

Assessment of Household Budget Allocation for Yam Tubers among Urban Dwellers in Edo State Nigeria

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Abstract: The study examined household budget allocation for yam tubers among urban dwellers in Edo State, Nigeria using both primary and secondary data. To achieve this, the study examined the socio economic characteristics of yam consuming households and determined the budget share of yam among households, relative to other carbohydrate foods in the study area. A three stage sampling procedure was used to select 264 respondents with the use of structured questionnaire. Data collected were subjected to descriptive and inferential statistics, which was used to address the budget share while paired sample t-test was used to test the budget shares. The result showed that yam constituted an important place in the food basket of households in the study area, having a mean budget share of 21.80% after rice, being an important substitute for yam based on preference. Since yam was mainly consumed in the boiled form probably due to the easy and less time intensive nature of its preparation, it may not be surprising that the respondents considered rice as the most preferred substitute for yam since it is equally easy to prepare. Expenditure on broad goods and services (such as food, child education, health care, housing, clothing and other expenditure items like transportation, utilities etc.) had budget allocation highest on food expenditure (N22,223.48) followed by expenditure allocated to education (N8,790.13). The paired samples t-test result for the test of significant difference between budget share for yam and that for other carbohydrates showed that there was a distinct difference in the budget allocated to each of the items which was significant at 1%.

Date of Submission: 25-04-2019

Date of acceptance: 05-05-2019

I. Introduction

The demand for foodstuff is primarily connected to the need for calories, and thus clearly is a necessity hence budget allocation on food cannot be undermined (Erling, 2002). In many parts of Sub-Saharan Africa, roots and tubers, especially yam, cassava, and sweet potatoes are a major source of sustenance. In the late 1990s, they accounted for 20 percent of calories consumed in the region, and even more in the diets of the poor. In much of Asia and Latin America, roots and tubers are an important supplemental source of carbohydrates, vitamins, and amino acids in food systems dominated by other commodities. According to the IFPRI IMPACT projections, between 1997 and 2020 total demand for roots and tubers in the developing world will increase by 55 percent (248 million tonnes), and the Sub-Saharan Africa is projected to account for 43 percent of this increased demand (Rosegrant, Paisner, Meijer and Witcover, 2001), indicating that roots and tubers will continue to play a large role in people's diets.

Root and tuber crops, including cassava, yam, sweet potato and Irish potato are the most important food crops for direct human consumption in Africa. These four crops account for about 95% of the total root and tuber crops production in Africa. The aggregate value of yam, cassava, irish potato and sweet potato exceeds all other African staples, including cereal crops. Report from the Bill Gate foundation, on "yam value chain" stated that yam consumption is on the increase, and domestic yam consumption increased significantly since 1990; consumption grew from 15,614 metric tonnes in 1990 to 31,100,000 metric tonnes in 2010. The report also stated that yam consumption as a percentage of total consumption of food has risen steadily and now accounts for 47.6% of total consumption, compared to 35% in 1990 (Kathryn, Patricia, Mary and Leigh, 2012) .

Household budget shares, defined as the share of total household resources spent for purchasing a specific class of goods, contain useful information on household expenditure allocation— i.e., how the budget of a household is allocated to buy different commodities, this is one of the most ancient topics in economics (Prais and Houthakker, 1955) – which requires critical attention which will be beneficial to policymakers and urban planners.

Hence this study was set to examine the household budget allocation on general goods and services, carbohydrate groups and the place of yam in the food basket. This study therefore, seeks to address the following objectives: describe the socio-economic characteristics of yam consuming households in the study

area, determine the budget share of yam among households, relative to other carbohydrate food in the study area.

II. Materials And Methods

The study was carried out in Edo State, which is predominantly agrarian, about 70% of its land mass is used for agricultural production as a means of livelihood and it is estimated that agriculture accounts for about 40% of the State's GDP (Edo State Ministry of Health, 2010). While the State mineral resources, manufacturing industries and power generation probably account for 60%. The State is in the agricultural zone of the country and quite a number of crops thrive in the zone. Cash crops such as cocoa, rubber, palm produce; grains such as maize, rice, root and tubers such as yam, cassava, potatoes; then vegetables and legumes (Edo State Ministry of Health, 2010) are grown. The traditional cuisine in Edo State is a fair representative of what obtains in most southern States in Nigeria. Pounded yam or eba are eaten with different types of soups such as vegetable, melon or okra soups prepared with either bush meat, beef or fish (Edo Community National Body, 2015). The focus of this study was to determine the budget allocation for carbohydrate foods by households in the study area narrowed down to yam tubers.

Cross-sectional data were used in this study and the primary data were collected with the use of a structured questionnaire and personal interview for information on quantity consumed of each food item, income of households, total expenditure, prices of the consumed commodities and others. Secondary data were obtained from, among other sources, the National Bureau of Statistics, journals, and bulletins from Research Institutes.

A three stage sampling procedure was employed in this study. The study area had already been stratified based on the Edo State Agricultural Development Programme delineation which is Edo South, Edo Central and Edo North agricultural zones and respondents were sampled from all zones so as to get a State - wide coverage. The first stage involved a simple random selection of three blocks (L. G. As) from each of the zones. From Edo South (Oredo, Orhionmwon and Egor), Edo Central (Esan west, Esan central and Esan south), Edo North (Etsako west, Etsako east and Owan west). The second stage involved a purposive selection of the headquarters of the selected blocks (L. G. As) as urban communities, hence Benin City was selected from Oredo, Abudu from Orhionmwon, and Uselu from Egor local government area, while Ekpoma was selected from Esan west, Irrua from Esan central, Ubiaja from Esan south, Auchi from Etsako west, Agenebode from Etsako east, and Sabongida- Ora from Owan West. The third stage involved a simple random selection of 35 households from a sample frame of 100 pre-listed households with obvious urban characteristics from the major streets of the selected headquarters from stage two. This was as a result of the non – existence of a reliable list of households in any of the Ministries and National Population Commission coupled with the unwieldy number of households in the selected cities that made it impossible to include all in the sampling frame. The urban characteristics used were the nature of the household and its location in the city. The total sample size was therefore 315. Out of the 315 households sampled, only 264 of them provided useful information for this analysis. The remaining 51 copies of questionnaire were discarded because of the inadequate information for the analysis. The results discussed in this study are therefore based on a sample size of 264 households. Respondents were asked to name the carbohydrate foods frequently consumed in their homes. Based on their responses, a list of seven carbohydrate food items was generated. However, out of the seven carbohydrate food selected for this study, cocoyam and potato were dropped because a large number of the respondents had zero consumption in them.

Data collected were analysed using both descriptive and inferential statistics. The descriptive statistics used were frequency counts, percentages and mean scores.

The budget share formular was given as:

$$\omega_i = \frac{p_i q_i}{X} \dots\dots\dots 1$$

where :

ω_i = budget share of the i^{th} commodity

X = the total expenditure on all carbohydrate food items.

q_i = quantity of the i^{th} commodity consumed

p_i = price of the i^{th} commodity consumed

While paired sample t-test was used to test the budget shares.

The broad food category comprises of the six classes of food which the households consume. For the purpose of this study, expenditure allocation on food was narrowed down to expenditures on carbohydrates' class of food consumed. Data were collected on the major carbohydrates food items consumed by the sampled households, which were yam, garri, rice, plantain and bread as consumption for others were too low for the analysis

III. Results And Discussion

Socio-Economic Characteristics of Respondents in the Study Area

Socio-economic characteristics play important roles in the demand and consumption of yam tubers by the respondents as shown in Table 1. The result showed that out of the 264 respondents interviewed for the study, 145 households were headed by males accounting for 54.9% of the total, while 119 households were headed by females accounting for 45.1%. This shows that most of the households were headed by males. The result indicates that most of the households heads were married (79.2%). Since greater percentage of the respondents were married, it may suggest that there is financial stability to some extent because of pooled resources from the men and women and therefore great ease in meeting the household budget share for yam and others.

The literacy level of household heads was generally high as shown in the table. The consumers were distributed evenly across the categories of level of education in the table. The result showed that about 90.2% of the household heads were educated with 20.1%, 39.0% and 31.1% of them having primary, secondary and tertiary education respectively. This suggests that the household heads maybe well informed of the relevance of yam in the diet, as yam is seen to be nutritionally superior to most root and tubers in terms of digestible protein and minerals (Green, 2003; Chukwu and Nwosu, 2008), thus influencing its demand. Hence, this category of people maybe more likely to make useful decisions about household consumption and take the nutritional requirements of their households seriously.

The selected household heads were more of businessmen /traders/artisans (67.0%), followed by civil servants (23.5%) and farmers (9.5%). This agrees with the work done by Emokaro and Dibiah (2014), who found that majority of the respondents in Edo State were businessmen/traders/artisans.

The mean age was found to be 41.5 years. The results showed that most of the household heads (35.6%) were within the age range of 31-40 years, and about 14.7% were within the age range of 51-60 years while about 5.7% were above 60 years of age. This is an indication that a large percentage of the household heads was within the economically active age group. Therefore given adequate opportunity and resources, the household heads should have the potentials to meet the demand for yam in the study area. With a high percentage of the respondents being in the middle-age class of 21 – 50 years; which is an active age class group in terms of energy and nutrient requirement, they are likely therefore, to consume significant quantities of yam in their households. This is because most of the respondents were within the age that is energetic and enthusiastic, and they could be involved in economic activities to augment their financial and food supply contribution to the home.

The household size was classified as small (1-3), medium (4-6) and large (above 6) based on the mean household size of 5 in the family for the purpose of this study. The result showed that 28.8% were within small household size, 54.9% were within medium sized household and 16.3% were within large household size. This indicates that out of the 264 respondents that were interviewed, most of the respondents had a household size between 4-6 (medium) with a frequency of 145 (54.9%), which may indicate that the respondents had medium household size in the study area and may have considerable influence on demand for yam.

Income level in the study area was defined as cash income earned or received by households. Consumers considered in the study fell within different monthly income groups. An analysis of per capita expenditure figures in Nigerian Living Standards Survey as cited by Fadare and Alade (2009) suggest that households in Nigeria could be put in three main income groups which are low, middle and high where the low-income group were classified as those who earn less than N50,000.00 per month. Those earning above N50,000.00, but below N100,000.00 were grouped as middle income, while people who earn N100,000.00 and above are classified as high income. On the bases of the classification, the results indicate that about 39.77% were in the low income group, 56.82% in middle income group and 3.41% in the high income group. This means that most (56.82%) of the households were in the middle income class and the mean income was N51,284.85.

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Table 1: Socio-Economic Characteristics of Respondents

Variables	Frequency (264)	% (100)
Sex of household Heads		
Male	145	54.9
Female	119	45.1
Marital Status of household heads		
Single		
Married	21	7.9
Divorced	209	79.2
Widowed	11	4.2
	23	8.7
Level of Education of household heads		

No formal			
Primary			
Secondary	26	9.8	
Tertiary	53	20.1	
	103	39.0	
Occupation of household heads	82	31.1	
Civil Servant			
Business/trader/artisans			
Farmer	62	23.5	
	177	67.0	
	25	9.5	
Age of household head			Mean
21-30			
31-40	49	18.6	
41-50	94	35.6	
51-60	67	25.4	41.5
>60	39	14.7	
	15	5.7	
Household Size			
1-3 (small)			
4-6 (medium)	76	28.8	
>6 (large)	145	54.9	4.9
	43	16.3	
Family Income (N)			
1 - 49,999			
50,000 - 99,999	105	39.77	
100,000 and above	150	56.82	51,284.9
Total	9	3.41	
	264	100	

Respondents' Preference for Substitutes for Yam

Table 2 provides a distribution of the households according to the most preferred substitute in case yam is not available or when yam is too expensive. Among all the yam substitutes considered in the study area, rice ranked first as the most preferred substitute.

Table 2 Household most preferred substitutes for Yam

Yam substitute	Frequency	Percentage
Bread	26	9.8
Cocoyam	6	2.3
Garri	31	11.7
Maize	15	5.7
Plantain	40	15.2
Potato	14	5.3
Rice	112	42.4
Wheat	20	7.6
Total	264	100

Source: Field Survey, 2015

About 42.4% of the households in the study area indicated that they preferred rice as substitute for yam. The other three important yam substitutes were found to be plantain (15.2%), garri (11.7%) and bread (9.8%). Since yam was mainly consumed in the boiled form probably due to the easy and less time intensive nature of its preparation, it may not be surprising that the respondents considered rice as the most preferred substitute for yam since it is equally easy to prepare. Wheat, cocoyam, potato and maize were identified as the least preferred substitutes for yam in the study area.

Reasons for substitute preference

Table 3 Reason for the substitute preference

Reason for substitute	Frequency	Percentage
Easy to cook	53	20.1
Taste	81	30.7
Affordability	19	7.2
Health reasons	21	8.0
Satisfies more	22	8.3

Availability	51	19.3
Others	17	6.4
Total	264	100

Source: Field Survey, 2015

The reasons for the substitutes identified by the respondents are shown in Table 3. The result shows that taste was the most important factor that determined the consumption of the substitutes. Thirty-one (30.7) percent of the respondents indicated that their choice of a particular substitute was a function of its taste. Other factors considered before a particular substitute was consumed was the ease of preparation(20.1%), availability (19.3), affordability (7.2%), health reasons (8%), satisfies more (8.3%) and others (6.4%).

Expenditure on Broad Category of Goods and Services

This section discusses the expenditure on a broad category of goods and services which households made day-to-day (recurrent expenses). In this study recurrent expenditure items, were items on which household members made frequent expenses to ensure their survival and they included: food, child education, health care, housing, clothing and other expenditure items like transportation, utilities etc.

Expenditure on food

Table 4Distribution of Households according to level of Monthly Expenditure on Food

Exp. On Food (N)	Frequency	Percentage	Mean exp (N)
< 10,000	18	6.8	
10,000-30,000	221	83.7	
>30,000	25	9.5	22,223.48
Total	264	100	

Source: Field Survey, 2015

The mean expenditure on food was N22,223.48. The result indicates that most of the respondents (83.7%) in the study area spent between N10,000 – N30,000 monthly on food; 9.5% of the respondents spent above N30,000 on food while 6.8% spent less than N10,000 on food monthly.

Expenditure on Education

Table 5 Distribution of Households according to level of Monthly Expenditure on Education.

Exp. On Education N	Frequency	Percentage	Mean Exp. (N)
Nil	31	11.7	
< 10,000	133	50.4	
10,000-30,000	87	33.0	8,790.13
>30,000	13	4.9	
Total	264	100	

Source: Field Survey, 2015

The expenditure on education per month was derived from their school fees per term/session and other stationeries. The mean expenditure of the respondents on education in the study area was N8,790.13k. The result shows that 50.4% of the respondents spent less than N10,000 on education monthly, while 33.0% spent between N10,000 – N30,000 on education, 4.9% spent above N30,000 on education and 11.7% of the households sampled do not spend money on education. The 11.7% of households that do not have expenditure on education could be because there is no one in school at the time the survey was carried out.

Expenditure on Housing

Table 6Distribution of Households according to level of Monthly Expenditure on Housing

Exp. On Housing(N)	Frequency	Percentage	Mean exp. (N)
Nil	32	21.1	
< 10,000	170	64.4	
10,000-20,000	41	15.5	4,411.64
> 20,000	21	8.0	
Total	264	100	

Source: Field Survey, 2015

The mean expenditure of households on housing in the study area was N4,411.64 per month. The result shows that 64.4% of the households sampled spent less than N10,000 on housing per month, 15.5% spent

between N10,000 – N20,000, 8.0% spent above N20,000 while 12.1% did not have expenditure on housing. The 12.1% of households that did not have expenditure on housing could indicate that some of the respondents were landlords or in their family houses.

Expenditure on Health

Table 7 Distribution of Households according to level of Monthly Expenditure on Health

Exp. On Health(N)	Frequency	Percentage	Mean exp. (N)
Nil	16	6.1	
< 10,000	205	77.7	
10,000 – 20,000	33	12.5	3,252.02
>20,000	10	3.8	
Total	264	100	

Source: Field Survey, 2015

The mean expenditure on health was N3,252.02k per month. The result shows that most (77.7%) of the sampled households in the study area spent less than N10,000 on health monthly, 3.8% spent above N20,000 on health monthly while 6.1% did not have expenditure on health care. The mean expenditure on health was generally low, this is because majority of the respondents said they did not believe in sickness, as a result little or nothing is budgeted for health.

Expenditure on Clothing

Table 8 Distribution of Households according to level of Monthly Expenditure on Clothing

Exp. On clothing(N)	Frequency	Percentage	Mean exp. (N)
Nil	21	8.0	
< 10,000	187	70.8	
10,000 – 20,000	38	14.4	4,545.68
>20,000	18	6.8	
Total	264	100	

Source: Field Survey, 2015

The mean expenditure on clothing was N4,545.68 per month. The result shows that 70.8% spent less than N10,000 monthly on clothing while 6.8% spent above N20,000 on clothing per month. From the result majority of the sampled household spent less than N10,000 on clothing monthly. 8.0% of the sampled households did not have expenditure on clothing. This may suggest that the respondents do not place so much importance on clothing. This could be as a result of insufficient income to meet up with basic necessities of the household.

Expenditure on Others (Transportation, utilities, donations etc)

Table 9 Distribution of Households according to level of Monthly Expenditure on transportation, utilities, donations etc.

Class (N)	Frequency	Percentage	Mean exp. (N)
Nil	16	6.1	7,347.33
< 10,000	160	60.6	
10,000 – 20,000	76	28.8	
>20000	12	4.5	
Total	264	100	

Source: Field Survey, 2015

The mean expenditure of the households on other expenses made in the home was N7,347.33 per month. The result shows that 60.6% spent less than N10,000 monthly on other expenditures while 4.5% spent above N20,000 monthly.

Budget Share Analysis

Expenditure allocation on the broad category of goods and services is shown in Table 10 below. Budget share allocation on food had the highest share (47.08%) and the least was expenditure allocation on health (5.98%). Also the monthly expenditure share on food was the highest (N22,223.48).

Table 10 Mean Budget share on broad category of goods and services

Broad category of goods and services	Mean percentage of budget share (%)	Mean Expenditure (N)	Monthly
Food	47.08	22,223.48	
Education	14.81	8,790.13	
Housing	7.72	4,411.64	
Health care	5.98	3,252.02	
Clothing	8.74	4,545.68	
Others(transportations, utilities, donations etc)	15.67	7,347.33	
Total	100	50,570.28	

Source: Field Survey, 2015

Budget Share on Carbohydrate Foods

Results in Table 11, indicate that on the average, households spent N2,153.22, N1,642.05, N2,639.02, N1,304.17 and N1,809.92 monthly on yam, garri, rice, plantain and bread respectively. However the average monthly expenditure on the major carbohydrate food items consumed in the study area was N9,548.38. The households had about 45.57% mean budget share allocation for carbohydrates in the food broad group.

Table 11 Mean Budget share for carbohydrate food among respondents

Food item	Mean percent Budget share (%)	Mean monthly exp (N)
Yam	0.2180	2,153.22
Garri	0.1755	1,642.05
Rice	0.2860	2,639.02
Plantain	0.1375	1,304.17
Bread	0.1830	1,809.92

Source: Field Survey, 2015

From the result, the sampled households in the study area had a mean budget share of 21.80% for yam of the total mean expenditure on carbohydrate foods (N9,548.37) consumed in the study area. While rice had a budget share of 28.60% and about 17.55%, 13.75% and 18.30% represent the budget share on garri, plantain and bread respectively. The highest percentage of the respondents' budget share of expenditure on carbohydrate food went to rice (28.64%) followed by yam (21.81%). Rice however had the highest mean monthly expenditure of N2,639.02 followed by yam (N2,153.22), bread (N1,809.92), garri (N1,642.05), and plantain (N1,304.17). This means that most of the sampled households in the study area may have preferred rice to the other carbohydrate food hence the allocation for it was highest. This may be because some household heads were subsistent yam farmers thereby spending less on the purchase of yam. This agrees with the work of Erhabor and Ojogho (2011), who found that rice had the highest expenditure share relative to other food items, yam inclusive.

Table 12: Significant Difference between budget share for yam and substitutes(Paired sample t- test Result)

Paired samples	Mean diff.	t- value	Sig.
Yam and garri	.04261	4.689	.000 ***
Yam and rice	-.06831	-7.036	.000 ***
Yam and plantain	.08062	9.416	.000 ***
Yam and bread	.03451	3.144	.002 ***

Source: Field Survey, 2015

*** = 1% significant

The paired sample t-test result for the test of significant difference between budget share for yam and the budget share for substitutes is presented in Table 12. The result shows that there is a significant difference between the budget share for yam and other carbohydrate foods consumed in the study area, and the difference was significant at 1% level.

IV. Conclusion

Among the monthly expenditure on various goods and services, budget allocation on food had the highest share while budget on their health received the lowest attention. Rice was an important substitute for

yam when yam is not available or too expensive and taste was an important factor that informs their choice. Households average monthly expenditure on the commonly consumed carbohydrate food items in the study area was N9,548.38, with rice having the highest budget allocation followed by yam. The budget share for yam ranked second to that of rice.

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G. O. Alufohai" Assessment of Household Budget Allocation for Yam Tubers among Urban Dwellers in Edo State Nigeria" *International Journal of Engineering Science Invention (IJESI)*, Vol. 08, No. 05, 2019, PP 14-21