Research Article

Determinants of Ruminant Meat Demand in Maiduguri, Borno State, Nigeria

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ARTICLE INFO	ABSTRACT
	This study analyzed the determinants of ruminant meat demand in Maiduguri. 150 households were randomly selected for the study and it covered the period of May-June, 2011. The findings show that 88% of the households were male headed, with 39 years as the mean age, while 73% had one form of formal education or another. The mean household size was eight, while the mean monthly income was ₦20,825. The multiple regression result revealed that gender, age and educational level of household heads were insignificant determinant of expenditure on ruminant. On the contrary, household size and income had positive coefficients and are significant at 1% level. The study recommends policy to enhance the purchasing power of the poor.

INTRODUCTION

Meat and meat products are concentrated sources of high quality protein and their amino acid composition usually compensates for the shortcomings of the product. They supply easily absorbed iron and assist in the absorption of zinc, and are rich sources of some of the vitamins in the B group. Hence, meat consumption alleviates nutritional deficiencies (Cunningham and Lupein, 1992).

Borno state is one of the major livestock producers in Northern Nigeria. Out of the estimated population of 12 to 15 million cattle in Nigeria, the state produced 3.1 in 1995. The state's production estimate stood between 17 to 20% of total national production in 1993 and1995 (Borno state Directorate of Statistics, 1998). Furthermore, this region accounts for more than 90% of the estimated world goat population of 504 million, with approximately 56% in Asia, 33% in Africa and 7% in South and Central America and the Caribbean (FAO, 1988).

Ruminant meat products have elastic demand and are complementary in Maiduguri. However, beef is the most desired meat item (Yakaka *et al.,* 2011). Ruminant products are influenced by host of factors. Consumption of beef in Maiduguri is positively influenced by household size, monthly income and monthly expenditure on food and negatively related to expenditure on substitutes (Zongoma, 2003).

Despite the importance of ruminant meat to heath, its consumption in most African countries is very low at a level of about 25g below the recommended 200g per day (FAO, 2000). In order to proffer a solution to under nutrition in Maiduguri and Nigeria as well, there is the need to know the factors that influence ruminant demand. This study therefore, analyzed the determinants of ruminant meat in the study area. The specific objectives were to:

(a) examine the socio-economic characteristics of the respondents in the study area; and
(b) determine the effects of the socio-economic characteristics on ruminant meat demand.

MATERIAL AND METHODS

The population for the study included all the households in Maiduguri. 150 households were randomly selected for the study. The data were generated through the use of structured questionnaire. Information on gender, age, educational level, household size and monthly income of household head were collected. Descriptive statistics and multiple regression model were used for this study. The multiple regression model is implicitly specified as:-

$$Y = f(X_1, X_2, X_3, X_4, X_5, U).$$

where,

Y = Value of meat products demanded by households measured in Naira (₦) per month
X_1 = Gender of respondents measured by dummy variable (male =1, female =0)
X_2 = Age measured in years
X_3 = Level of education measured in number of years spent in formal school
X_4 = Household size measured in number of people in the house
X_5 = Income level measured in Naira (₦)
U = Error term.

Various functional forms were fitted and Double-log function was chosen as the most fitted for the analysis based on the coefficient of determination (R^2) significance level.

RESULTS AND DISCUSSIONS

Socio-economic characteristics of the respondents differ significantly among households and have influence on ruminant meat demand. The socio-economic characteristics studied include gender, age, years spent in formal education; household size, and monthly income. The results are presented in table 1.

Table I: Socio-economic characteristics of the Respondents (n=150)

Variables	% Frequency	Mean
Gender		
Male	88	
Female	12	
Total	100	
Age		
18-30	17.3	39
31-43	51.3	
44-56	28.1	
>57	3.3	
Total	100	
Formal Education		
No Education		26.7
Primary Education	30.0	
Secondary Education		20.0
Tertiary Education	23.3	
Total	100	
Family Size		
≤ 6	46.7	8
7-13	37.3	
14-20	4.7	
≥ 21	11.3	
Total	100	
Monthly Income		
₦ 5,000- ₦15000	26.7	₦20,825
₦15001-₦30,000	63.3	
₦30,001-₦ 45,000	3.3	
≥ ₦ 45,000	6.7	
Total	100	

Source: Field Survey, 2011

The finding reveals that 88% were male respondents. This suggests dominance of male gender as household heads in the study area. This is not surprising considering the fact that the study area is located in the northern part of the country, where it is viewed as a conservative society, with family structures that are largely patrilineal. More so, the males dominate marketing due to the cultural factor that encourages them to go out to purchase materials needs of the family Akinleye (2009).

The result also shows that the mean age of the respondents was 39 years. This corresponds with the findings of Baba (2007) on socio-economic characteristics of food consumers. Majority of the respondents (51%) were in the age group of 31 to 43 years. A total of 92% of the respondents are in their active age to support demand for ruminant meat in their respective households. This falls within the range of active age identified by FAO (1992). Younger-headed households are expected to be more aware of the importance of the ruminant meat as a source of protein in the body because most of them read news papers which usually carry health columns, listen to health programs on radios etc.

Analysis of the educational background reveals that a total of 73.3% had one form of formal education or the other. A similar range was reported by (Adeoye *et al., 2010)* on their study of consumers' preference for common exotic vegetables in Oyo and Kano states. The educational background of consumers is a very important determinant for ruminant meat demand. High literacy level could impact significant influence and variation on ruminant meat demand among households as well as a guide to the consumer on the nutritional importance or its health consequences.

Household size with the highest frequency is between zero and six persons constituting a total of 46.7%. Similar range was reported by Lesiba and Robert (2007) for food consumers in South Africa. This suggests that taste and preferences of household members could determine the quality of meat demand. Thus, demand of different families is likely to vary with taste and other specific characteristics. In addition, married households with children are more likely to purchase meat items than all other households, indicating a greater preference for the family meal-eating occasion (Raghavendra *et al.,* 2009).

Household earning ₦15,000 - ₦ 30,000 monthly constitute the highest (63.3%) as seen from (Table1), this is contrary to the findings of Yakaka (2012). The reason could be because of the increase in the minimum wage

rate of workers by the federal and state governments of Nigeria. The mean monthly income was ₦ 20,825.08. Income is one of the major determinants of demand and budget share allocation among households. Income is expected to have a positive and significant effect on ruminant meat expenditure, because it is a normal good. However, the effect of income on meat expenditure decisions is expected to decline over time because the more income increases the more its effect declines in magnitude.

Effects of Socio-economic Characteristics on Ruminant Meat Products Demand: Multiple regression technique was used to determine the socio-economic factors that affect ruminant meat expenditure. Double-log function was chosen as the lead equation because it had the highest value of magnitude (R^2). The coefficients and the significant levels are presented in Table II.

Table II: Regression Estimate of Socio-economic Factors Affecting Ruminant Meat Demand

Variables	Coefficients	Std. Err.	T-value	P-value	
Constant	5.401	0.738	.732	.000[**]	
Gender	6.154	7.876	.781	.436[NS]	
Age	.389	.167	2.322	.022 [NS]	
Education	.042	.196	.215	.830 [NS]	
Household size	-.663	.143	-4.652	.000[**]	
Income	45.457	3.840	11.841	.000[**]	
R^2				0.63	

Source: Regression Extract, 2011. * = Significant at 1%; NS = Not significant at the specified level

Gender of the respondents (X_1) was an insignificant determinant of expenditure on ruminant meat. However, the coefficient was positive implying that the male household heads in Maiduguri spend more on ruminant meat than female household heads. This also means that the higher the income level of the household head the more his expenditure on ruminant meat demand. This is could be attributed to the fact that ruminant meat is a normal good which means that its demand increases with increase in income.

The coefficient of age (X_2) was also insignificant (Table 2). On the other hand, positive relationship existed between age and expenditure on ruminant meat. This corresponds with the findings of Igwe and Onyekwere (2007) on their work on meat demand in Umuahia. The positive relationship implies that as age increases ruminant meat expenditure increases too. The reason for this could be due to the fact that most (51%) of the respondents were between the age group of 31 to 40 years (see Table1). Hence, they could support expenditure on ruminant meat. This means that it would take a very long time for the household heads to become economically in-active however, if they have constant flow of income and are well informed on the importance of ruminant meat to health, they would expend more on it.

The result also reveals that educational level (X3) was not a significant determinant of expenditure on ruminant meat. This could be because majority (56.7%) of respondents (Table 1) had no formal to only primary education. On the contrary the coefficient was positive. This means that as the level of education of the consumer increases, expenditure on ruminant meat also increases. Thus, this indicates that a literate consumer would likely be conscious of the nutritional importance of ruminant meat, due which he would demand more.

Analysis of the result shows from table 2 that resident household size (X4) is a good determinant of expenditure on ruminant at 1% significant level (Table1). This corresponds with the previous study on meat demand analysis in Maiduguri (Yakaka, 2012). However, in this study, the coefficient is negative. Therefore, this implies that the higher the household size the lower the expenditure. This is true because ruminant meat is a luxury commodity in the study area (Yakaka *et al.,* 2011). Hence, increase in household size without a corresponding increase in income would decrease ruminant meat demand to other cheaper substitute commodities like fish.

Household income (X5) (Table 2) was positively related to expenditure on ruminant meat at 1% level. This implies that the higher the income level, the higher the expenditure on ruminant meat. Income is one of the major determinants of budget share allocation among households. Ruminant meat is a normal good; therefore, the positivity of the coefficient means consumers will increase their expenditure on ruminant meat so long as incomes increase. This agrees with the findings of Igwe and Onyekwere (2007) on meat demand in Umuahia.

CONCLUSION AND RECOMMENDATIONS

From the foregoing**,** it is evident that socio-economic characteristics have influence on ruminant meat demand. The result indicates that the study area is characterized by dominance of male gender as households' heads. In addition, majority were in their active productive age. However, most household heads

have not had deep formal education, with the average family size of eight (8) and monthly income of ₦ 20,825.

On the effects of socio-economic characteristics on meat expenditure, the result reveals that about 63% variations have been explained by the independent variables. Household size and income level were the only significant variables. However, the study reveals that income level has improved.

Non- governmental organizations and cooperative societies should enhance the purchasing power of the poor; because this could increase their demand for ruminant meat. This could be done through skills acquisition programs.

Government should subsidized animal feeds to the farmers and assist them in having   more easy access to credit. This will encourage the livestock farmers to increase supply, and subsequently it will result to fall in retail prices. Thus, enhanced their purchasing power and in turn increase income and fall in price. Hence, results to equilibrium of demand and supply for ruminant meat in the market.

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