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Analysis of Consumer Preference for Cassava Products in Akoko South West Local Government Area of Ondo State, Nigeria

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Abstract

The study analysed consumer preference for cassava products in Akoko South local Government area of Ondo state, Nigeria. Data were collected from one hundred and ten (110) respondents with the aid of a structured questionnaire. Descriptive statistics and multiple regressions together with correlation Test were used to analyse the study data. The result revealed that the mean age of the household head was found to be 49.5 years and have a mean income of ₦26,800. The result revealed that garri is the major cassava product consumed. The result of the regression revealed that household size and income are the major factor that enhance the consumption of cassava products in the study area. The results of the Pearson Correlation showed that there is no significant relationship between income and the cassava products consumed. The major constraints faced were price of the products, taste, and household size. This research recommends that the Government, Ministries of Agriculture should provide improved technologies for production, processing and adding value to the cassava products. Scientists and bioengineers are encouraged to develop cassava varieties with less cyanide content and healthier for consumption by the old. Extension personnel should provide extensive services for actors of cassava value chain.

1. Introduction

1.1. Background to the Study

Nigeria is the world's highest producer of Cassava, leading with over 57 metric tons, followed by Thailand, Indonesia, and Brazil (Nnadozie, Ume, Isiocha, & Njoku, 2015; Truman, Daphne, Sanni, & Akoroda, 2004). It constitutes 37.3% of Africa and 20.8% of the world's total production of Cassava. It has been identified as the major supplier of carbohydrates to Nigerians above the rice (40% more) and maize (25% more); and over 80% of Nigerians in the rural areas consume cassava products every day (Food and Agriculture Organization, 2020) giving it a significant role in food diversity and security. Besides the nutrient supply, it has contributed to the Gross Domestic Product of Nigeria, while providing jobs in production (farming), processing and marketing of cassava and its products.

Cassava is used for domestic, commercial, and industrial purposes. The uses include traditional food recipes, which are *garri*, *fufu*, *lafun*, and *pupuru*, and processed dried chips and pellets, starch, bread, biscuits, paperboard, beer, sugar syrup, ethanol, high-quality cassava flour (HQCF), and glue for industrial use (Ezedinma, Nkang, & Simon, 2007). The increase in production has been facilitated by the increase in cultivated farmland, not in yield increase (Ojiako et al., 2018) which has called for more intentional effort to increase crop yield, sustainability, inclusive marketing, and rich value addition.

Consumption of cassava products is contingent on the proper processing of cassava into finished products according to the preferences. It is bulky with about 70% of moisture with varying quantities of cyanide according to the varieties. Raw and uncooked cassava is toxic to humans and animals and has a low shelf-life which means it cannot be stored more than four (4) days. Thus, a need to improve its shelf-life through proper processing techniques which are mainly done by smallholders and improve the healthy consumption of its products.

Cassava is gaining prominence on its use for biofuel (Ziska et al., 2009) while serving as the possible source of carbohydrate for ethanol production. A well-defined development strategy aimed at increasing production, improving processing and marketing will invariably increase the preference of consumers for its products, thus the research work examines the determinants of consumers' preference for cassava products.

1.2. Objectives of the Study

The main objective of the study was to determine the consumer preference for cassava products in Akoko South-west of Ondo State, Nigeria.

The Specific objectives were to:

1. Ascertain the socio economics characteristics of the consumer in the study area.
2. Identify the various forms of cassava products in the study area.
3. Determine factors affecting consumer's preference to cassava products in the study area.
4. Determine the relationship between the family income and the types of cassava product consume by the households in the study area.
5. Identify the main constraints faced by the respondents in the study area.

2. Methodology

2.1. The Study Area

The study was conducted in Akoko South West Local Government Area, Ondo state. The choice of Akoko South West area for this study was deemed to be appropriate given its antecedent in agriculture and cassava production .Generally, Akoko is a large Yoruba cultural sub-group in the north eastern part of Yoruba land and it extends from Ondo state to Edo state. It has a population of about 815,360 people (Federal Government of Nigeria, 2007) with a land area of 1,283,443 km² and with the coordinates of 7°23'51.58" N 5°41'40.67" E. It takes 4 out of the 18 local government areas in the state. The local government areas include Akoko North East, Akoko South West, Akoko North West, and Akoko South East. The major occupation there is farming and most of the people in the district are engaged in small- and large-scale farming with major arable crops cultivated. Some of the crops grown include groundnut, tomatoes, maize, cocoa, cassava, yam, plantain etc.

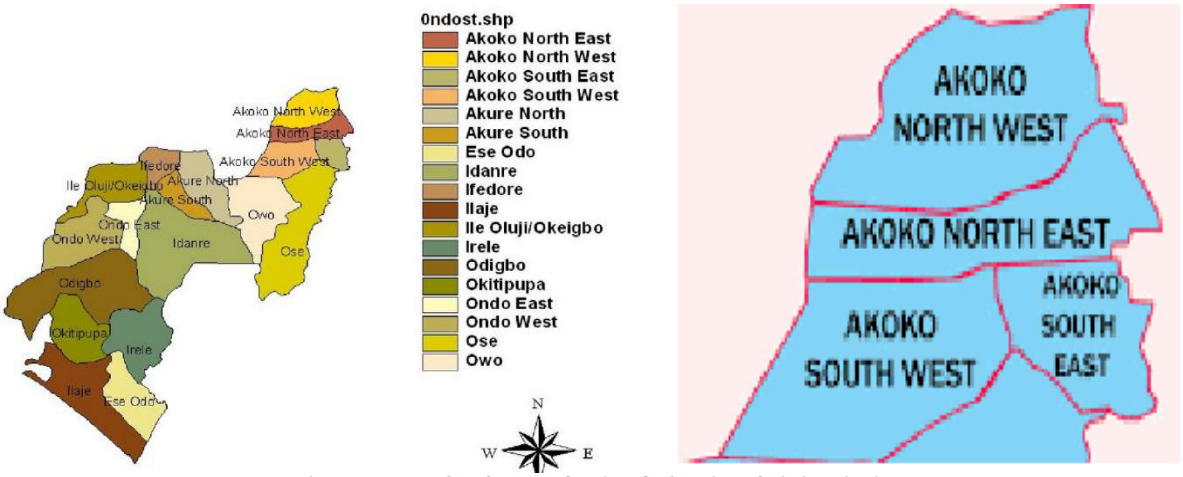

Figure-1. Map of Ondo State showing the location of Akoko Districts.

2.2. Sampling Techniques

The Akoko South West LGA was chosen because of the heavy concentration of cassava producers in the area. Multi-stage sampling was used to select samples for the study. The first stage involved the purposive selection of one local government from the four local government areas that make up the entire Akoko districts while the second stage involved a simple random selection of five (5) communities in the local government. The last stage involved a random selection of twenty-two (22) cassava household consumers from each community, which totalled one hundred and ten (110) cassava household consumers in all.

2.3. Data Analysis

Data for analysis were generated primarily using interview scheduled and structured questionnaires administered to one hundred and ten (110) respondents selected for the study.

2.4. Analytical Technique

Data for the study were analysed using both descriptive and inferential statistics. Objective i, ii and v were analysed using descriptive statistics such as mean, percentages and frequency distribution. Objective iii was analysed using a logistic regression. Objective iv was analysed using a Pearson Correlation test.

2.5. Model Specification

The study employed the logit regression analysis to determine the significance of the number of factors which contribute to the consumer's preference (Eastwood, Brooker, & Orr, 1987) for cassava products to the household. Variables included in the model were income of the household, family size, educational level, gender of the household head, quantity of the products, age of the household head and price of the processed products.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \mu$$

Where;
Y= preference for cassava products (1- preferred, 0 - otherwise).
β_0 = Constant.
β_1=β_8 coefficients of independent variables.
X_1 =Age.
X_2 = Household's size, (numbers).
X_3 = Income of the household (₦).
X_4 = Quality of the products (rating scale).
X_5= Marital status (1- married, 0 - otherwise).
X_6 = Price of cassava products (₦).
X_7= Taste and Fashion.
X_8 = Religion.
X_9 = level of educational (1- educated, 0- otherwise).
μ= The error term.

2.6. Pearson Correlation

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

r = correlation coefficient.
x = income y = cassava products.

3. Results and Discussion

3.1. Socioeconomic Characteristics of Rural Cassava-Based Farmers

Table 1 revealed the socio-economic characteristics of the cassava consumers in the study area. Above average of the respondents (56.4%) were female headed households and the remaining were males, implying that female household heads were more involved in cassava consumption than their male counterparts. This may be since gender of household head could influence food consumption pattern of households (Agbola, 2003) who noted that gender was one of the socio-economic characteristics that influenced household demand. The age distribution of the cassava farmers revealed that (12.7%) of the respondents fell between 18 - 30 years of age, about (44.5%) of the household head fell between age 31- 50 years while about (42.7%) were between 51-80 years. The mean age was 49.5 which indicates that most of the consumers were in their active age. Majority of the respondents (61.8%) were married. This indicates that consumption pattern was found to be greatly influenced by couples' decision. Majority of the respondents had relatively large household size. About (51.8%) had households' size of 1-4 persons, about (30%) had households' size of 5-8 persons and (14.5%) had household size of 9-12 persons, while others (3.6%) had households' size of 13-16 persons.

The mean household size was 4 persons, implying that the cassava consumer's choice of the products is influenced by their family size (Amaza, Umeh, & Adejobi, 2009). On the other hand, large household size is associated with increased household consumption expenditure. Large family size implies increase in family expenses since almost all members depend on the family. The Organization for Economic Co-operation and Development (OECD) (2013) reported that the number of persons living in a household is in close relation with consumption. Emphasizing that the total expenditure and household size are positively and directly related. Most of the cassava product consumers (74.5%) were Christians while (21.8%) were Muslims and (3.6%) were Traditional worshipers. This implies that cassava consumers cut across religious boundaries.

Majority of the respondents (76.4%) are literate (i.e. primary, secondary, and tertiary education) which allowed them to make a rational choice and decision on food items to be consumed. Majority of the respondents (63.6%) earned between ₦1,000- ₦30,000 annually and (19 .1%) of the respondents earned between ₦31,000-₦60,000 respectively, about (8.2%) earned between ₦61,000- ₦90,000 annually, while others: (8.2%),(1%) earned between ₦ 91,000-₦120,000 and ₦121,000-₦150,000 annually respectively. The findings prove that most of the respondents are low income earners. The high variability of household income implies a wider variation in purchasing power of households and subsequently, the households demand for food (Muhammad, D'Souza, Meade, Micha, & Mozaffarian, 2017) have shown that household income influences food consumption.

Table-1. The socio-economic characteristics of the respondents.

Variables	Frequency	Percentage (%)	Mean
Gender			
Male	48	43.6	
Female	62	56.4	
Age (years)			49.5
18-30	14	12.7	
31-50	49	44.5	
51-80	47	42.7	
Marital Status			
Single	9	8.2	
Married	68	61.8	
Divorced	23	20.9	
Widow	10	9.1	
Household Size			4
1-4	57	51.8	
5-8	33	30.0	
9-12	16	14.5	
13-16	4	3.6	
Religion			
Christianity	82	74.5	
Islamic	24	21.8	
Traditional	4	3.6	
Level of Education			
No formal	26	23.6	
Primary	30	27.3	
Secondary	33	30.0	
Tertiary	21	19.1	
Income Per Annum			₦26,800
₦1,000-₦30,000	70	63.6	
₦31,000-₦60,000	21	19.1	
₦61,000-₦90,000	9	8.2	
₦91,000-₦120,000	9	8.2	
₦121,000-₦150,000	1	0.9	

3.2. Forms of Cassava Products Available in the Study Area

The forms of cassava products consumed by the respondents are represented in Figure 2. The results show that the respondents consume a variety of cassava products with the highest form to be garri which is consumed by 45.5% of the respondents. Pupuru was consumed by 9.1% of the respondents, followed by lafu with 27.3% and lastly fufu which is consumed by 18.2% of the respondents.

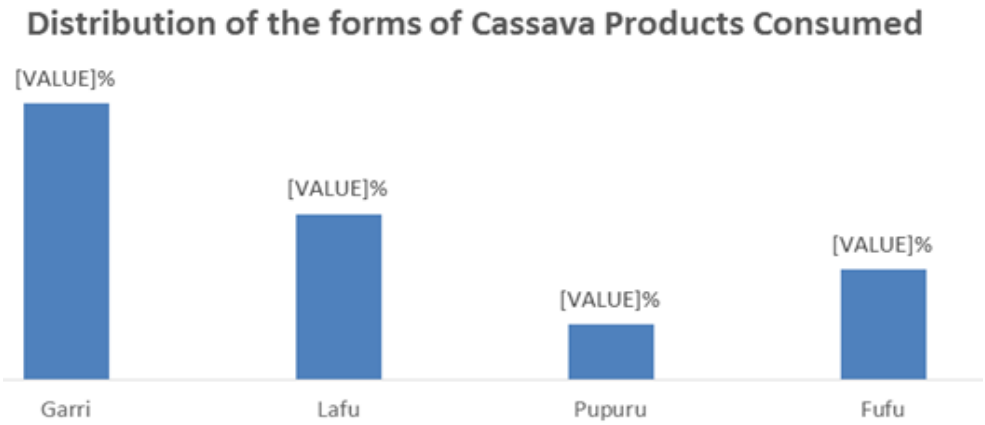

Figure-2. Distribution of the forms of cassava products consumed in the study area.

3.3. Factors Affecting Consumer's Preference for Cassava Products

The factors that affect consumers' preference for cassava products in the study area were presented in Table 2. The value of the coefficient of multiple determination (R^2) was obtained and its statistical test indicates that the age, household size, income, quality of the product, marital status, price, taste and fashion, education and religion variables explained about (52%) of the variation in the quantity of cassava products consumed in the study area. Household size was found to be positively significant at (5%), implying that an increase in this variable will give rise to a 125% increase in cassava products consumption. This may be due to the low price of the products, easy accessibility and availability, quality, and health benefits of the cassava products. This agrees with Eze and Nwibo (2014) which found that household size is the major factor that influences the consumption of Cassava Value Added Products. Likewise, income is found to be significantly affecting the consumers' preference by 77% increase, this is significant at 10% level. This implies that an increase in the consumers' income will lead to the increase the consumers' preference by 0.77. This follows (Muhammad et al., 2017) and a-prior expectation that an increase in income will increase consumption of normal goods. Age shows negative relationship with consumers' preference, this follows a-prior expectation. The older the consumers are, the lower the likelihood to consume cassava products this is because too much cassava and/carbohydrates food is said to be indirectly related to some illness such as night blindness, high blood sugar and diabetes (Food and Agriculture Organization (FAO), 2018).

Table-2. Result of Logistic regression showing the factors influencing consumer's preferences for cassava products.

Variable	Coefficient	Std. Error	t-ratio
Age	-0.737	0.628	-1.174
Household size	1.250	0.573	2.183**
Income	0.770	0.437	1.762*
Quality of the product	0.222	0.371	0.598
Marital status	0.367	0.599	0.613
Price	0.966	0.867	1.134
Taste and fashion	1.257	0.852	1.475
Religion	1.054	0.719	1.466
Education	0.172	0.251	0.685
Constant	4.417	2.360	1.872
R^2	0.52		

Note: ** =significant at 5%; * =significant at 10%

3.4. Relationship between Family Income and the Type of Cassava Product Consumed

The result of the Pearson correlation shows a correlation coefficient of 0.24, this revealed that there is a weak, but positive relationship between household income and the consumption of cassava products by the households. This relationship is not statistically significant. This result indicates that the higher the household income, the more the consumption of cassava products but could not be relied upon statistically since consumption of cassava products cut across all levels of income. The result is in line with the result of Morris, Drake, Ezemenari, and Diao (2007) who noted that as family income increases, consumption of cassava increases with a decreasing rate.

Table-3. Result of Pearson correlation between family income and the product consume.

Variables	Household Income	Cassava Product	P-value	Decision
Household income	1.00	0.24	0.48	Not significant
Cassava products	0.24	1.00		
N	110	110		

Figure 3 shows the constraints faced by households for cassava products preference. The top constraints was price of cassava products which is faced by (85%) respondents, implying when there is increase in price of cassava products, the respondents will rather consider the substitute products than getting the cassava products at an excessive price. This was followed by taste which ranked second as indicated by 80% respondents. The third (73.0%) constraint faced by the respondents was household size, implying that most of the respondents consume more cassava products such as *garri* for both drinking and making *eba* because of the family size and low price of the product. Followed by proximity of the respondents to the market or place of purchase (63.7%), age of the respondents (61.9%), household income (55.8%), methods of processing of cassava products (54.9%) and lastly norms and culture (46.9%).

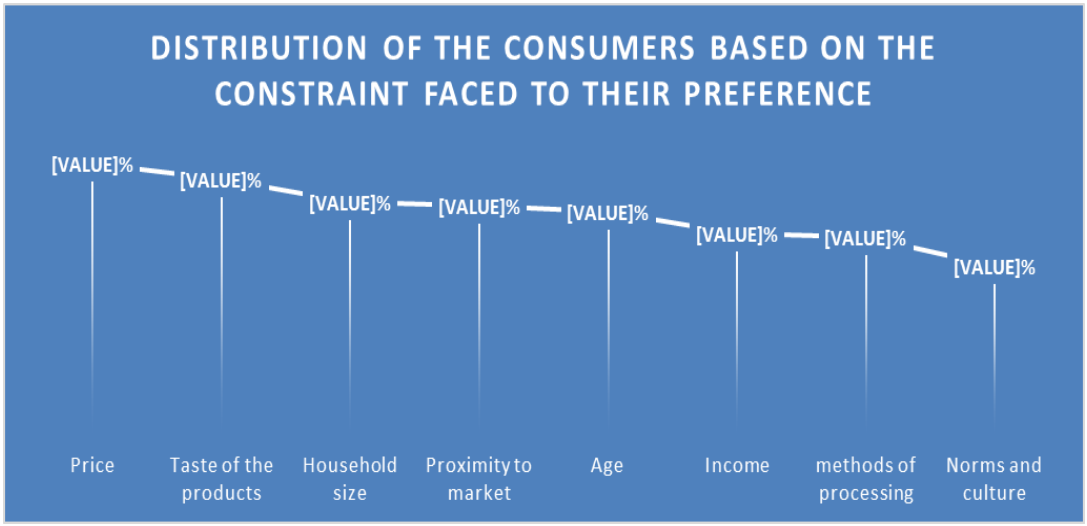

Figure-3. Distribution of the consumers based on the constraint faced to their preference.

4. Conclusion and Recommendations

The study shows that most of the household heads were between 31-50 years of age, with a mean age of 49.5, this result implied that cassava consumers were mainly of middle-aged group. Majority of the respondents about (61.8%) were married and have average family size of 4, this indicates that high proportion of cassava consumers are married, the result also proves that majority of the consumers are Christian at 74.5% and most of the household head are civil servant and they purchase most of their cassava products from shop and open market at 38.4% and 31.5% respectively. That results also showed the mean income of the household to be ₦26,800 and (51.3%) respondents consume one cassava products or the other on daily basis, about (39.8%) of them consume it at most once a week, and (6.3%) consume it once in two weeks, while (0.9%) consume cassava products occasionally.

The result of the cassava products consumed shows that *garri* is the major cassava product consumed in Akoko South-West local government area of Ondo state, followed by *lafu* (24.55%), *pupuru* (8.2%) and *fufu*. This indicates that *garri* could be easily purchased mainly from nearby retail shops and gives a signal that it is less costly than- and more preferred to other cassava products in the study area.

The result of the Logistic regression shows that household size and income are the factors that influence the consumption of cassava products at statistically significant levels of 5% and 10% respectively in the study area.

The result of the Pearson correlation test shows that there is no significant relationship between household income and the cassava products consumed even though there is a low correlation between them. Increase in income will bring less than the proportionate increase in the product consumed.

This research recommends that processors should go further into the processing of *garri* due to its high market demand. In order to control the prices of the cassava products, the government, Ministries of Agriculture should help to provide improved technologies so as to improve production, processing and adding value to the cassava products, thus increasing the household income and consumers' preference for the products. Scientists and bioengineers should help develop cassava varieties with less cyanide content and healthier for consumption by the old. While this is done, extension agents and organizations should provide

support and adequate information to the producers to use the improved varieties-such as vitamin A rich varieties, this will invariably increase the attractiveness and value of the products, and consumers' preference for the cassava products.

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