Demand Analysis for Meat Consumption in Urban Household in Nigeria: A Review

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ABSTRACT

Demand analysis for meat was reviewed for urban household in Nigeria. Results showed that while Chevon, Chicken and Mutton were luxuries, beef was a necessity. All the meat products considered were normal goods with own-prices that were negative and consistent with demand theory. However, mutton showed an exception which a positive own price. Chevon and Chicken were price elastic in many of the studies and as such, price changes for these products will affect their consumers more than consumers of other meat products that were less elastic. The major models used for many of the studies were Linear Approximate-Almost Ideal Demand System (LA-AIDS), Marshallian Demand Function, Multiple Regression Model, Tobit model and Rotterdam demand model, Quadratic Almost Ideal Demand System (QUAIDS). The most commonly used model is the LA-Almost Ideal demand System (AIDS) largely due its inclusion of demographic variables, ease of interpretation and flexibility of the functional form.

Keywords: Linear Approximate Almost Ideal Demand System (LA-AIDS), meat, demand elasticity, own-price, cross-price income elasticity.

INTRODUCTION

Meat is the flesh of animal that can be used for food. It has high nutritional value and very attractive in appearance (Akinwumi et al., 2011). The most valuable product of a livestock is meat and many people consider it as the main source of protein (Tsegay, 2012). Several varieties of meat exist based on the sources from which they can be obtained. There are beef that can be gotten from cattle, mutton from sheep, pork from pig, chicken form birds, chevon obtained from goat. Beef, Chevon, Mutton, Pork and Chicken are the major sources of daily consumed animal proteins in Nigeria (Olaleye, 2004)

Animal protein is an important dietary component for Nigeria's urban household. Protein constitutes roughly about 20% of the human body, the body's inability to store protein makes daily dietary intake crucial for cell growth and development (Boluwaji et al 2024). Protein intake remains inadequate for a substantial portion of the Nigerian population despite the efforts of government with the introduction and implementation of programmes like operation feed the nation (1976), Family support programmes (1994) and Structural Adjustment Programme(1994) to curb and reduce malnutrition. According to Food and Agriculture Organization (FAO) protein intake remains below recommended levels. Nigeria falls short of the FAO suggested intake (53.8g) and global intake of (64g). Protein malnutrition is a significant public health concern due to limited access to animal protein sources. This is prevalent in many developing countries including Nigeria and contributes to food insecurity and hinders healthy living (obayelu et al 2022). It is for this reason the study seeks to research on the effects of price of meat are on the demand for meat in urban household in Nigeria. Several factors affect the demand for these protein product and these factors cut across socio-economic, cultural, price-related, health and nutritional aspect of the urban society. One of these factors is the increase in the number and proportion of persons living in urban areas. Urbanization is also placing a high demand for protein product leading to changes in consumption patterns (Emokaro and Dibiah 2014). Consumption of animal protein has been found to be higher in urban areas than in rural areas (Hussain 1990)

which could be as a result of rising income, changing taste and preferences leading to a shift in the demand for meat (Ezedinma et al.2006). The difference in consumption pattern could also be as result of regional, physical, agro climatic, socioeconomic and cultural diversity in food habits (Jabbar and DiComenico, 1993).

The study aims to examine the response of meat demand to variations in price and incomes and examine consumption patterns of meat consumers in urban household in Nigeria.

Income, Own- Price and Cross Price Elasticity o**f Demand**

Income elasticity of demand measures the percentage change in the demand for a good resulting from a small percentage change in income, when all other variables are held constant.

Where Y = income and $P1$ = the price of the good, $\in Y$ is income elasticity of demand the income elasticity of demand is

$$\in Y = \frac{\partial Q}{\partial Q1} \div \frac{\partial Y}{\partial Y} = \frac{\partial P1}{\partial Y}\left(\frac{Y}{Q1}\right)$$

When $\in Y$is elastic i.e $\in Y$>1, it means the goods are luxury goods

When $\in Y$ is inelastic i.e$\in Y$<1, it means the goods are necessities

Cross price elasticity of demand measures the relative responsiveness of the demand for one product to changes in the price of another, when all other variables are held constant.

$$\in c = \frac{\partial Q1}{\partial Q} \div \frac{\partial P2}{\partial P2} = \frac{\partial Q1}{\partial P2}\left(\frac{P2}{Q1}\right)$$

When $\in c$ 1,2 negative, goods 1 and 2 are complements. An increase in $P2$ will lead to a decrease in $Q1$.

When $\in c$ 1,3 positive, goods 1 and 3 are substitutes. An increase in $P3$ will increase $Q1$.

Own price elasticity of demand measures the percentage in the demand for goods resulting from a change in its own price.

METHODOLOGY

Prominently, there has been the Linear Expenditure System (LES), the Almost Ideal Demand System (AIDS) and the generalized forms of AIDS and the recent Quadratic AIDS (QUAIDS) within the systems approach to demand or consumption pattern analysis, the Almost Ideal Demand Model (AIDS) of Deaton and Muellbauer(1980) has been the workhouse of the subject. This is because it allows for approximate aggregation over consumers while retaining the salient theoretical features of flexibility. Its linear approximate version, the LA/AIDS has been the most popular because of its flexibility, relative ease in estimation and interpretation along with other reasons.

Several literature make use of the AIDS model and specifically, the Linear Approximate Almost Ideal Demand System (LA-AIDS) model due to its popularity in demand analysis, flexibility and the fact that the estimated coefficients in a LA-AIDS model are easy to interpret.

Wit = αI + Σγijlog Pij + βI (log X _ Σ WIt_1 log Pit) + Uij

where, Wit =budget share of meat i in period t in (_) αi = constant coefficient in the ith

share equation, □ij= slope coefficient with respect to jth meat item in the ith share equation, Pj = price of meat item j (_ **)**, X t = total expenditure of meat item i in (_) Pt= consumerprice index, □i = parameter

In Nigeria, the studies where the Linear Approximate Almost Ideal Demand System (LA-AIDS) model was used include Maina et al (2012), Emokaro and Dibiah (2014), Ojimba and Akoma (2019) with an exception of Obayelu and Odetola (2022)who used the Quadratic AIDS (QUAIDS)for demand analysis of white meat, Maina et al (2023) and Njoku and Nweke 1990 used Mutiple regression analysis to investigate the determinants of demand for meat products in Damaturu and demand elasticity for meat in Imo state Nigeria respectively. The Linear Approximate Almost Ideal Demand System (LA-AIDS)has been revealed to be the most widely used model for demand analysis but other models like the Quadratic AIDS (QUAIDS) can be explored for demand analysis even though it more complex and captures the non-linear relationship between income and demand than the Linear Approximate Almost Ideal Demand System (LA-AIDS).

KEY FINDING FROM STUDIES

According to Maina et al (2012), the own-price elasticity of demand for beef, chevon, mutton and chicken showed that all the price elasticity coefficients were negative and are price inelastic. This means that a small change in price is relatively unresponsive to quantity demanded and a negative price elasticity coefficient is consistent with demand theory. Maina et al(2012), also pointed out that own-price effect is greater on chevon meat item and on middle income group while cross-price elasticity shows that all meat items are luxuries and most meat items are complement with prevalence of substitutability. The findings that own-price elasticity of demand for beef, chevon, mutton and chicken showed that all the price elasticity coefficients were negative and are price inelastic is in line with Emakaro and Dibia (2013) in their study on Demand Elasticity for meat and fish in Edo and Delta states. However, Adetunji and Rauf (2012) reported positive own-price elasticity for mutton in their study on household demand for meat in Southwest Nigeria. Aborisade and Carpio (2017), in their study on Analysis of Household Demand for Meat, in Southwest, Nigeria also pointed out that beef was a necessity while chevon, chicken and mutton were luxuries.

Maina et al (2012) in his study on Urban household demand among different income groups in Borno pointed out that Expenditure elasticity of demand is the highest for mutton in the middle income group between beef and mutton in the low and high income groups.. According to Njoku and Nweke(1990), Expenditure (income) elasticity of demand were positive and greater than unity for all households and for low and medium income households, indicating that for these households demand for meat was elastic with respect to income . For the high income households, expenditure elasticity was below unity, indicating inelastic demand with respect to income.

CONCLUSION

This paper assessed the demand for meat products for urban household in Nigeria. Several models were reviewed for demand analysis. Linear Approximate Almost Ideal Demand system (LA-AIDS) model was the most commonly used model for demand analysis. All meat items were regarded as luxuries. Three of the own-price elasticity was negative and consistent with demand theory. Mutton had a positive own-price effect which is consistent with other studies. The results suggest that all the meat products considered were normal goods as revealed in their positive expenditure elasticity. The results indicate that beef is a necessity and also suggest that goat and mutton are price sensitive. Hence, policies that cause variations in the prices of goat and mutton affect welfare and livelihood.

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