Consumer Behaviour and Preferences to Cassava Value Added Products in Ikwuano Local Government Area (L.G.A) of Abia State, Nigeria

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***Abstract*—This study determined the consumer behaviour and preference to cassava value added products in Ikwuano LGA of Abia State, Nigeria. Multi Stage random sampling technique was used in the selection of autonomous communities, villages and 100 respondents. Instrument of data collection was via a set of pre-tested and structured questionnaire. The result showed that a good proportion of the respondents were aware of the existence of cassava bread as one of the value added products of cassava. The logistic regression analysis showed that the critical variables that influenced the statistical preference for cassava bread include household size and educational level of the respondents, significant at 5.0% risk level. The research revealed that the coefficient of the income elasticity of demand for cassava value added product was 1.42; while that of the own price elasticity was 0.03. The cross price elasticity between cassava and maize flour was 0.98. Consumers were encouraged to consume more of cassava value added products as they are cheap, available, affordable and very good sources of carbohydrates.**

***Index Terms*—Consumer behaviour, preferences, cassava value added products.**

I. INTRODUCTION

Cassava (*Manihot* *esculenta* crantz) is an important staple food and cash crop in several tropical African countries especially Nigeria where it plays a principal role in the food economy. Nigeria is the largest cassava producing country in the world with an annual estimate of 39 million metric tonnes [1]. Among the starchy staples, cassava gives a carbohydrate production which is about 40.0% higher than rice and 25.0% more than maize. Cassava is the cheapest source of calories for both human nutrition and animal feeding [2]. According to [3], 80.0% of Nigerians in the rural areas eat cassava meal at least once a day; hence it plays a major role in the country's food security.

As a result of the high demand generated from the major products: garri, fufu, flour to mention but a few, cassava currently plays a vital role in crop combination of most farmers. Although a popularly held view supports that an unbridled consumption of cassava leads to kwasiokor and a host of other nutritional short coming, consumers stick to this

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root crop because it is most available and valuable compared to other carbohydrates [4].

In 2002, cassava gained prominence in Nigeria following the pronouncement of presidential initiative on the crop. The initiative was aimed at using cassava production as the engine of growth in Nigeria. In recent times, government has encouraged the use of the crop to produce a wide range of industrial products such as ethanol, glue, glucose, syrup, biscuits, chin-chin, cake, bread, to mention but a few. Recently, the Nigerian government promulgated a law, making it compulsory for bakers to use composite flour of 10.0% cassava and 90.0% wheat for bread production. The new regulation which came into effect, January 2005, stipulated that the large flour mills that supply flour to bakeries and confectionaries must premix cassava flour with wheat flour [5].

Despite the fact that cassava has several advantages over rice, maize and other grains as a food staple in areas where there is degraded resource base, uncertain rainfall, weak infrastructure, drought and famine, it has been neglected for numerous reasons by researchers, African policy makers and by most donor and international agencies [5].

Although cassava has been in existence in Nigeria, farmers have not been enjoying good pricing of the crop. The reason being that minimum effort is generated towards adding value to the tubers produced. Hence farmer's earnings are not commensurate with their efforts exerted in cassava production.

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 because of several long standing myths and half truths [3]. This problem is the major reason why maize flour is preferred to cassava flour.

Also, whether cassava can be relied on as a low cost food staple in urban centers and as a source of steady real income for rural households will depend on how well it can be processed into a safe form [6] and how far it can be presented to urban consumers in an attractive form at prices which are competitive with those of wheat, cereal and yam [7]. It is the prime objective of this paper to anchor this research on the following specific objectives:

1) to identify and describe the various forms of value-added products of cassava origin within the area of study.
2) to determine the factors that influence consumer preferences to selected types of value added cassava product.
3) to compare the own price elasticity, cross price elasticity and income elasticity of demand for cassava value added

products and products of close substitution.

The under-listed null hypothesis was tested to achieve a selected specific objective.

Ho: Consumer preference to cassava value added product is positively related to price of the product, texture of the product, income per month, educational level, household size and age of the consumers.

II. RESEARCH METHODOLOGY

The study area was Ikwuano Local Government Area (LGA) of Abia State, Nigeria. The choice of the study area was purposive because of its proximity, accessibility to required data and noted for the high production of this crop [8]. More so, the LGA is known as the food basket of Abia State. The LGA is located between latitudes 5^o28^1 and 5^030^1 North of the equator and longitudes 7^032^1 and 8^005^1 east of the Greenwich meridian in the rain forest area of the South-eastern agricultural zone of Nigeria. The LGA is 122m above sea level and has a population of over 250, 000 people [9]. However, the major occupation of the people is farming.

Multi-stage random sampling technique was employed in the research. First, 5 autonomous communities were selected randomly out of the twenty-eight autonomous communities. Then, two villages from each of the five autonomous communities were randomly selected, giving a total of ten villages. A list of cassava value-added products consumers were compiled with the aid of the Abia ADP Extension Agents in the area. Finally, 10 cassava value-added products consumers were chosen randomly from each of the ten villages giving a sample size of 100 respondents. Sampling was done without gender discrimination and replacement. Instrument of data collection was via a structured and pre-tested set of questionnaire. Objective one was analyzed using descriptive statistics, such as tables, frequency and percentage. Objective two (ii) was achieved with the use of the logic regression model while objective [iii] three was realized using cross price elasticity, own price elasticity and income elasticity models. The model specification for the general logit regression function model is explicitly specified thus:

$Zi = v\,b_0 + b_1\,xi_1 + b_2\,xi_2\ldots\ldots\ldots\ldots b_p\,xi_p$ ----- [1]

Where Z_i = Unobserved continues variable for ith case

X_{ij} = the jth coefficient (any independent variable)

P = number of the predictors

Translating this to this study, it is specified thus:

Z_i = preference to cassava bread (dummy) cassava bread = I, otherwise = 0

X_1 = Age of consumers (Years) otherwise 0

X_2 = Sex (Dummy Male I, Female 0).

X_3 = numbers of years spent in school

X_4 = Household size

X_5 = income per month (Naira)

X_6 = price of the product (N)

X_7 = texture (Dummy smooth I; otherwise 0)

Income elasticity of demand =

% change in quantity demanded of cassava

value added product (kg)

% change in monthly income

Cross elasticity of demand ($E \times Y$) =

% change in quantity demanded of cassava flour

% change in the price of maize flour

Own price elasticity of demand =

% change in qty dd of cassava value added product.

% change in price of cassava.

III. RESULTS AND DISCUSSION

The distribution of the respondents according to their identification of various forms of valued added products of cassava origin is shown in Table I. A reasonable proportion(33.33%) of the respondent identified cassava bread as one of the value added products of cassava origin which is closely followed by 20.51% of the respondents that identified cassava snacks such as chin-chin, meat/fish pie and dough-nut to mention but a few as value added products of cassava origin. Cassava bread had the highest awareness because it is readily available and can be purchased at affordable prices. This result is in agreement with a previous study who stated that whether cassava can be relied on as sources of steady income for the rural households will depend on how far it can be presented to the consumers in an attractive form and at prices which are competitive with those of wheat, maize, cereal and yam [7].

TABLE I: DISTRIBUTION SHOWING CONSUMERS AWARENESS AND IDENTIFICATION OF CASSAVA VALUE ADDED PRODUCTS IN IKWUANO LGA, ABIA STATE, NIGERIA.

Cassava Value Added Products	Frequency	Percentages
Cassava flour	23	11.79
Cassava starch	45	23.08
Ethanol	7	3.59
Cassava snacks	40	20.51
Cassava bread	65	33.33
Cassava cake	15	7.69

Source: Field Survey Data (2010)
*Multiple responses recorded.

The results of the logistic regression analysis showing the factors that influence the preference for a selected type of value added cassava product is shown in table 2. The logistic regression estimation for the variables showed that the effect coefficient Exp (B) for household size and educational level were statistically significant at 5.0% risk level. In terms of the household size, the results revealed that consumers with large household size had preference and showed willingness to consume cassava bread as indicated by the odd ratio of 152.405. This is indicative of the fact that cassava bread is large in size, with high quality and had a higher fullness factor when compared with other value added products of

cassava origin and can satisfy every member of a large household. In line with the above reasoning, the result is consistent with the findings that quality and health peculiarities are important factors for preference and willingness to consume any food [10].

TABLE II: RESULTS OF THE LOGISTIC REGRESSION ANALYSIS SHOWING THE FACTORS THAT INFLUENCE THE PREFERENCE FOR CASSAVA BREAD IN IKWUANO LGA OF ABIA STATE, NIGERIA.

Variables	B	S.E.	Wald	Exp(B)
Constant	-3.767	2.543	2.195	0.023
Age (X_1)	-0.051	0.045	1.269	0.951
Sex (X_2)	3.286	2.522	1.698	26.731
Educational Level (X_3)	5.417**	2.031	7.110	225.096
Household size (X_4)	5.027**	1.520	10.934	152.405
Income/ (X_5)	0.000	0.000	0.001	1.000
Price of Product (X_6)	1.637	1.933	0.717	5.139
Texture (X_7)	-23	17495.734	0.000	0.000
Step 1-2				
Log likelihood 34.769				
Cox and snell R^2 0.589				
Nagel kerke R^2 0.6				

Source: Computation from Field Survey Data (2010). ** indicates that the variable is statistically significant at 5.0% level.

TABLE III: ELASTICITY COEFFICIENTS OF CONSUMERS OF CASSAVA VALUE-ADDED PRODUCTS IN IKWUANO LGA, ABIA STATE, NIGERIA

Elasticity Category	Elasticity Coefficients
Income elasticity	1.42
Own Price Elasticity	0.03
Cross Price Elasticity	0.98

Source: Consumption from Field Survey Data (2010).

With odds ratio of 225.096, education level has a positive and significant influence on preference to cassava bread. This means that the more years a consumer spends in school, the more he can logically evaluate the food product and its quality. This result is consistent with a prior study which stated that consumers with higher level of education are expected to evaluate food products by their quality rather than by popularity [11].

The Cox-snell and Nagel Kerke R^2 values are attempting to provide a logistic analogy like the coefficient of multiple determination (R^2) in OLS regression. At 58.9% and 78.6% for Cox-snell and Nagel Kerke respectively, the regression fit the data appreciably high and as such, imply the extent of explanation of variation in the dependent variable. The results consolidate the findings of a similar study which had a similar outcome [12].

Table 3 shows the values of different elasticities of demand for the value added products of cassava origin in the study area. The coefficient of income elasticity of demand to value added products of cassava origin was 1.42. This result implies that as the income of the consumers increase, their taste and preference to cassava value added products will also increase, thus making the demand for cassava value added products perfectly elastic.

The own price elasticity for cassava value added products was 0.03. This shows that a percentage change in the price of cassava value added products results in a less than proportionate change in quantity demanded of the product hence being perfectly inelastic. This reinforces the readily availability of cassava value added product with very minimal price variation.

However, the cross price elasticity of cassava flour and maize flour is given as 0.98, showing that a percentage increase in price of maize flour will cause a proportionate increase in the quantity demanded of cassava flour. Hence cassava flour and maize flour are perfect substitutes.

IV. CONCLUSION

The research showed that the awareness index of the respondents was skewed in favour of cassava bread and cassava snacks among all other value added products of cassava origin in Ikwuano LGA in Abia State, Nigeria. The critical factors that influenced the preference for cassava bread, the research revealed include household size and level of education.

The research also showed that the income elasticity of demand for the value added products for cassava was 1.42 while that of the own price elasticity was 0.03. The cross price elasticity between cassava flour and maize flour was 0.98. The preference and consumption of cassava value added products in Ikwuano LGA in particular and Abia State in general can be enhanced through the adoption of the following recommendations:-

1) All consumers (Urban and Rural) are encouraged to consume cassava value added products the more as it is cheaper, available and affordable when compared with other substitutes.
2) Cassava value added products should be made available in varieties in the rural areas. This is because the ruralities were majorly aware of only cassava bread among this many cassava value-added products.

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