts, gizzards, kidneys, uteri, cheek meat, and non-skeletal muscle tissues also are considered as meat (Seman et al., 2018).

It has been documented that meat of good compositional quality should have a normal uniform colour with marbling throughout the cut which is an indication of tenderness and juiciness as well as flavour (FAO, 2013). Assessment of meat quality varies among individuals and even cultural inclination of consumers can affect quality perception. Also, meat quality may be looked at from compositional angle (objective attribute) which is the ratio of lean to fat and palatability angle (subjective attribute) which is the juiciness, tenderness, and flavour quality of meat which can be determined at cooking stage. Osadebamwen (2015) reported that Consumers' first assessment of any meat is based on the appearance which is the visual identification of quality based on colour, marbling, and water holding capacity.

Boler and Woerner (2017) reported that consumers of meat often give three reasons for consuming it. The first reason is that it tastes good and has desirable favour while the second reason has to do with social status during special occasions and lastly, meat has desirable nutritional benefits and supports human health (Murphy et al., 2011, McNeill, 2014 and O'Connor et al., 2017). Also, meat gives protein needed for physical and mental development as well as for developing immunity against disease. Meat is a major source of some nutrients, such as essential amino acids in forms of quality protein, iron, and B vitamins and zinc. It has water, fat, and a small proportion of carbohydrate. Uncooked fresh Meat is about 20 percent protein. Oloyede (2005) observed that protein contains about 22 amino acids, eight of which are essential for growth. The sulphur containing amino acids which are important for the health of the

brain and nervous system include cysteine, methionine, and cystine.

In the developing countries, according to Food and Agricultural Organization (FAO), an average of 200g animal protein is required per day per person for healthy living. It has been emphasized that the daily minimum protein required of an adult in Nigeria should be between 65g and 85g per person and that 35g of this should be obtained from animal products (Omotosho, 2004). In Nigeria, meat from cattle, poultry, goat, sheep, and pig are the main sources of daily per capita consumption of animal proteins.

Obi (2000) claimed that the global demand for meat is expected to increase by 58 percent between 1995 and 2020. FAO (2003) reported that the demand for meat across countries and regions is rapidly on the increase with a 2030 projection of per capita consumption of 36.7 kilogram (kg) of meat per year for the developing countries. But, it was reported that household demand for meat products such as beef, mutton, pork, chevon and chicken in Nigeria is low and the consequence of this poor nutritional status is infection which will eventually result in weakness, lethargy, absenteeism, stress and poor farm productivity (Jamison and Leslie, 2001). It is on this basis that the study aimed at: determining the factors affecting demand for meat among farming households; identifying the types of meat consumed and examining the socio-economic characteristics of farming households in the study area.

Methods and Materials

Study area

The study was carried out in Ekiti State, Nigeria. The State was created on October 1 1996 with a total land area of 6,353km^2. The state is blessed with 2,384,212 people, hence ranked 29th in Nigerian population (NPC, 2006). It has an annual rainfall range between 2000 and 2400mm and consists of sixteen (16) Local Government Areas (LGAs). It is located within southwestern part of Nigeria. Ekiti State is located within the tropics between Latitude 7^0 15^1 to 3^0 5^1 North of the Equator and Longitude 4^0 45^1 to 5^0 45^1 East of the prime meridian (Greenwich Meridian). Temperature in the state ranges between 21 and 28 Degree Celsius with high humidity. Tropical forest exists in the south while guinea savannah occupies the northern part of the state. The major occupation of the people in the study area is farming while their major food crops are yam, cassava, plantain and maize with cash crops such as cocoa, oil palm, banana, etc. (Sekumade and Owoeye, 2016).

Source of data and method of data collection

Data for this study were obtained from both primary and secondary sources. Primary data were collected with the aid of a well-structured questionnaire while the secondary data on the other hand were sourced for from publications such as journal, textbooks, internet and other related materials.

Sampling techniques and sampling size

The multistage sampling method was employed to select respondents. In the first stage, three LGAs were randomly selected out of the sixteen LGAs in Ekiti State. The second stage of selection involved the selection of three local communities which were randomly done from each Local Government Area (LGAs) to give a total of nine communities in all. Ten farming households were selected from each of the communities randomly, making a total of 90 farming households. The households' heads were interviewed.

Analytical technique

Descriptive statistics such as mean, frequency table and percentage were used to describe the socio-economic characteristics of the respondents, type of meat preferred, benefits of meat consumption and constraints to demand for meat. Regression analysis was used to analyse the factors determining the demand for meat among the farming households. Based on the past researches, the data collected were subjected to just two functional forms which are, semi-log and log-log. The lead equation was selected based on economic, statistic and econometric criteria. The model is stated implicitly as:

$$Y = F(X_1, X_2, X_3, X_4, X_5, X_6, X_7, U_i) \dots\dots\dots\dots\dots (1)$$

Dependent variable (Y) is the Household Per Capita Monthly Expenditure on Meat (HPCMEM), estimated as:

$$\text{HPCMEM} = \frac{\text{Household monthly expenditure on meat}}{\text{Household size}} \dots (2)$$

This serves as a proxy for meat demand among the farming households.

Where:

Y= Household Per Capita Monthly Expenditure on Meat (HPCMEM)

X_1= Educational level (years)

X_2 = Marital status (married 1, 0 otherwise)

X_3= Age of respondent (years)

X_4 = Gender (male 1, female 0)

X_5 = Monthly income (₦)

X_6 = Choice of meat consumed (beef 1, 0 otherwise)

X_7 = Household size (number)

U_i= Error term

Semi-log functional Form

$Y = \beta_0 + \beta_1 LogX_1 + \beta_2 LogX_2 + \beta_3 LogX_3 + \beta_4 LogX_4 + \beta_5 LogX_5 + \beta_6 LogX_6 + \beta_7 LogX_7 + e_i \dots (3)$

Log-log functional form

$LogY = \beta_0 + \beta_1 LogX_1 + \beta_2 LogX_2 + \beta_3 LogX_3 + \beta_4 LogX_4 + \beta_5 LogX_5 + \beta_6 LogX_6 + \beta_7 LogX_7 + e_i. \dots (4)$

Where:
β_0--- β_7 are parameters to be estimated and e_i is the error term.
Other variables are as earlier defined.

Results and Discussion
Socio-economic characteristics of the respondents.

Table 1: Socio-economic characteristics of the respondents

Variable	Frequency	Percent age
Sex		
Male	43	47.8
Female	47	52.2
Marital status		
Single	12	13.3
Married	74	82.2
Divorced	4	4.5
Household size		
<3	31	34.4
3-6	52	57.8
>6	7	7.8
Age		
≤30	9	10.0
31-40	35	38.9
41-50	37	41.1
>50	9	10.0
Educational level		
No formal education	20	22.2
Primary education	27	30.0
Secondary education	26	28.9
Tertiary education	17	18.9
Choice of meat consumed		
Beef	54	60.0
Poultry	12	13.3
Pork	8	8.9
Bush meat	13	14.5
Others	3	3.3
Monthly income (₦)		
<20,000	9	10.0
20,000-50,000	50	55.6
>50,000	31	34.4
Meat cooking methods		
Moist heat	56	62.2
Dry heat	22	24.4
Both	12	13.4
Benefits of meat consumption		
Nutritional value	40	44.5
Taste and satisfaction	38	42.2
Derive special enjoyment	9	10.0
Others	3	3.3

The results in Table 1 show that about 52.2 percent of the households were headed by women. The majority (82.2%) of the farming household heads were married with a mean household size of 6 persons and 57.8 percent had a household size of 3-6 persons. This is an indication of a large household size. The mean age of the household heads was 42years. In addition, 77.8 percent of the household heads had formal education. This shows that the level of literacy among the heads is high. The majority (60%) of the households consumed beef. This may be due to the fact that cow meat is readily available and cheaper in the study area. This is in line with what Adetunji and Rauf (2012) found out in Southwest, Nigeria. About 55.6 percent earned between ₦20,000 and ₦50,000 as monthly income. The households could be regarded as low income earners. The mean household monthly income was about ₦34,000.

Also, according to Table 1, 62.2 percent (majority) of the households only consumed the meat cooked through moist heat cooking methods such as boiling and stewing, while 24.4 percent preferred to consume the meat prepared through the dry heat cooking methods such as roasting, frying and smoking. Just13.4 percent of the households preferred the two main methods of cooking meat. Based on benefits derived from meat consumption, Table 1 shows that 44.5 percent consumed meat because of its nutritional value while 42.2 percent consumed their preferred meat based on taste and satisfaction. Those who derived special enjoyment and other reasons had 10 percent and 3 percent respectively. This indicates that consumption of meat by farming households is majorly based on the nutritional benefit.

Constraints to demand for meat

Table 2 indicates that 43.3 percent of the households were faced with price fluctuation problem. Those faced with religion and taboo problem were 27.8 percent while 20.0 percent and 8.9 percent were faced with market availability and other problems respectively. This shows that demand for meat in the study area is faced mainly by its price fluctuation.

Table 2: Distribution of households by main constraints to demand for meat

Constraints	Frequency	Percentage
Price fluctuation	39	43.3
Religion and taboo	25	27.8
Market availability	18	20
Others	8	8.9
Total	**90**	**100**

Factors determining demand for meat

In Table 3, the multiple regression analysis was used to estimate the relationship between selected socio-economic characteristics of the respondents and Household Per Capita Monthly Expenditure on Meat (HPCMEM) which is a proxy for households' meat demand. Two functional forms (Semi-log and Log-log) were fitted into the data collected. The lead equation (Log-log) was chosen for having the largest coefficient of multiple determinations (R^2) and the least standard error. The R^2 of 58 percent implies that 58 percent of the variation in the demand for meat can be explained by the explanatory variables included in the model.

Table 3: Result of the regression model on factors determining demand for meat

Variable	Semi- log	Log- log
Constant	-30568.292*** (3881.477)	1.445*** (0.213)
Educational level	2889.139** (1121.209)	0.103* (0.062)
Marital status	1275.260 (1990.496)	0.139 (0.109)
Age	-1288.677 (2264.012)	-0.022 (0.124)
Sex	-1029.726 (1423.267)	0.503*** (0.049)
Monthly income	7746.777*** (889.216)	0.046 (0.048)
Choice of meat consumed	914.376 (867.686)	0.045 (0.079)
Household-size	1908.514 (1447.431)	0.585 (0.471)
R^2	0.579	0.560

*** Significant at 1%, ** Significant at 5%, and * Significant at 10%. The figures in parentheses are the standard errors.

Regression analysis result as presented in Table 3 showed that, the coefficients of, educational level, marital status, monthly income, household size, choice of meat consumed were positively related to Household Per Capita Monthly Expenditure on Meat (HPCMEM) while coefficients of age and sex had negative relationship with HPCMEM. The positive coefficient of educational level implies that the higher

the educational level of the household's head the more the household demand for meat. This may be because educated people know the importance of meat for a healthy living. The positivity of marital status coefficient indicates that the household headed by a married person would demand for more meat than the household headed by unmarried person. Also demand for meat by the households increases with increase in household monthly income. This might be due to the fact that increase in income would boost consumer's purchasing power. This is consistent with Akinwumi et al. (2011).

The negativity of choice of meat consumed coefficient connotes that availability of beef leads to higher demand for meat while households with large members consume more meat. In addition, the sign (negative) on the coefficient for age shows that as age of the household head increases, less meat is demanded by the household. In the same vein, an inverse relationship between HPCMEM and sex implies that female headed households consume more meat than their male counterparts. The main determinants of farming households' demands for meat were educational level of the household heads and the monthly income of the households. Both were statistically significant from zero at five percent and one percent levels of significance respectively.

Conclusion and Recommendations

Meat is an important component of diet of people needed for a healthy living. In the developing countries, Nigeria inclusive, the rate of animal protein consumption is still low and this is attributed to high cost of meat products as well as income status of the consumers.

The descriptive statistics was used to analyse the socio-economic characteristics of the respondents and constraints to households' demand for meat. Also, regression analysis was used to determine factors affecting the demand for meat among the farming households in the study area. The study reveals that most (52.2%) of the farming households are headed by female while about 82.2 percent of the respondents are married with large household size. The majority (77.8%) of the household heads are formally educated with beef being the most preferred meat. Moist heat cooking methods are the most popular methods for cooking meat among the households. The main determinants of demand for meat are the educational level of the household head and the household monthly income. The main constraint to demand for meat is its price fluctuations. Based on the findings, the following recommendations will improve the consumption of meat vis-à-vis demand for meat:

• The prices of meat especially beef should be regulated by the government at all levels in order to encourage the consumption of more animal protein which is good for a healthy living.

• Also the consumption of other meat types such as poultry meat should be advocated among the farming households.

• Sensitization on nutrition should be given to farming households by the relevant stakeholders to increase their awareness on the importance of meat in their diets.

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