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Estimation of Food Demand in Tobacco and Sugarcane Production Zones in Migori County, Kenya

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ABSTRACT

This study estimated food demand in tobacco and sugarcane production zones in Migori county on 8 aggregated foods using an online data kit with a pre-loaded structured questionnaire and Stata was used in data analysis. Results revealed all eight food categories analyzed were elastic in nature and livestock products had the highest elasticity while cereals had the least elasticity amongst all the food groups with each one of them classified as normal goods. Marshallian elasticities of all aggregated foods were negative and equally price elasticities on all food groups was unit elastic with livestock products lowest at -0.834 and cereals highest -0.856. The county government should prevent monopolistic actions to ensure competitive prices by promoting transparency in quality and pricing across food groups through Migori county food committee to avoid distortion on consumer choices.

Keywords: Food demand, Sugarcane and tobacco zones, Marshallian elasticities

1. INTRODUCTION

With rapid population increase in the 21st century in Sub-Saharan Africa, food demand is expected to rise due to rebound of income growth back from the early 1980s among low income earners in the region. With rapid population increase, urbanization is eminent in major towns and cities and this brings new aspects in food systems such as more processed foods away from traditional foods and thus, for policy makers, to get the correct prediction of composition and supply projections at affordable prices it becomes a challenge. With countries such as Kenya having participated in structural adjustment programs in the late 1990s towards the millennial, macroeconomic stabilization is expected to have occurred and therefore demand estimates for different demographic groups is needed for policy reforms and households' welfare (Carr, 2024).

Households in Kenya spend two thirds of their salaries on food consumption and budget allocations but equally change with an income increase for certain well-endowed households. It is important to note that no particular food in the African population, Kenya in the forefront, dominates the diet and majorly because the diets are starchy in nature with tubers, roots and cereals and in Migori county the starchy staples differ due to cultivation environment for the households. Kumar et al (2024) denotes that analysis of personal consumption and consumer allocations is key to economists as it provides insights on relative price and household income that concerns future patterns of consumption. For a systematic development program to work in the agricultural sector, consumer demand as a component must be at the core to maintain a balance of exchange, consumption and production.

This study on food consumption helps to assess how food demand responds to price changes and household income. These findings are important in evaluating economic shocks, tax policy changes and welfare effects on households. The demand analysis was based on household survey to provide information on consumer expenditures on a subpopulation that would be more likely affected by income and commodity price changes in Migori County and was necessary to highlight aspects of population increase, urbanization and income inequalities.

The findings were forwarded to Migori County Assembly food committee for reference when making policies to regulate matters food security in the county. It was also shared with Community Agriculture for Rural Development (CARD) Migori to aid in their work of promoting a sustainable food system in Migori County. The information will also be online for other researchers to utilize.

The aim of the paper was thus to estimate food demand elasticities in Migori county. This was achieved by estimating expenditure elasticities of various food crops that were produced, purchased and consumed by households. The foods were aggregated into eight groups: fruits, legumes, leafy vegetables, cereals, sugars, secondary foods, livestock foods, oils and fats. Quantitative analysis of estimates was done using Linear Approximate Almost Ideal Demand System model where elasticities were classified into three groups as per results. High income elasticity products included livestock products, oil and fats. Unit elastic products were fruits, cereals and legumes. Less-than unit elastic commodities were secondary foods and green leafy vegetables. The observed pattern above confirms Bennet's law which attests that rising incomes will shift food consumption to high value and nutritious foods such as livestock products and fruits away from starchy plant dominant foods such as green leafy vegetables.

1.1 Expenditure analysis

Gould and Villarreal in their assessment of food demand in China explored a household based expenditure model using aggregate analysis to find out how such households allocate expenditure between eating out and cooking at home utilizing a Quadratic Almost Ideal Demand System (QUAIDS). Their study findings outlined complementary and significant substitutive behaviors in purchasing patterns of households as referenced by Nyangweso (2010). Aggregate analysis was used in their study to accommodate households with irregular eating patterns, those who do not have 3 meals a day, and was equally done in this study to cater for Migori households with similar characteristics.

Matsuda in his 2006 study articulated a composite function simulation employing linear approximations on the QUAIDS model and he argued that nonlinear equations in time series analysis render the results less meaningful and vouched for linear analysis for policy evaluations as cited by (Nyangweso 2010) and therefore, this study also focused on linear models given the one condition that prices must be stable for commodities sold and also made good use of a cross sectional survey for recent trends in prices in the region.

In their investigation on poverty determinants employing consumption functions on households, Anderson et al (2006) incorporated household surveys and emphasized the need to use expenditure of households as a proxy to income given the latter's sensitivity. This study also used the same approach and avoided logit and probit models in favor of Linear Approximate Almost Ideal Demand System (LA/AIDS) due to its flexibility in handling expenditure equations as confirmed by Aborisade et al (2024). Additionally, this study drew from duality theory as recommended by Diewert et al in their 1988 study and showcased the importance of expenditure functions in quadratic indirect utility analysis and their ability to manipulate consumer utility theory as cited by Nyangweso (2010).

Nyang in 1999 while investigating household fuel demand and environment management in Kenya used LA/AIDS model and pinned the importance of incorporating regression analysis given commodity prices are known and thus can result to price indices for ease of calculation as cited by Nyangweso (2010) and Aborisade et al (2024). He further references Rossi's 1988 study in which he introduced budget share within the AIDS model to project out demographic traits after expenditure modelling and avert aggregation pitfalls: this study also borrowed from the same principles and incorporated the budget share in its regression with LA/AIDS model.

2. METHODOLOGY

The research was based in Migori County in tobacco and sugarcane cultivation zones and used a cross-sectional survey design to get data from households in the areas of Kuria and Migori sub-counties. Households were selected using a multistage sampling method in which the two sub-counties were purposively selected in the first stage and one constituency also selected per sub-county purposively in the second stage and the last stage encompassed ward selection randomly per constituency. Household ratios as per 2019 housing census was utilized to identify specific households per region where Kanyamkagoward had 251 households and Kuria East had 145 households and this ensured representation across the regions.

2.1 Processing and analysis of data

Coding responses were auto generated by ODK platform. Data from Kanyamkago and Kuria East were retrieved from the McKnight server into excel then imported to STATA where data cleaning was actioned and inferential statistics done.

The research encompassed consumer theory based on households' decision making and their preferences given budget limitations and in neo classical economics a utility function can be hinged to consumer demand inserting various services and goods whilst maintaining non-satiation, convexity, transitivity, continuity, reflexivity and completeness.

Utility maximization$u$is incurred as expenditure M on a commodity bundle purchase$x$ givena price p

$Max\ [u(x){:}M = p^T X]$(1)

Leading to a lagrangian function:

$l(x, M, \lambda) = U(x) - \lambda(px - M)$(2)

Resulting to a quasi-concave:

$X_T^m = f(\mathrm{p}, M)$(3)

Resulting to Expenditure function

$e(p, U)$(4)

The objective function given below in dual formulation that minimizes expenditure to attain utility $\boldsymbol{u}$

$\min_x [P^T\ x{:}(M) = u]$(5)

Leading to Hicksian demand (compensated)

$X_i^h = f(P, u)$(6)

Likewise Shepherd's Lemma given as:

$X_i^h(P, u) - \frac{\partial e(P,u)}{\partial P_i}$(7)

Then a utility indirect function

$V = (p, M)$(8)

Enabling Roy's theorem on indirect utility function (Marshallian)

$X_i^m(P, M) - \frac{\partial V(P,M)/\partial P_i}{\partial V(P,M)/\partial M,}$(9)

2.4Model Specification

Aggregated foods were thus fitted as

$Lne(u, \boldsymbol{P}) = (1 - u) Ln[a(\boldsymbol{P})] - uLn[b(P)]$
(10)

And$a(P)$ and $b(P)$given as

$Lna(\boldsymbol{P}) = \alpha_\circ - \sum_k \alpha_k lnP_k + \frac{1}{2}\sum_k \sum_j \gamma_{kj} LnP_k$ (11)

and

$Lnb(P) = Lna(P) + \beta \prod_k P_k^{\beta_k}$(12)

together it gives

$$Ln(P) = \alpha_{\circ} - \sum_k \alpha_k lnP_k + \frac{1}{2}\sum_k \sum_j \gamma_{kj} LnP_k\, LnP_j \quad (13)$$

Equation (13)homogeneous at degree one:
$\sum a_k = 1 \; and \; \sum \gamma_{kj} = \sum \gamma_{jk} = \sum \beta_k$

Equations that define cost function (11), (12), (13)invokes Shepherd lemmaLnP_k. Leading to expenditure function

$$\frac{\partial Lne(u,p)}{\partial LnP_k} = S_k = a_k + \sum_j \gamma_{kj} LnP_k + \beta_k\, U\beta_{\circ} \prod_k P_k^{\beta_k}$$
(14)

where $S_k = \frac{P_k a_k}{M}$ and $\gamma_{kj} = \frac{1}{2}(\gamma_{kj} + \gamma_{jk})$

Substitute (14) you get a Marshallian function

$$S_k = a_k + \sum \gamma_{kj} LnP_j + \beta_k Ln(\tfrac{M}{P})$$
(15)

Where P_j is jth goods price, M expenditure$P$ given as price index

$$Ln(P) = \alpha_{\circ} - \sum_{.} \alpha_k lnP_k + \frac{1}{2}\sum_k \sum_j \gamma_{kj} LnP_k\, LnP_j$$
(16)

The final fitted framework is given as:

$$S_{ih} = \alpha_i + \beta_i LnX_h + \sum_j \gamma_{ij} LnP_j + \lambda_{i1} LnCrop + \lambda_{i2} LnLocation + \cdots + \varepsilon$$
(17)

3. RESULTS

Forty-four foods were aggregated to eight categories namely cereals which include maize flour and maize grain; legumes which include black/green grams, cow peas and peas; secondary foods which include sorghum flour, rice, sorghum grain, wheat grain, millet flour and bread; livestock products which include fresh milk, eggs, fingerlings (omena), goat, fish, mutton, chicken and beef; green vegetable which include bananas and pumpkin; sugar which include jaggery, sugarcane and sugar; oil and fats which include salads, traditional oils, margarines, cooking fats, cooking oil, coconut and groundnuts; fruits which include loquats, lemon, other fruits, avocadoes, guavas, papaws, mangoes, ripe bananas oranges and pineapples.

3.1 Estimates of Linear Approximate Almost Ideal Demand System (LA/AIDS)

Table 1: Estimates of LA/AIDS

Variabless	S_L	S_C	S_{SF}	S_{LP}	S_{GLF}	S_F	S_{OF}
Y_{bs}	0.080	0.030	0.120	0.300	0.100	0.190	0.190
Y_{pi}	0.46^{***} (84.68)	0.52^{***} (19.82)	0.488^{***} (41.79)	0.47^{***} (12.71)	0.489^{***} (60.34)	0.474^{***} (21.92)	0.395^{***} (12.25)
S_L		-0.067^{**} (-2.41)	-0.005^{*} (-1.51)	$-0.018^{\cdot}$ (-0.56)	-0.001 (-1.49)	-0.012^{**} (-2.02)	-0.005 (-1.13)
S_C	$-0.001^{\cdot}$ (-0.47)		-0.011^{***} (-3.49)	-0.177^{***} (-3.43)	$-0.0001^{\cdot}$ (-0.12)	-0.019^{***} (-3.24)	$-0.007^{\cdot}$ (-1.90)
S_{SF}	-0.00004^{*} (0.0)	$-0.0034^{\cdot}$ (-0.42)		$-0.007^{\cdot}$ (-0.23)	$-0.0001^{\cdot}$ (-0.16)	$-0.007^{\cdot}$ (-1.48)	-0.027^{**} (-2.50)
S_{LP}	$0.00003^{\cdot}$ (1.90)	0.000008 (1.35)	$-0.000004^{\cdot}$ (-1.14)		0.000003^{***} (3.81)	-0.00006^{***} (-2.93)	0.00001^{**} (2.67)
S_{GLF}	-0.016 (-0.86)	$-0.073^{\cdot}$ (-1.45)	$-0.022^{\cdot}$ (-1.44)	$-0.05^{\cdot}$ (-0.37)		$0.007^{\cdot}$ (0.28)	-0.0322 (1.34)
S_F	$0.026^{\cdot}$ (1.66)	$-0.014^{\cdot}$ (-0.22)	$-0.016^{\cdot}$ (-0.68)	$0.09^{\cdot}$ (0.68)	$-0.007^{\cdot}$ (-0.73)		$-0.0731^{\cdot}$ (-1.92)
S_{OF}	0.014^{***} (7.43)	$-0.009^{\cdot}$ (-1.25)	$0.0006^{\cdot}$ (0.19)	-0.126^{***} (-4.31)	$-0.0001^{\cdot}$ (-0.27)	$-0.001^{\cdot}$ (-0.55)	
LCaps	9.32^{***} (3.98)	$65.77^{\cdot}$ (1.94)	$4.079^{\cdot}$ (0.29)	$104.8^{\cdot}$ (0.49)	$-1.189^{\cdot}$ (-0.64)	$9.26^{\cdot}$ (0.50)	$35.72^{\cdot}$ (1.53)
Lnland	$18.47^{\cdot}$ (1.51)	$-17.35^{\cdot}$ (-0.43)	$-18.1^{\cdot}$ (-1.55)	$51.3^{\cdot}$ (0.34)	$-2.06^{\cdot}$ (-1.65)	$-19.22^{\cdot}$ (-0.97)	$-51.03^{\cdot}$ (-1.81)
Lnage	$9.73^{\cdot}$ (0.80)	-88.33^{**} (-2.52)	$7.036^{\cdot}$ (0.70)	$65.03^{\cdot}$ (0.35)	$-3.75^{\cdot}$ (-1.38)	$-10.42^{\cdot}$ (-0.55)	-22.37 (1.81)
LnHHs	0.44^{***} (3.41)	1.388^{**} (1.96)	0.6711^{***} (4.07)	14.36^{***} (3.14)	0.0315^{**} (2.29)	1.7703^{***} (3.11)	3.187^{***} (3.28)
Dn-Wn	1.82	1.73	1.63	1.52	1.41	1.53	1.29
Rsquared	0.99	0.99	0.99	1.0	0.99	0.93	0.98

pi price index, bs budget share, t statistics in parentheses

Presented estimates in table 1 indicate budget allocations for the 8 food groups with livestock products at 30%, fruits 19%, oil and fats 19%, secondary foods 12%, green leafy vegetables 10%, legumes 8% and cereals 3% and sugar was excluded from the group due to collinearity. Households in the two sub-counties prefer livestock products to cereals given the 27% difference. In most developed countries, the budget share of foods ranges between 10-20% which gives elasticities of 0.2-0.4 while this contrasts developing countries with allocations of 60-80% with equivalent elasticities of 0.7-1

(Nyangweso 2010). These high elasticities in developing countries mean substantial expenditure of an already constrained income is spent on food consumption.

The price index was noted at 1% with all positive signs on the aggregated food items which imply as income increases, the consumption of that particular food group decreases which eventually underscores their demand in the market (Kimsanova et al (2023). In this study cereals were impacted the most while oils and fats were the least affected and as also reported by Pomboza and Mbaga (2007), price index points to market demand rather than changes in preferences.

Capital sourcing as a demographic variable was significant in the legumes equation while household size also had a significant influence in budget allocation for aggregated equations for secondary foods, legumes, oils and fats, fruits and livestock products each at 1%. Other notable findings indicate that livestock products were significant in fruits and green leafy vegetables equations while livestock products, fruits and secondary foods was impacted by legumes equation. Equally, oils and fats was significant in livestock and legumes equation and the negative signs on the equations revealed a declining share as expenditure increase in the main share equation and was similar to findings from Aborisade et al (2024).

Tabel 2: LA/AIDS (Restricted model) Estimates and Homogeneity Test

Variables	S_L	S_C	S_{SF}	S_{LP}	S_{GLV}	S_F	S_{OF}
Y_{bs}	0.080	0.030	0.120	0.300	0.100	0.190	0.190
Y_{pi}	0.46^{***} (135.5)	0.52^{***} (85.91)	0.49^{***} (103.64)	0.493^{***} (54.02)	0.489^{***} (246.25)	0.476^{***} (42.76)	0.385^{***} (41.13)
S_L		-0.067^{**} (-7.11)	-0.006^{*} (-1.94)	$-0.037^{\cdot}$ (-0.85)	-0.001 (2.26)	-0.013^{**} (-3.05)	-0.003 (-0.64)
S_C	$-0.001^{\cdot}$ (-0.69)		-0.011^{***} (-5.73)	-0.193^{***} (-7.80)	$-0.00013^{\cdot}$ (0.0)	-0.02^{***} (-6.62)	$-0.007^{\cdot}$ (-1.85)
S_{SF}	-0.00007^{*} (-0.24)	$-0.0034^{\cdot}$ (-0.34)		$-0.024^{\cdot}$ (-0.60)	$-0.0001^{\cdot}$ (-0.03)	$-0.007^{\cdot}$ (-1.52)	-0.027^{**} (-4.23)
S_{LP}	$0.00001^{\cdot}$ (0.35)	0.000007 (0.60)	$-0.000004^{\cdot}$ (-0.99)		0.000029^{***} (3.99)	-0.000067^{***} (-1.29)	0.00001^{**} (1.49)
S_{GLV}	-0.017 (-1.6)	$-0.073^{\cdot}$ (-2.14)	$-0.024^{\cdot}$ (-1.87)	$-0.123^{\cdot}$ (-0.61)		$0.006^{\cdot}$ (0.39)	-0.0322 (-2.44)
S_F	$0.01^{\cdot}$ (1.05)	$-0.02^{\cdot}$ (-0.65)	$-0.026^{\cdot}$ (-2.37)	$0.20^{\cdot}$ (-1.36)	$-0.003^{***\cdot}$ (-2.24)		$-0.056^{**\cdot}$ (-2.44)
S_{OF}	0.012^{***} (3.33)	0.009^{*} (0.90)	0.007^{*} (-0.18)	-0.171^{***} (-3.35)	$-0.003^{\cdot}$ (0.52)	$-0.002^{\cdot}$ (-0.52)	
LCaps	8.82 (0.77)	$65.02^{\cdot}$ (1.62)	$3.512^{\cdot}$ (0.27)	$73.8^{\cdot}$ (0.43)	$-104^{\cdot}$ (-0.47)	$8.28^{\cdot}$ (0.47)	$38.22^{\cdot}$ (1.55)
Lnland	$21.19^{\cdot}$ (1.67)	$-16^{\cdot}$ (-0.36)	$-16.77^{\cdot}$ (-1.10)	$106.89^{\cdot}$ (0.54)	$-2.47^{\cdot}$ (-0.96)	$-17.51^{\cdot}$ (-0.80)	$-56.19^{\cdot}$ (-1.92)
Lnage	$10.9^{\cdot}$ (0.89)	-88.54^{**} (-2.01)	$6.77^{\cdot}$ (0.45)	$39.55^{\cdot}$ (0.21)	$-3.73^{\cdot}$ (-1.49)	$-11.30^{\cdot}$ (-0.54)	-23.09 (-0.81)
LnHHs	23.51^{***} (2.11)	1.27^{***} (3.46)	0.5741^{***} (4.51)	9.886^{***} (5.91)	0.48^{**} (2.58)	1.6703^{***} (8.76)	3.81^{***} (12.38)
D-W	1.81	1.72	1.63	1.53	1.41	1.54	1.29
R-squared	(0.99)	(0.99)	(0.99)	(1.0)	(0.99)	(0.93)	(0.98)
Prob>F	0.0	0.0	0.0	0.0	0.0	0.0	0.0

A few changes were noted in the restricted model where the size of household was significant at 1% in the cereals equation and 5% in the legumes equation and legume equation significant at 1% in fruits equation and fruit equation significant at 5% in oils and fats equation, oil and fats equation had a 1% significance in secondary foods equations with a significance of 5% also noted in cereals equation with fruits and green leafy vegetables. Given the F-test result of 0.000 no equation was rejected due to homogeneity and the Durbin-Watson figures also show no changes in both models thus reaffirming fit of the models. This test is reaffirmed by Blanciforti et al (1986) during their study in post war on United State in regards to consumer behavior who said that as long as no rapid changes are noted in D-W figures and F-test results are 0.00 and R-squared results are constant then the model is acceptable and valid.

3.2 Marshallian Estimates

Table 3. Marshallian Estimates for LA/AIDS

Variables	S_L	S_C	S_{SF}	S_{LP}	S_{GLV}	S_F	S_{OF}
$\varepsilon_{..}$	1.01100	1.0030	1.0180	1.0260	1.0230	1.0250	1.0230
ε_L	**(-0.8490)**	-0.8500	-0.84900	-0.8530	-0.8430	-0.8490	-0.8500
ε_C	-0.8560	**(-0.856)**	-0.8560	-0.8570	-0.8540	-0.8560	-0.8560
ε_{SF}	-0.84400	-0.8450	**(-0.843)**	-0.8500	-0.8320	-0.8430	-0.8440
ε_{LP}	-0.8190	-0.8230	-0.8170	**(-0.834)**	-0.7950	-0.8190	-0.8220
ε_{GLV}	-0.84600	-0.8480	-0.8460	-0.8510	**(-0.837)**	-0.8460	-0.8470
ε_F	-0.8340	-0.8360	-0.8330	-0.8430	-0.8190	**(-0.834)**	-0.8360
ε_{OF}	-0.83400	-0.8360	-0.8330	-0.8430	-0.8190	-0.8340	**(-0.836)**

In table 3, Marshallian estimates reveal that the least elasticity is on green leafy vegetables and the highest is livestock products which imply substitutability was highest in livestock product amongst the households. All the negative signs indicate levels of substitution in each aggregate food equation with cereals highest in legumes and livestock products the least, in cereals equations the least was livestock and highest was cereals while in livestock equation cereals was highest and livestock had the least and was the same in fruits equationand is confirmed by Pomboza and Mbaga (2007) and Aborisade et al (2024) who had similar findings in their studies of food demand.

Expenditure elasticity clustered aggregated foods based on their expenditure fluctuations relative to their total expenditure and the findings affirmed livestock products was highest meaning disproportionate increase on expenditure on them while cereals had a disproportionate expenditure decrease as income increases similar to findings of Kumar et al (2024) while estimating food demand forecast by engineering applications. Given that the food elasticities were 1 and above it classifies them as luxurious in nature and that is not good for households because food insecurity incidences are common when basic foods are considered luxurious for households.

According to Vu (2020), uncompensated elasticities are negative as expected and suggests that if the percentage change in food demand is more than consumer expenditure, demand is therefore elastic and that is the same case for this study. Moreover, the low own price elasticities on the aggregated foods indicate repeated household consumption with no specific food exhibiting variability and therefore articulates that any variances in price will not have a shock on consumption patterns wherein positive elasticity infer complementary associations amongst food groups while the negative signs imply substitutability.

4. DISCUSSION

From the above results, a change in elasticitygiven the bundle of food groups denoted that consumers are likely to shift to other alternatives in case of price changes implying greater substitution effect on foods like livestock products compared to green leafy vegetables with limited options and this implies that any policy in regards to price or market directed to livestock products will have higher impact on consumption patterns in the region as also predicted by Carr et al (2024).

If essential foodstuff such as cereals have elasticities on expenditure less than 1 and in essence they are necessity goods then as income rises, households tend not to buy them and that is a prerequisite to food insecurity in case of any shocks in the value chain of other food groups or any other trigger and conversely when expenditure is high on livestock products then as income rises more expenditure is allocated to it and in the long run other essential household foodstuff might be omitted leading to budget strain for such households Damari et al (2024). It is therefore important for households to balance between the necessities and luxury goods. This is key for planning within households and to a larger extent the region such that policies should be geared towards accessibility and affordability of essential goods as income rises to ensure dietary diversity and nutrition.

Complementary relationships highlighted within the food groups as a result of positive elasticity indicate that when price increases for one food group, it has a similar effect on other food groups implying that these foods are always consumed together such as meat and maize flour or rice however the negative signs also imply if there is a sharp increase in one food group, then the next alternative which is cheaper is substituted likewise, the low elasticities signify that price changes do not significantly change consumption patterns largelyin the aggregate food groups as also reported by Kimsanova et al (2023).

4.1 Symmetry test

Table 4: Symmetry

Variables	$S_L S_C S_{SF} S_{LP} S_{GLV} S_F S_{OF}$
LRtchi(3)	2.280 0.460 4.170 7.790 3.650 0.460 7.310
Probt>chi2	0.510 0.920 0.240 0.050 0.3000.9200.060

Symmetry involves examination of large sample likelihood and cannot be reduced to a test of one aggregate equation per food group thus done on main model equation for both unrestrictive and restrictive equations (Deaton and Muelbauer, 1980). In this study a rejection was realized on oils and fats and livestock equations meaning that symmetry will not hold as long as a rejection is noted after chi test. In essence, symmetry showed that the marginal utility given expenditure on one food group is not proportional to another food group and this signifiesthat goods are complements and substitutes in a manner which can be replicated across different prices and income levels while homogeneity assumes that each aggregate food groups are constant in characteristics in the demand equation but for which is violated in cereals and fruits equation implying that consumer demand behaviors are distinct and not similar amongst households.

5. CONCLUSION

Livestock products had the largest share at 30% and cereals least share at 3% and equally livestock and dairy products also experienced the largest expenditure elasticity and cereals the least. All the foods were taken as normal goods but high food expenditures were recorded for most households impacting consumption priorities. Marshallian elasticities were negative and own price elasticity indicated the foods are consumed daily by the households.The county government should prevent monopolistic actions to ensure competitive prices by promoting transparency in quality and pricing across food groups through Migori county food committee to avoid distortion on consumer choices. Further research is needed to identify factors that influence demand asymmetry on aggregate food groups for livestock and oil and fats amongst households.

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