

# Buying Attitude of Yam Consumers in Southeastern, Nigeria

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## Summary

*Buyer attitude is a complex and dynamic subject. It differs from consumer group to another. This study focused on the buying behavior of yam consumers in Imo state, Nigeria and sought to identify the major factors that influence buyer attitude as well as the effects of different variable on consumer decision to purchase yam. In order to achieve this mandate, the study adopted a multistage sampling technique, which was employed in the selection of location and respondents. Descriptive statistics, logistic regression and paired t test were the tools of analysis adopted for this study. The results showed that household income, education, taste and age were statistically significant and therefore influence demand for and willingness to buy yam. Based on the findings, it was recommended that there is the need for increased consumer education especially to enlighten parents to include yam in the diet of their children. This is necessary because the findings showed that adult consumers were dominant. Breeders are also challenged to develop new varieties that have desirable qualities in addition to good and palatable taste.*

## Résumé

### Attitude d'achat des consommateurs d'igname au Sud-Est du Nigeria

*L'attitude des acheteurs est un sujet complexe et dynamique. Il diffère d'un groupe de consommateurs à l'autre. Cette étude a porté sur le comportement d'achat des consommateurs de l'igname dans l'État d'Imo et cherché à identifier les principaux facteurs qui influencent l'attitude d'acheter ainsi que les effets de différentes variables sur la décision des consommateurs d'acheter l'igname. Afin de réaliser ce mandat, l'étude a adopté une méthode d'échantillonnage, qui a été employée dans la sélection de l'emplacement et les répondants. Les statistiques descriptives, la régression logistique et le test t apparié ont été les outils d'analyse adopté pour cette étude. Les résultats montrent que le revenu du ménage, l'éducation, le goût et l'âge sont statistiquement significatives, et donc influent sur la demande et la volonté d'acheter de l'igname. Sur la base des conclusions, il a été recommandé la nécessité de l'éducation des consommateurs en particulier pour éclairer les parents de l'importance de l'igname dans l'alimentation de leurs enfants. Cela est nécessaire car les résultats ont montré que les consommateurs adultes ont été dominants. Les sélectionneurs sont aussi mis au défi de développer de nouvelles variétés qui ont les qualités désirées en plus du bon goût agréable.*

## Introduction

One of the basic human needs for his continued existence in life is food. Human's need for food goes beyond fulfillment of his biological necessities and meeting with their cultural and social needs (4, 23). Importantly, it gulps a large percentage of his expenditure (23).

Yam (*Dioscorea* species of family Dioscoreaceae) is a (staple) food; it serves the above highlighted purposes and more for man. According to IITA (12), it has a rich nutritional content providing more than 200 dietary calories per capita daily for more than 150 million people in Nigeria; vitamin B6 and potassium. Information on the nutritive value of yam has been highlighted by several authors in their work (1, 5, 7, 21). Yam also has ritual, medicinal and socio-cultural significance. For instance, it is a choice food during ceremonies and festivities (11).

Approximately 95 percent of the 51.4 million metric tons of yams produced in 2009 in the world are grown in the yam belt of the West Africa. Nigeria is the largest producer with a total production of 38.7 million metric tons accounting for 75 percent of total world output (10, 13). According to the Nigerian Export Promotion Council (NEPC) report, Nigeria realized N70 billion from yam export in 2009 as against N56 billion in 2008 and N37 billion in 2007 (20). In terms of yam consumption, the quantity consumed in Nigeria (258 kcal) is low when compared with Benin (364 kcal), Ivory Coast (342 kcal), and Ghana (296 kcal) (13).

The consumption patterns and taste in food are often shaped by the family life cycle and the number, age, and gender of people in the household besides their occupation (14). Moreover, despite the fact

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that economists had in time past developed series of models explaining consumer choice in terms of changing utilities, or demand preference according to the variations in price, income and quantity, recent empirical evidence suggests that consumer decision making processes involve some unseen relative cognitive values that include taste, species, durability, weight etc.

Consumer behavior with respect to food has not received much attention in Nigeria. At least part of the difficulty in conducting research in this important area lies in the complexity and diversity in the influence at work in food choice and consumption. Based on the foregoing, this study assesses the socio-economic profile of yam consumers; analyze and compare the consumption pattern of yam with other staples and identifies the major factors that influence buyers' attitude towards yam. To guide the study in achieving meaningful results, the following hypotheses were formulated:

H<sub>1</sub>: there is a significant relationship between price and consumption of yam;

H<sub>2</sub>: age, income, education, household size, weight, colour, taste are positively related to purchases and rate of consumption of yam while price and price of substitutes are negatively related to its purchase and rate of consumption.

## Materials and methods

### The Study Area

The study area is Imo State, Nigeria. Imo State is situated in the south eastern geographical zone of Nigeria. It lies between longitudes 06° 35' and 07° 28' E and latitudes 05° 00 and 05° 37' N, covering an area of 3,289. 49 km<sup>2</sup>. It is bounded on the east by Abia State, on the west by Delta State, on the north by Anambra and Ebonyi State and on the west by Rivers State. The state falls within the tropical rainforest zone with an average annual rainfall of up to 2550 mm. It has estimated population of 3.7 million with a growth rate of 2.8% per annum.

For ease of administration of agricultural programmes, the State is divided into 3 geographical zones namely: Owerri, Orlu and Okigwe; farming is the major occupation of the people and yam is one of the major root and tuber crops produced in the area.

### Method of data collection

Multi-stage sampling technique was employed in the selection of location and respondents. In the first stage, Owerri main town was chosen purposively for this study due to its cosmopolitan nature, in addition to being the state capital. The second stage involved a random selection of ten streets from the town. Finally, ten (10) households were randomly selected from each street. This aggregated one hundred households and constituted the sample for the study.

### Method of data analysis

Data were analyzed using descriptive statistics, logistic regression and t-test statistic to realize the objectives. Specifically, the socio-economic profile was analyzed using descriptive statistics while logistic regression was employed in the assessment of the factors that influence the buyer attitude towards yam. The paired t-test statistic however was employed for the last objective.

The logistic regression for the estimation of the factors that influence buyer attitude is stated thus:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + \dots + b_nX_n + \epsilon_1$$

Where Y= Dummy: (1= demand for and willingness to buy yam and 0= Otherwise)

X<sub>1</sub> = Age (years)

X<sub>2</sub> = Household Income (Naira)

X<sub>3</sub> = Education (years)

X<sub>4</sub> = Price of substitute (Naira)

X<sub>5</sub> = Price of yam (Naira)

X<sub>6</sub> = Household size (No)

X<sub>7</sub> = Taste (dummy: Good= 1, otherwise= 0)

X<sub>8</sub> = Weight (dummy: sizeable = 1, otherwise= 0)

X<sub>9</sub> = Color (dummy: white= 1, yellow= 0)

ξ<sub>1</sub> = Composite error term

In the comparison of consumption for yam with other carbohydrate foods, the paired t-test statistic will be employed and thus stated as:

$$t = \frac{X_1 - X_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

Where t= t - test statistic

X<sub>1</sub> = mean value of consumption of yam by regular consumers.

X<sub>2</sub> = mean value of consumption of other staples by regular consumers.

S<sub>1</sub><sup>2</sup> = sample variance of consumption of yam by regular consumers.

S<sub>2</sub><sup>2</sup> = sample variance of other staples by regular consumers.

n<sub>1</sub> = sample size of regular consumers of yam.

n<sub>2</sub> = sample size of regular consumers of other staples.

The above methodologies are consistent with Nwachukwu *et al.* (18) and Ariyawardana and Prathiraja (2) who employed same in their studies.

## Results and discussion

### Analysis of socio-economic profile

This study analyzed the socio-economic characteristics of the respondents under the following: age, household income, education, price of yam and substitute, household size. The data are presented in table 1. Table 1 showed that a dominant proportion of

**Table 1**  
**Socio-economic statistics of yam buyers (n= 100)**

Variables	Frequency (Percentage)
<b>Age (Years)</b>	
18 - 20	7.00
21 - 25	5.00
26 - 30	13.00
31 - 35	18.00
36 - 40	23.00
41 - 60	34.00
<b>Education (Years)</b>	
School Certificate	7.00
WAEC/NECO	25.00
OND/NCE	14.00
B.Sc/BA/HND	49.00
Others	5.00
<b>Household Income (Naira)</b>	
30,000 - 49,999	11.00
50,000 - 69,999	16.00
70,000 - 89,999	40.00
90,000 - above	33.00
<b>Sex</b>	
Female	69.00
Male	31.00
<b>Price of Yam (Naira)</b>	
100 - 199	28.00
200 - 299	40.00
300 - 399	20.00
400 - 499	6.00
500 - 599	4.00
600 - 699	2.00
<b>Price of Substitute (Naira)</b>	
100 - 299	49.00
300 - 499	18.00
500 - 699	19.00
700 - 899	7.00
900 - above	7.00
<b>Household Size (No)</b>	
1 - 4	31.00
5 - 8	60.00
9 - 12	9.00

Source: Field Survey (2010)

NB: The frequencies are the same as the percentages and N150 is equivalent to \$1.

the respondents are adults. This is possible because adults decide most their respective household purchases. Also, majority of the household has an appreciable income.

While other staples are less expensive, it takes an individual with high income to demand and consume more quantity due to cost and availability caused by variability in season. On the other hand, the high mean for other staples depicts a higher demand/willingness and availability of these staples than yam.

The frequency distribution in table 1 also revealed that about more than 50% of the respondents have attained their tertiary education, meaning that majority of the respondents are literate and rational buyers. This high literacy level demonstrates that our respondents have a wide knowledge of food nutritional content. Their level of exposure academically influences the kind

of food and willingness to buy more quantity of their choice product despite economic pressure.

More so, the table 1 shows that an average yam (about 2 kg -3 kg) costs between N250- N300. This is validated by about 40% of the respondent. About 60% of the households that participated in the study have between 5-8 people in a household. The size of a household determines the quantity of a food item purchased hence, the willingness to buy more.

The consumer profile showed that the majority of the respondents are educated, female adults in their middle ages with appreciable income and relatively large households. This is plausible given the fact that adults decide most their respective household purchases and yam is not readily affordable. High education level of the buyers implies that they have a wide knowledge of nutritional values of foods and are able to choose the type of food that will suit their nutritional needs cum preferences despite economic pressures (Table 1).

### Analysis and comparison of the consumption pattern of yam with other staples

Yam, garri and rice were the major staple foods selected for this study. As such, to assess and compare the quantity and consumption rate for yam and other staples, paired t-test statistic was employed and the results are presented in table 2.

Table 2 shows a higher mean value for garri and rice and as such confirms that these staples are consumed more both in quantity and frequency than yam. According to Daniel and Kormawa (8), yam is the most expensive among the tubers and roots crops.

**Table 2**  
**Paired t-test comparison of consumption pattern for yam and other staples**

Variables	Individual mean(kg)	Paired difference		
		Mean	standard deviation	t
<b>Quantity</b>				
Yam	2.70			
Garri	25.39	-23.12	10.39258	-22.24
Yam	2.70			
Rice	19.98	-17.71	9.08245	-19.49
<b>Consumption rate</b>				
Yam	1.26			
Garri	4.68	-3.42	1.80448	-18.95
Yam	1.26			
Rice	4.69	-3.43	1.9448	-17.63

Source: Field Survey, 2010.

This also lend credence to the fact that average yam consumption per capita per day is low when compared with other nations that produce yam (13). Moreover, available quantity is not adequate to feed the growing population, after export. In Nigeria, yam is becoming more expensive and relatively unaffordable in urban areas as production has not kept pace with population growth leading to demand exceeding supply (15). Also from table 2, it could be deduced that an average quantity of yam consumed in one month per household was 2.7 kg at the cost of N100 - N300. When compared with other staples (rice and garri), the quantity and rate of consumption of yam is less. Garri appeared to be the most consumed but a little less than rice in terms of rate. This is consistent with the findings of IITA (12) and Nigeria Food Consumption survey (17) and which averred that other staples are consumed far more than yam because they are more affordable and available.

### Factors influencing demand and willingness to buy yam

To identify the factors that influence the demand and willingness of consumers to buy yam and the effect of these different variables on consumer purchase decision, logistic regression was employed. The variables used for this analysis include: age, household income, household size, taste, weight, color, education, price of yam and substitute. The result of the analysis is presented in table 3.

Table 3 indicates that the coefficients of age, income, education were significant at 99% and while taste was significant at 95% confidence level, as represented by the wald statistics. It is equally important to note that the positive signs in the statistics depict that the observed variables have a direct relationship with demand and willingness of consumers to purchase yam against other staples, despite the cost implications and quantity that can satisfy a particular household. This result is consistent with the findings of Nwachukwu *et al.*, (18) in their study on buyers'

attitude for made in Nigeria shoes. This is equally consistent with the views of Kotler and Keller (14), which observed that consumption patterns and taste in food are often shaped by the family life cycle, and the number, age and gender of people in the household and occupation (income).

The effect of economic circumstances such as disposable income and borrowing power on demand is consistent with Olanyinka and Aminu (19). According to them, income and other economic factors affect purchases, and by extension affect availability, quantity purchased and subsequently consumed. This justifies the first hypothesis that price is significantly related to consumption of food. Also, In Nigeria, the overall expenditure elasticity of demand for yam was greater than one. Therefore, increased urban income is likely to boost the sale of yam without affecting the prices. Also, yam was shown to have a positive price elasticity, improved production or storage methods which increase the supply of yam will lower the price and increase quantities at low expenditure levels (3). The positive signs for price(s) show that price is an important determinant of consumer purchase intentions/choice for goods/service. The higher value for price of substitutes indicated that given consumers budget constraint, demand will shift downwards to alternative foods, due to the effect of price. Each individual wants to maximize utilities, but due to budget constraints, the individual faces a dilemma. It is to solve this problem of choice that economists turn to the theory of indifference curve. Price changes affect willingness to buy, purchasing power and quantity demanded, unless the food is a necessity in the households and has to be bought, no matter the price. Previous studies show garri-to-yam cross price elasticity positive depicting that they are strong substitute goods. This is consistent with the finding of Daniel and Kormawa (8).

It could be observed that two factors stood out as the most important determinants of yam purchase attitude and rate of consumption. They are income of individual/

**Table 3**  
Binary logit estimates of factors that influence buying behavior for yam

Variables	Co-efficient (B)	Standard error	Wald	Exp (B)
Constant	7.002	3.186	4.833	1102.073***
HH income (N)	0.001	0.002	7.790	1.000***
Education (yrs)	-0.331	0.139	5.692	0.718***
Price of Sub.(N)	0.002	0.001	1.666	1.002
Price of yam(N)	-0.001	0.002	0.167	0.999
HH size (No)	-0.146	0.127	1.323	0.864
Weight (dummy)	-0.088	0.162	0.293	0.916
Color (dummy)	0.610	0.136	0.201	1.063
Taste (dummy)	0.291	0.189	2.369	0.748**
Age (yrs)	0.051	0.031	2.660	1.052***
Cox-Snell R <sup>2</sup>	0.215			
Nagelkerke R <sup>2</sup>	0.322			

Source: Field Survey, 2010.

\*\*\* and \*\* denoted statistical significance at 1% and 5% risk level respectively.

household and price of goods/service. This is consistent with the views of Deaton and Muelbauer (9).

The positive signs of color, weight and taste confirm consumer perception of quality with respect to food. It equally confirms that consumer perception of quality involves some unseen relative cognitive values that include taste, species, weight, color etc. Taste in consumer food quality assessment is referred to as the hedonic quality dimension of food (6). Quantitative studies on important predictors of food choice usually conclude, not surprisingly, that taste and pleasure are among the most important predictors of food choice (22). Perception of quality as an important determinant of buyer's preference has been highlighted by many authors by previous studies (4, 6, 16).

The Cox-Snell and Nagelkerke  $R^2$  values are attempts to provide a logistic analogy to coefficient of multiple determination,  $R^2$  in OLS regression. The Nagelkerke measure adapts the Cox-Snell measure so that it varies from 0 to 1 as does  $R^2$  in OLS. At 21% and 32% for Cox-Snell and Nagelkerke respectively, the regression line fits data to up to the stipulated level. As such, they imply the extent of explanation of variation in the dependent variable, lending to credence to the

fact that age, income, education and household size are positively related to purchase and consumption rate of yam.

## Conclusion

Consumers have been recurrently the unit of analysis in all economic activities. Each individual want to maximize utilities but due to budget constraint must resorts to alternatives. Alternatives in terms of whether the alternatives will satisfy their need or not must be evaluated. From the analysis of the buying behavior of consumers of yam, this study reveals the major determinants of demand and willingness to buy yam. The major determinants are age, education, income and taste. The effect of these variables on their willingness to buy is direct. Therefore, this study suggests the need for increased consumer education especially to enlighten parents to include yam in the diet of their children. This is necessary because the findings show that adult consumers are dominant. Breeders are also challenged to develop new varieties that have desirable qualities in addition to good and palatable taste.

## Literature

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