



Research Article

## ANALYSIS OF FACTORS AFFECTING MEAT DEMAND IN MICHIKA LOCAL GOVERNMENT AREA OF ADAMAWA STATE, NIGERIA

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### ABSTRACT

Meat is an important component of the diet of people needed for a healthy living. This study basically analysed the factors affecting meat demand in Michika Local Government Area of Adamawa State, Nigeria. Primary data were used and collected from 148 randomly selected household heads using structured questionnaires. Multistage random sampling technique was employed in the selection of respondents. Descriptive statistics and multiple regression analysis were employed in analysis of the data. The results revealed that majority (74%) of the household heads were men and married, with an average household size of 8 persons. About 74% of them have attained some levels of formal education, 40% were farmers and they earn an average of ₦32,182.67 a month. Their meat sources were predominantly from cattle and poultry birds. The result of regression analysis revealed that family size, marital status, level of education and monthly income positively influences meat demand in the area. However, age was found to negatively affect meat demand. The coefficient of determination was 0.87 indicating that 87% of the variation in meat demand was explained by the variables used in the model. The study recommends that household heads diversify their income sources to increase the family's disposable income. Training programmes be organized for household heads on nutrition and dietetics to sensitize them on the nutritional diseases associated with protein deficiency.

**KEY WORDS:** Analysis, Affecting, Demand, Factors, Meat

### INTRODUCTION

Meat refers to any flesh of animal that is used for food. It is a product of livestock farming and has remained an essential component of the agricultural sector of the Nigerian economy. Livestock is a good source of animal protein which is needed for proper balanced diet. Red meat product comes primarily from cattle, sheep, goat and pig. These products are the primary source of protein for some 950 million people worldwide and represent an important part of the diet of many people (FAO, 2006). Against the backdrop of increasing protein deficiency arising from low per capita consumption of animal protein, meat is regarded as one of the most nutritious animal products because it is

a rich source of valuable proteins, vitamins, micro-nutrients and fats, which provide multi-faceted nutrients for human health. The Food and Agriculture Organization recommends an average of 35g animal protein intake per day for a healthy person living in the developing countries (Omolaran, 2004). The world demand for meat has risen sharply due to increase in population, improvement in technology, increasing awareness of its nutritional value and increasing incomes (Raghavendra, 2007; Ekine *et al.*, 2012). Population growth creates an additional demand for meat and general food in developing countries. Nevertheless, there are worries in medical parlance regarding the fat content in meat and the possible effect on health; current evidences and research findings are in

favour of intake of at least lean meats on a regular basis to protect and promote human health (Raghavendra, 2007).

Household expenditure can be split into autonomous expenditure and full expenditure (Ekine *et al.*, 2012). Full expenditure is brought about by price of the food products and that of labour (wage rate), while autonomous expenditure is accounted for by the number of dependents and age of household. Developing countries such as Nigeria are among the low income households where decrease in per capita income leads to decrease in meat demand and consumption (FAO, 2000). Household demand for meat products is faced with problems which are mostly due to market prices (Adetunji and Rauf, 2012), and this increases the demand for protein from plant sources and fish to augment the imminent short fall in meat demand.

Meat consumption may be a deciding factor in the development of the livestock sector. CBN (2008) revealed a dramatic increase in livestock production from 3,102.92 tonnes in 2004 to 3,647.33 tonnes and 3,858.44 tonnes in 2007 and 2008 respectively. These increases are attributed to increase in demand for meat brought about by population growth and also by effective measures taken by the government to control livestock diseases. Despite this increase, 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. It is against this background that this study is undertaken. Specifically, the socio-economic characteristics of the respondents in the area were described, and factors affecting meat consumption examined.

## **MATERIALS AND METHODS**

### **Study Area**

Michika Local Government has 16 wards and is one of the 21 Local Government Areas of Adamawa State and lies between Latitude  $10^{\circ} 23' - 10^{\circ} 47' N$  and Longitude  $13^{\circ} 16' - 13^{\circ} 36' E$ . It shares common boundaries with Madagali Local Government to the North, Borno State to the west, Cameroun Republic to the east and Mubi North Local Government to the south. The Local Government has landmass of  $1,421.99\text{km}^2$  and a population of 155,238 with a projected population of xxx for 2013 using a growth rate of 2.8% (NPC, 2006)

The area has a tropical climate characterised by wet and dry season. The wet season commences in May/June and ends in late October, while the dry season starts in November and ends in April. The mean annual rainfall in the area is 1,000mm while mean monthly temperature is 27.8 (Adebayo, 1999). The study area falls within Sudan Savannah, and vegetation cover is predominantly shrubs and grasses.

Major economic activity of the inhabitants is farming, although there are civil servants and traders. Major ethnic groups in the area are Higgi and Marghi, while Matakam, Kanuri, Fulani and Hausa are the minority.

## **SAMPLING METHOD**

Multi-stage random sampling technique was used in selecting respondents for the study. In the first stage, eight (8) wards out of sixteen (16) wards in the Local Government were randomly selected. In the second stage, three villages from each of the selected wards were randomly selected to give a total of twenty four (24) villages. Finally, one hundred and forty eight (148) household heads were selected in proportion to the size of the selected villages.

## **ANALYTICAL TECHNIQUE**

Descriptive and inferential statistics were both employed in the data analysis. Descriptive statistics involved the use of frequency distributions, means and percentages to analyse the socio-economic characteristics of the respondents, while inferential statistics involved the use of multiple regression analysis to examine the influence of socio-economic characteristics of the respondents on meat consumption.

The explicit form of the model is expressed as:

$$C = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_7 X_7 + e$$

Where C = Total monthly expenditure on meat by the  $i^{th}$  respondent (₦)

$X_1$  = Number of people in household

$X_2$  = Age of household head (years)

$X_3$  = Gender of household head (where male = 1, female = 0)

$X_4$  = Marital status (Dummy where 1 = married and 0 otherwise)

$X_5$  = Total monthly income of the respondent (₦)

$X_6$  = Education level (measured by years spent in formal schooling)

$X_7$  = Primary occupation (Dummy where 1 = farming and 0 otherwise)

$\alpha, \beta_1 - \beta_7$  = Parameters to be estimated

e = Error term

## RESULTS AND DISCUSSION

Socio-economic characteristics is an economic and sociological combination of total measure of a person's economic and social position relative to others, based on experience, sex, age, marital status, household size, education, among others. These characteristics as they relate to the respondents are presented in Table 1. Majority of the household heads (74%) were male while only 26% were female. This is expected because culture and religion have placed men over women where women's primary responsibility is basically home-making and supplementing the food needs of the households.

The distribution of their marital status shows that about 71% were married, while only 18% were single. The number of people in households where the head is married is expected to be higher than those of the unmarried hence; expenditure and consumption of meat is expected to be higher. About 36% of the respondents had between 1-5 people in their households, while 64% had 6 persons and

above. The mean household size is estimated at 8 persons. This is relatively large, thus the demand and consumption of meat is expected to be higher. On their educational levels, about 16% had no formal education, 29% attained primary education, while 34% attained secondary school. Only 20% of the household heads had attained tertiary education. The attainment of higher educational levels not only increases awareness of the importance of meat to the human body but also enhances better paid job opportunities, which in turn increases disposable income leading to increase in demand and consumption of meat. On their income levels, 44% of the household heads earn monthly income of ₦30,000 and below, while 40% earns between ₦30,001 and ₦50,000. Only 16% of the household heads earns above ₦50,000 monthly. The mean monthly income is estimated at ₦32,182.67 an indication that most households in the study area are low income earners, and this will affect the demand and consumption of meat. On their primary occupation, about 40% were farmers, 34% civil servants and 24% traders.

**Table 1:** Socio-economic characteristics of the respondents

Variables	Frequency	Percentage	Mean
Sex			
Male	109	73.65	
Female	39	26.35	
Marital status			
Single	27	18.24	
Married	105	70.95	
Widowed	16	10.81	
Household size			
≤ 5	54	36.49	
6-10	66	44.59	8.14
11 and above	28	18.92	



Level of education			
No formal education	24	16.22	
Primary	43	29.05	
Secondary	51	34.46	
Tertiary	30	20.29	
Monthly income (₦)			
≤ 30,000	65	43.92	
30,001 – 50,000	59	39.87	32,182.67
>50,000	26	15.18	
Primary occupation			
Farming	59	39.87	
Civil servant	50	33.37	
Trading	39	26.35	
Total	148	100	

Source: Field Survey, 2013

On the type of meat demanded and consumed by the respondents, the study revealed a wide range of meat categories and is presented in Table 2. It shows that majority (79.73%) of the respondents demanded beef, 45.95% demanded chicken, and 43.92% mutton. Others include; chevon (41.89%), bush meat (31.76%) and pork (21.62%). The distribution shows that pork and offal are the least demanded and consumed meat in the area and this may be attributed to religious belief where Islam forbids the consumption of pork. However, beef is the most demanded and consumed meat in the area.

**Table 2:** Distribution of respondents by type of meat consumed

Meat category	Source	Frequency*	Percentage
Beef	Cattle	118	79.73
Chicken	Birds	68	45.95
Mutton	Sheep	65	43.92
Chevon	Goat	62	41.89
Bush meat	Bush meat	47	31.76
Pork	Pig	32	21.62

Source: Field Survey 2013.

\*Multiple responses

The regression analysis result on the relationship between socio-economic factors affecting meat demand is presented in Table 3. The result shows that five of the seven socio-economic variables used in the model significantly affect meat demand in the area. These are household size, age, marital status, monthly income and education. With the exception of age all the significant variables were positively related to the demand for meat. This indicates that an increase in these variables will bring about increase in the demand and consumption of meat. However, sex and primary occupation were both not statistically significant although the latter is inversely related to the consumption of meat.

Of the four functional forms tried, namely; linear, exponential, semi-logarithm and double-logarithm functions, the linear function gave the best result based on the number of significant variables, magnitude of the coefficient of determination ( $R^2$ ), correctness of signs of the regression coefficients and plausible magnitude of the coefficients. The coefficient of determination is 0.87 indicating that 87% of the variation in meat demand is explained by the variables used in the model, indicating that the data have fitted well into the model. Consequently,

the overall model is significant at 1% as indicated by the F-statistics.

The coefficient of household size ( $x_1$ ) is significant at 10% level and positively related to the demand of meat indicating that as household size increases the demand for meat also increases. This is in tandem with *a priori* expectation where larger households will demand and consume more of meat especially when the population is skewed towards children. A similar result was obtained by Ekine *et al.* (2012) who reported that a unit increase in the number of people households will bring about an increase in the consumption of beef.

Age is an important factor that determines the quantity of meat consumed. The coefficient of age is statistically significant at 5% level but negatively related to the demanded for meat, implying that as one advances in age the demand for meat decreases. This is also expected because medically as one grows older consumption of beef decreases because of the linkage between beef consumption and age related sicknesses such as heart disease and arthritis (Kudi *et al.*, 2008).

Marital status is an important factor that determines the quantity of meat demanded and consumed. The coefficient of marital status is positive and statistically significant at 5% level indicating that married people tend to increase their demand for meat than the unmarried ones owing to the number of dependents which must be catered for. In African setting, marriage is accompanied by responsibilities of which catering for the number of dependents under ones care is one.

The coefficient of monthly income is also positive and statistically significant at 5% level implying that as monthly income increases the demand and consumption of meat also increases. Meat is a normal good which is income responsive, hence, as disposable income increases demand for meat also increases. This finding corroborates

the results of Alimi (2013) who obtained a positive relationship between household income and meat consumption.

The coefficient of education is significant at 1% and directly related with meat demand, implying that as respondents' level of education increases the propensity to demand and consume meat increases. Education affords individuals the opportunity to know the importance of meat as a good source of protein to the well-being of an individual.

**Table 3:** Regression analysis result of socio-economic variables affecting meat demand in the study area

Variables	Coefficient	Standard Error	t-Statistic	Probability
Constant	3.2066***	0.4440	7.2228	0.0000
Family size	0.0635*	0.0330	1.9260	0.0561
Age	-0.0576**	0.0234	-2.4577	0.0140
Sex	0.0035	0.0321	0.1078	0.9143
Marital status	0.0384**	0.0176	2.1843	0.0140
Monthly income	0.1428**	0.0553	2.5823	0.0226
Education	0.6924***	0.2074	3.3385	0.0008
Occupation	-0.0134	0.0894	-0.1493	0.8816
R <sup>2</sup>	0.87			
Adjusted R <sup>2</sup>	0.85			
F- value	4.73			

Source: Field Survey, 2013

\*\*\* Significant at 1%, \*\* Significant at 5%, \* Significant at 10%

**CONCLUSION**

Meat is a primary source of protein and an important part of the diet of many people. The demand for meat will always be increase be on the increase owing to growing population and the increasing awareness of the importance of meat to a healthy living. It is evident from the findings that socio-economic characteristics of household heads affect the demand and consumption of meat. Most households in the study area demand more of beef than

other meat categories although they may be impaired by their relatively low average monthly income of ₦32,182.67 and a relatively large household size of 8 persons which is above the Nigerian national average of 5 persons. It is therefore recommended that respondents should be able to diversify their income base so as to be able to generate additional income to cope with present and future challenges and to meet the protein needs of their households. Sensitization on nutrition and dietetics is given to farmers by the relevant stakeholders to increase

their awareness on the importance of meat in their diets and the associated nutritional health challenges related to protein deficiency. Farmers should also be encouraged to rear animals domestically as this will help in meeting their finances and household protein requirements.

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