

## Analysis of Household Consumption of Cassava Products in Ohaozara, Ebonyi State, Southeast Nigeria

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**ABSTRACT:** The broad objective of the study was to conduct an analysis of household consumption of cassava products in Ohaozara area of Ebonyi state south-eastern Nigeria. Data were collected with questionnaire from 20 consumption households randomly selected from 3 out of the 30 communities in the area. The sampling frame used for the study was obtained from the National population Commission for the area. Sixty households were sampled in the area. Data were analyzed using descriptive statistics and ordinary least squares multiple regression technique. The results identified garri, pounded cassava, tapioca, cassava chips, and cassava flour as the various cassava products consumed in the area. The results show further that about 11% of the monthly income of an average household in the area was spent on cassava products while about 23% of their monthly income was spent by them on substitutes. Garri was identified as the major cassava product consumed by the respondents in the area while rice and plantain are the major substitutes consumed by them. The findings of the study show also that household size, household income, and the cost of substitutes were the statistically significant determinants of the quantity consumed of cassava products by the respondents in the area. The significant variables have positive coefficients, which imply that an increase in their magnitude will lead to an increase in the quantity consumed of cassava products in the area and vice versa. The result shows further that the sampled households have a moderate marginal propensity to consume, which imply that they spend a moderate percentage of their monthly income on consumption. [Researcher. 2010;2(6):1-6]. (ISSN: 1553-9865).

**KEYWORDS:** Determinants, Household, Consumption, Cassava-Products, Substitutes

### INTRODUCTION

Declining productivity in the agricultural sector, rising food prices and increasing food import bills have become permanent features in Nigeria (Anyasi, 1999). The situation becomes more embarrassing against the background of vast Agricultural resources available in the country. Cassava is Africa's second most important food staple in terms of per capita calories consumed. It is a major source of calorie for roughly two out of every five Africans. In some countries cassava is consumed daily and sometimes more than once a day. According to Bokanga (1998) cassava has the potential to increase farm incomes, reduce rural and urban poverty and help close the food gap. Without question, Nweke et al (2001) noted that cassava holds great promise for feeding Africa's growing population. Nigeria ranks first among cassava producing nations of the world, with annual output of about 34 million tonnes of the root crop, which is mainly for local consumption (IITA, 1997; Okorji et al,2003). Cassava is available to low income rural households in the form of simple food products (for example, dried roots and leaves) which are significantly cheaper than grains such as rice. Many parts of West Africa consume cassava product in the form of Garri.

Cassava has several other advantages over rice, maize and other grains as a food staple in areas where there is a degraded resource base, uncertain

rainfall and weak market infrastructure. Cassava has historically played an important famine prevention role in Western and Southern Africa where maize is the preferred food staple and drought is a recurrent problem (Blackie, 1990). Cassava is a marginalized crop in food policy debates and burdened with the stigma of being an inferior food, ill suited and uncompetitive with the glamour crops such as imported rice and wheat. Many food policy analysts consider cassava as an inferior food because it is assumed that its per capita consumption will decline with increasing per capita income (Nweke et al, 2001).

While many useful genetic and agronomic characters of cassava have been identified through researches (IITA, 2001; COSCA, 1996; Nweke, 1994; Nweke, 1995; Hahn et al, 1990; Chukwuji et al, 2007), not much appear to be known on the determinants, elasticity and the pattern of the demand for cassava products, especially in South-eastern Nigeria where more than 84% of people eat cassava and cassava-based products at least every other day (Okolo, 1986).

Inadequate planning of Nigeria's agriculture to cope with the growing population has led to wide spread food shortage (Akande, 2000). Data on effective demand for food is needed to sustain the growth in food production because producers need market for their products. Moreover, consumption parameters provide necessary information on linkages

from food consumption to incentives for agricultural production, through the marketing sector (Korwama and Akoroda, 2003). Efficient production and marketing techniques ensure large scale production and marketing at low cost in order to increase the quality and quantity of food available for consumption. However, before efficient production and marketing techniques are adopted, reliable consumption data has to be obtained. It is therefore necessary that this study be carried out. The specific objectives of the study are to describe the socioeconomic characteristics of cassava consumers identified for the study and their relationship with cassava consumption, identify the cassava-based products in the area and the quantity consumed of them in the area, isolate the factors that influence cassava consumption in the area as well as establish the marginal propensity to consume cassava in the area.

## MATERIALS AND METHODS

### Study Area

The study is conducted in Ohaozara Local Government Area (LGA) of Ebonyi state. The LGA is located in the Western part of the state. It is bounded by Onicha L.G.A in Enugu state to the East, to the South by Ivo L.G.A and Afikpo-South L.G.A respectively in Ebonyi state, by Afikpo West L.G.A to the West, and to the North by Ezzah North L.G.A all in Ebonyi state. The 2006 population census puts the population of the Local Government Area at 148, 626 people (NPC, 2006). The people of the area are predominantly farmers while cassava, rice and yam are the major farm produce of the area.

### Sampling Procedure

The choice of Ebonyi state for this study was purposive because it is one of the major cassava producing south-eastern states. Simple random sampling was used to select three communities from among the 30 communities in the Local Government Area. The communities are Okposi, Uburu and Ugwulangwu. 20 households were randomly selected from each of the 3 communities from a sampling frame obtained from the National Population Commission for the areas. The sampling frame used was a list of household units in the area. A total of 60 consumption households were used for the study.

### Data Collection

The collection of data used for this study lasted for six months, from May to November 2009. Primary data were used for this study. During each visit to the sampled households, questionnaire and personal interview schedule were the instruments used for data collection. Data collected focused on the

socioeconomic features of the households such as their sex, age, household size, and level of education (measured by the number of years the respondent spent in school). Data collected on household consumption pattern include the form, quantity and price of cassava and cassava-product consumed. Data were similarly collected on the form, quantity as well as the price of substitutes of cassava consumed by the sampled households during the sample period. Useful data on the factors that affect the consumption of cassava/ cassava product and the proportion of household income spent on cassava/ cassava product respectively were collected too.

### Statistical Analysis

Data were analyzed using descriptive statistics, marginal analysis and quantitative techniques as they affect the various specific objectives. Measures of central tendency such as mean, mode, frequency distribution, percentages and tabulation were used to analyze objectives 1 and 2, objective 3 was achieved by using the ordinary least squares multiple regression (OLSMR) technique. Objective 4 was achieved using marginal analysis and confirmed from the result of OLSMR technique. Within the context of this study, a cassava consumption model is implicitly stated thus:

$$C = f(X_1, X_2, X_3, X_4, X_5, e)$$

Where,

C = Quantity of cassava and cassava products consumed (kg)

X<sub>1</sub> = Cost of cassava and cassava products (₦)

X<sub>2</sub> = Level of education (no. yrs spent in school) (yrs)

X<sub>3</sub> = Household size (no. of persons)

X<sub>4</sub> = Household income (₦)

X<sub>5</sub> = Cost of close substitutes (₦)

e = disturbance term

Four functional forms, namely linear, exponential, double log, and semi log forms, were fitted into the consumption function specified above. The form that satisfies some statistical, econometric, and economic criteria was selected as the lead equation and used for analysis (Olayemi, 1998).

## RESULTS AND DISCUSSION

### Socioeconomic Characteristics of the Respondents

The result of findings on the socioeconomic features of the respondents is presented in Table 1 which shows that women constitute 78.33% of the respondents while men make up 21.67% of them. This finding goes to support that by previous researchers on consumption ( Okolo, 1986; Onyemauwa et al, 2008) that as far as household consumption management in

south-eastern Nigeria is concerned, women are in charge.

Previous research efforts (Ayanwale and Ajetomobi, 2001) show that household size and age significantly influence the level of household consumption. It is necessary, therefore, to conduct analysis on them. The result of Table 1 show that the modal class of the age of the respondents is 35-44years and 45% of the respondents belong to that

category while 25% representing 15 respondents belong to the 45-54 age class. On the aggregate, about 93.33% of the respondents were in the 25-54 age class as against only 6.67% found in the 55-64 age class. It can be inferred that majority of the respondents are in their youthful and active stage of life in terms of energy requirements and cassava and cassava-based products, being the most important energy-giving food to people in the area, have a lot to do in this regard.

**Table 1. Socioeconomic Features of the Respondents**

Variables	Male	Female	Frequency	Percentage
Gender			13	21.67
Age (years)			47	78.33
		25-34	14	23.33
		35-44	27	45.00
		45-54	15	25.00
Household size (persons)	1-4		9	15.00
		5-8	38	63.33
		9-12	13	26.67
		13-18	22	36.33
Level of Education (years) 1-6			6	10.00
		7-12	32	53.67
		13-18	22	36.33

Data were collected on the household size (as measured by the number of persons in the households) of the respondents and the result as presented in Table 1 show that 63.33% (or 38) of the respondents have a household size of between 5-8 while 26.67% (or 13) of them belong to the 9-12 class of household size. Only 15% (or 9) of the respondents have household of between 1-4 persons. On mean basis the respondents have 8 persons per household. Education level of people has been identified as a crucial variable in studies of food demand, the exclusion of which will bias income response upwards (Behrman and Wolfe, 1984). In line with this, data were obtained on the education level of the respondents (measured by the number of years they spent in school). It is unfortunate to note that in this era of development when different nations and organizations are emphasizing on and funding education, about 10% of the respondents in the area as reported in Table 1 did not spend more than 6years in formal education. On the aggregate, Table 1 show that 63.67% of the respondents spent not more than 12 years in formal schooling, while only about 36% attained tertiary institutions (by Nigerian rating). This is an indication of an average-educated class of people who would likely consider the nutritional requirements of their households important.

### **Household Consumption of Cassava and cassava-Products by Respondents**

Data were obtained on the form, quantity, amount and percentage of monthly income spent on cassava/ cassava products in the area and the result as presented in Table 2 identified garri, tapioca (called akpu mmiri in the area), pounded cassava (popularly referred to as akpu or fufu in the area), cassava chips (called abacha by the people), and cassava flour are the various forms of cassava products consumed in the area. Table 2 show that an average household of 8 persons consumed 25kilograms (kg) of garri at a cost of ₦2, 500 representing 5% of monthly household income. This is the highest monthly expenditure on cassava products in the area and the result is consistent with the assertion that garri is the most important processed cassava roots. Table 2 shows further that although the highest in terms of kg of cassava product consumed was pounded cassava and that it cost an average household about ₦1, 907 representing 3.81% of household monthly income to consume that quantity of pounded cassava.

Table 2. Household Consumption of Cassava and Cassava Products by Respondents

Food Items	Mean Qty Consumed (kg)	Amount (₦)	Percentage of Monthly Income
Garri	25.00	2500	5.00
Tapioca	2.50	1000	2.00
Pounded Cassava (akpu)	38.13	1906.67	3.81
Cassava Chips (abacha)	0.60	150	0.30
Cassava Flour	0.50	125	0.25
Total	66.73	5,681.67	11.36

Table 2 shows that both the quantity and expenditures on tapioca and cassava chips respectively consumed in the area are almost insignificant. This is likely due to the fact that they are not usually regarded as the main meal but are regarded as dessert. The Table shows that, on the aggregate, about 67kg of cassava products amounting to about ₦5,682 and representing about 11% of monthly income of the respondents in the area were consumed. According to Onyemauwa et al (2008), 42.06kg of cereals amounting to ₦9,012 and representing 16.55% of household monthly income were consumed. Comparatively, while more quantity (kg) of cassava was consumed relative to cereals, household expenditure on cereals was higher relative to cassava. These two studies were conducted in south-eastern Nigeria though the set of respondents are not the same. This is an indication that the mass (in kg) of food stuff is not a real measure of its price.

#### Household Consumption of Substitutes by Respondents

Data were collected also on the consumption of non-cassava products referred here to as substitutes. Since the aim was to make useful comparisons and to facilitate discussion, the same set of data was obtained for the substitutes and the result is presented in Table 3. The Table 3 show that an average household in the area consumed 24kg and 18kg of yam and rice respectively. These are the two major substitutes of garri and pounded cassava in the area. Ironically, rice which was the least consumed, in terms of kg, of the major food stuffs being considered now attracted the highest expenditure of ₦3,200 or 6.40% of household monthly income relative to yam and garri were 3.60% and 5.0% respectively of household monthly income were spent. Table 3 show further that the quantity of potato consumed (27.50kg) was the highest among the substitutes though it could account for only 4.40% of monthly income while plantain accounted for 6.00% of monthly income with only 20.80kg of it consumed. Beans was the least consumed of all the major food stuffs considered in this study with only 2.80% of monthly income devoted to its consumption in the area. This goes to support the general belief that beans is not usually regularly consumed by most households in south-east Nigeria. The Table 3 show that a total of 97.90kg of cassava substitutes worth ₦11,600 representing 23.20% of household monthly income were consumed by the respondents in the area. It could be inferred from Table 2 and 3 that the respondents consumed more quantity of substitutes and devoted more percentage of household monthly income on substitutes relative to cassava products. This is as expected since each of the 5 food substitutes considered are bulky and can be eaten solely as the main meal, while in the case of cassava products only garri and pounded cassava are usually eaten as the main meal not solely but with soup which is an additional expenditure.

Table 3. Household Consumption of Cassava Substitutes by Respondents

Food Items	Mean Qty Consumed (kg)	Amount (₦)	Percentage of Monthly Income
Yam	24.00	1800	3.60
Rice	18.00	3200	6.40
Beans	7.60	1400	2.80
Potato	27.50	2200	4.40
Plantain	20.80	3000	6.00
Total	97.90	11,600	23.20

**Statistical Results on the Determinants of Cassava Consumption by Respondents**

The result of a multiple regression obtained by regressing five variables that affect the consumption of cassava products in the area is shown in Table 4. The five explanatory variables are cost of cassava products (X<sub>1</sub>), level of education (X<sub>2</sub>), household size(X<sub>3</sub>), household income(X<sub>4</sub>), and cost of substitutes(X<sub>5</sub>). The regression result presented in Table 4 shows that the double log (Cobb Dauglas) functional form produced the lead equation having satisfied the statistical, econometric and economic criteria (Olayemi,1998). It is therefore used for the analysis.

Table 4. Multiple Regression Results on Determinants of Household Consumption of Casava and Cassava Products by Respondents

Functional form	Constant	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>	R <sup>2</sup>	F-ratio	SE
Linear	-14998.3 (-1.448)	-0.07 (-1.12)	1007.40 (1.04)	656.16 (12.72)*	0.03 (0.37)	-1.03 (-3.84)*	0.9113	110.97	36178.5
Exponential	6.50 (21.84)	7.97 (0.42)	0.01 (3.63)*	0.004 (2.95)*(0.01)		2.78 (1.31)	1.01	0.8066	45.05 1.04
Double log	-0.92 (-0.65)	-0.06 (-0.66)	0.10 (0.49)	0.48 (2.45)*	0.43 (4.01)*	0.43 (3.07)*	0.8430	58.01	0.94
Semi log	-155395 (-1.21)	-10062.6 (-1.32)	-2280.13 (-0.13)	53697.37 (3.00)*	12823.95 (1.30)	-2944.63 (-0.23)	0.5043	10.99	85526.59

The double log functional form in Table 4 show that out of the five explanatory variables fitted in the consumption model, three were statistically significant at 0.05 (or 5%) level of statistical significance. They are household size (X<sub>3</sub>), household income (X<sub>4</sub>), and cost of substitutes (X<sub>5</sub>). These are the variables that have statistically significant effect in the consumption of cassava products in the area during the period of study. Table 4 show also that all the significant variables have positive coefficients. This implies that an increase in their magnitude will

lead to an increase in the quantity consumed of cassava products by an average household in the area other factors held constant. The coefficient of multiple determination (R<sup>2</sup>) was 0.8430. This indicates that the explanatory variables fitted in the model account for about 84% of the variation in the quantity consumed of cassava products in the area. Table 4 shows also that of all the four functional forms, the double log has the least standard error (SE).

**Test of Hypothesis**

In this section the hypothesis that the marginal propensity to consume (MPC) cassava products in the area is not equal to 1(MPC ≠ 1) is tested. The hypothesis is tested thus,

- Ho: MPC ≠ 1 (i.e., households in the area do not spend all their income on cassava products consumption)
- Ha: MPC = 1 (i.e., households in the area spend all their income on cassava products consumption)

**Decision Rule**

If MPC ≠ 1, the null hypothesis (Ho) is accepted, otherwise reject it.  
 If MPC = 1, the alternative hypothesis is accepted, otherwise reject it.

According to Olayemi (1998), in a consumption function the marginal propensity to consume is given by the regression coefficient (b<sub>1</sub>). It follows therefore that the MPC as derived from the regression coefficient of household income in Table 4 is 0.43. Marginal propensity to consume (MPC) is a fraction of any change in income consumed. It is the

ratio of change in the consumption to the change in income which caused that change in consumption. Marginal propensity to save (MPS) is the fraction of any change in income saved.

Based on the above, the MPC ≠ 1 and the null hypothesis that the sampled households do not spend all their disposable income on consumption of cassava

products is accepted. The value of 0.43 recorded for MPC implies that the sampled households in the area spend about 43% of their disposable income on consumption. According to the absolute income theory, low income households spend large portion of their income on consumption while high income households spend small portion of their income on consumption. MPC of 43% recorded for the respondents in the area is an indication that an average household is of a middle income class.

In conclusion, this study has shown that the quantity consumed of cassava products in the area is influenced by household size, household income, and the cost of substitutes. These variables should be emphasized upon and also built into policy programmes aimed at improving the welfare of consumers in the area. Garri and pounded cassava were the major cassava products, while rice and plantain were the major substitutes, consumed by the respondents in the area. The households were found to have a moderate marginal propensity to consume (0.43). In other words, an average household in the area have a relatively high marginal propensity to save (0.57).

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