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Full Length Research

# Consumers Preference for Imported Rice over Locally Processed in Sokoto and Kebbi States, Nigeria

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**A survey was conducted to analyze the consumer's perception toward locally processed and imported rice in Sokoto and Kebbi State. One thousand questionnaires were administered in the two major markets of the state capitals. Data was collected and analyzed using descriptive statistics and binary logistic regression. The results revealed that majority of the respondents in the study area were male with (93.00%) and have acquired Qur'anic level of education, married (95.00%), (63.00%) are on the opinion that locally processed rice (LPR) is more available in the market and majority (54.00%) shows that they purchased (LPR) than the imported (IR) one while majority (52.00%) revealed that they prepared (IR) than (LPR). The result also revealed that majority (30.00%) chooses (LPR) due to its nutritional, economical, and good cooking quality. The result shows that by combining from strongly agree to agree scales, (90.00%) of the consumers purchased rice due to its nutritional contents (96.00%), purchased rice because of its physical appearance (77.00%), shows that (LPR) is more nutritious than the (IR). The result of binary logistic model of perception of respondents toward locally processed rice was presented. The chi-square is 13, significant at 1% significant level, indicating that the independent variables considered jointly have a statistically significant impact on choice of locally processed rice purchased. Likewise, the Cox and Snell and Negelkerke $R^2$ are 0.134 and 0.191 respectively. It is therefore recommended that Nigerian should produce rice that have these attributes such as aroma and long grain since the attributes were found to affect market and consumers acceptance.**

**Key Words**: Consumers, Rice, Preference, Locally Processed.

## INTRODUCTION

More than half of the world's population depends on rice as the major source of calories. Despite the efforts made by Nigerian government to reduce the importation of rice to the country and provision the conducive environment for the local rice farmers, Schramm (2006), discovered that most Nigerians prefer to consume imported rice brands as compared to local rice varieties. The reason could be that; most Nigerian rice processors lack adequate technology of rice processing machines that process the rice to meet international standard. Nigeria has the potential to be self-sufficient in rice production, both for food

and industrial raw material needs and for export purpose. However, a number of constraints have been identified as limiting factors to rice production. Most of the local rice produced in Sokoto and Kebbi State are processed locally using different traditional methods. Many local rice processors in the study area used various traditional methods in processing their local rice and sold it locally at low price as compared to the imported one. Whether or not the locally processed rice in Nigeria gained more attraction by the consumers over the imported rice is not known. Therefore, there is need to have the knowledge of the perception of consumers toward imported and locally produced and processed rice. The main aim of this research is to evaluate the perception of people toward locally processed and imported rice in the study area.

Rice is a staple food in many developing countries. Unfortunately, the current food price increase has been most pronounced with rice, with attendant food security problem on Nigeria import-dependent country. Today, the price of a bag of imported rice in the country has been increasing, whereby majority of Nigerian populace might no longer affordable for the imported rice. Thus, a research work that will evaluate the form of rice that is more affordable and cost effective is necessary. This will be of great benefit to rice producers, processors, consumers as well as policy makers. Over the years, rice in Nigeria has received enormous research attention. Erenstein and Lancon (2003), argue that locally produced rice has the potential to meet food demand of consumers in Nigeria if efficient production practices are employed. They also find that the price of imported rice, which is a function of world market price, import duties, transport costs, and a quality premium, puts a gap on the price of local produce. Lancon et al., (2003) conduct a survey of imported rice consumer's preferences and suggest that imported rice cleanliness is the overwhelming technical feature explaining the expansion of imported rice consumption in Nigeria. Next to cleanliness are swelling capacity, taste, availability and grain shape. Other studies on rice in Nigeria include research on market supply response and demand for local rice (Rahji and Adewumi, 2008); using stochastic frontier production functions and other production function models to test for technical efficiency in rice production in Nigeria (Ayinde et al., 2009). However, none of these studies has focused on consumer preference and the possible combined effects of habit persistence and perceived quality differences between imported and locally processed rice in Nigeria. In the general demand literature, there are multiple studies that address either habit persistence or preference for quality differences in isolation. For example, (Dynan, 2000; Heien and Durham, 1991; Fuhrer 2000; Campbell and Cochrane, 1999; and Abel, 1990).

Researchers have also done some interesting work on quality variation and its role in consumption behavior. For instance, Nelson (1991), rejects the theoretical arbitrariness of the simple sum of physical quantities used as a measure of demand in the 'quality' literature, and investigates alternative measures of demand derived from restrictions on quality variation, consumer preference or relative prices. However, none of these studies on habit and quality has focused on Nigeria, the highest consumer of rice in the West African sub-region. The contribution of the current study, therefore, is that it provides a theoretically consistent way of combining habit persistence and preferences for quality differentiated goods in a single consumption model, and applies this framework to investigate preferences for imported rice over locally-produced rice in Nigeria. The resulting empirical model can identify the extent to which consumer demand for imported rice in Nigeria over locally processed one.

## METHODOLOGY

### Geographical Location

The research was conducted in Kebbi and Sokoto States. The two States are located between Latitude 12º 46' to 13.06'N and Longitude 4º 22'to 5.24'S in the Sudan savannah agro-ecological zone of Nigeria. The climate of the area is semi-arid characterized by erratic and scanty rainfall that last for about four months (May - September) and long dry period of about 7 months (October - April). Occupation of the inhabitant is generally agrarian with about 60% of the population engaged in farming and selling of farm products including animal husbandry and other related activities, cash crops, food crops like rice, maize, millet etc, vegetables like onion, lettuce, tomatoe etc.

The study covers the largest markets in the state capitals of the two states and addition of four markets within four local governments' areas from each state. The purposive, based on high patronage of locally processed and imported rice in the markets. A total

of 500 households were systematically selected from each state making a total of 1000 respondents interviewed in the study. Likert scales were employed to assess the farmers' Preference toward imported rice over local ones (Wong et ai., 2010). Each item on the Likert scale has a weight or score attached to it. A person's score on the final attitude scale is simply the sum of acceptance of alternatives. Weight is usually assigned so that high scores indicate favorable attitudes toward more preferred rice. The responses were ordered on a five-point ikert format ranging from strongly disagree (SD=1) to strongly agree (SA=5), for positive statements and converse, for negatively worded statements. The data obtained from the questionnaire was analyzed by using both descriptive and inferential statistics such as percentages and frequency distribution to achieve objectives of the study.

Since the exact perception assigned to the different rice formats in a consumer's consideration set on a purchase occasion is unknown, we cannot state precisely which rice will be selected. However, the probability that the consumer, say i; will select rice format j on a particular purchase occasion may be specified as

**Pij = prob {Uij>Uik;(kεJ,k≠j)}.**

Where Pij = probability that consumer i selects rice j on a purchase occasion;
Uij=Vij +eij= perception assigned to rice j by consumer i;
Vij=deterministic component of perception, and
eij=stochastic component of perception, and
J=set of rice.

A random coefficients logit model of rice choice assumes a consumer faces a choice set consisting of J rice. The perception that consumer i; say, has assigned to rice j is modeled as;

Uij=Vij+eij=Xijβij+eij=∑βijXij+eij.

Where, Xij is a vector of observed rice attribute perceptions and household descriptors; βi is a vector of unobserved coefficients for each consumer that varies randomly over the consumers according to a distribution; eij is the unobserved random component independent of βi and Xij. The term eij is assumed to be distributed extreme value. The variance in βi will induce correlation in perception over rice, and the coefficient vector for a consumer, βi; may thus be viewed as the sum of a population β representing the average (over all consumers in the market) perception and an individual deviation, ηi; which represents the consumer's idiosyncratic values. Therefore, the unobserved portion of perception is equal to, ηiXij+ei

## RESULTS AND DISCUSSION

Characteristics of rice consumers such as sex, educational level, marital status are important in conducting product market acceptance studies because they influence consumption patterns. Results in Table 1 reveals that out of one thousand (1000) respondents ninety three percent (93.00%) of them were male while only seven percent (7.00%) of them were female. This can be connected to the religious believe of the peoples in the study area as the area is dominated by Muslims. It also indicates that ninety five percent (95.00%) the respondents were married, while the remaining 5.00%of the respondents were single. Based on the information generated from the result in Table 1, six percent (6.00%) of the respondents attended only primary school, while 4.00% of the respondents have attended secondary school, twenty two percent (22.00%) of the respondents have attended tertiary institution, forty nine percent (49.00%) of the respondents have only qur'anic education, while the remaining nineteen percent (19.00%) of the respondents have attended all level of education.

### Distribution of the respondents according to Consumers Perception on Locally Processed and Imported Rice

The respondents responses with regard to consumers perception while purchasing local and imported rice in the study area presented above in Table 2 as described in the previous descriptive analysis of the perception some procedure was apply in describing the descriptive analysis result of the respondents agreements/disagreements about the perception related question while purchasing local and imported rice by combining the respondents responses from strongly agreed, agreed, disagreed, strongly disagreed and neutral respectively.

In order for the consumers to accept for a product, that particular product (Rice) must possess certain characteristics that are most important and attractive

**Table 1**. Distribution According to Socio-economic Characteristics of the Respondents.

| Characteristics | Frequency | Percentage |
|---|---|---|
| **Sex** | | |
| Male | 930 | 93.00 |
| Female | 70 | 7.00 |
| **Total** | **1000** | **100.00** |
| **Marital Status** | | |
| Married | 950 | 95.00 |
| Single | 50 | 5.00 |
| **Total** | **1000** | **100.00** |
| **Educational Level** | | |
| Primary | 60 | 6.00 |
| Secondary | 40 | 4.00 |
| Tertiary | 220 | 22.00 |
| Qur'anic | 490 | 49.00 |
| All of the above mention | 190 | 19.00 |
| **Total** | **1000** | **100.00** |

**Source Field Survey, 2017.**

to consumers' attention. Respondents were asked that, in their decision for the factors considered on locally processed and imported rice, how they will rate the importance of the following rice perception indicators. Each perception indicator was measured on a five-point Likert scale from (strongly agree to strongly disagree). The value five was the highest value of disagree, Strongly agree for 1, Agree for 2, Neutral for 3, Disagree for 4, Strongly disagree for 5. The indicators of rice perception which includes processed rice is purchased on its nutritious contents, processed rice is purchased on its physical appearance, locally processed rice is more nutritious than the imported rice, and imported rice is more nutritious than the locally processed rice. Locally processed rice is cheaper than the imported rice, imported rice is cheaper than the locally processed rice, etc. Consumers decision on perception on purchasing the processed rice base on its nutritional contents was presented in Table 2 from the Table by combining the statements on strongly agreed to agree, about ninety percent (90.00%) of the of the respondent who buy locally processed rice claimed that they purchase local rice because of the belief they have that it has high nutritional content and therefore good for their health. It indicates that a nutritional content of a product (Rice) is a good indicator in knowing the consumers perception toward choosing the product. From Table 2, consumers decision on perception on purchasing the processed rice base on its physical appearance was presented by combining statement from strongly agree to agree ninety six percent (96.00%) of the consumers purchase processed rice base on its physical appearance. This indicates the respondent purchase rice just by mere looking on the physical appearance. From this Table also, by combining from strongly agree to agree we can see that about ninety percent (90.00%) of the consumers agree that locally processed rice is easy to cook, more palatable, remain intake before and after cooking and it is more economical than the imported rice in the study area. This indicate that locally processed rice is very soft, it will not sock more water while cooking and another were on the belief that local rice was delicious or has good taste than the imported rice. Combining from strongly agree to agree only twenty eight percent (28.00%) of the consumers agreed with the statement said imported rice is easy to cook, more palatable, remain intake before and after cooking and it is more economical than the locally processed rice. While majority sixty seven percent (67.00%) disagreed and strongly disagreed with the statements mention above. This indicates that imported rice is very hard while cooking, it is not palatable as locally processed rice while eating and it will sock much water than the locally processed rice as by the opinion of the respondents in the study area. As it was shows in the Table 2, by combining statements from strongly agree to agree about ninety

**Table 2.** Perception of Consumers on Locally Processed and Imported Rice.

| Variable | 1* | 2* | 3* | 4* | 5* | Mean | Standard Deviation |
|---|---|---|---|---|---|---|---|
| **Nutritional Content** | 27.00 | 63.00 | 7.00 | 1.00 | 3.00 | 1.88 | 0.81 |
| **Physical Appearance** | 79.00 | 17.00 | 2.00 | 1.00 | 1.00 | 2.30 | 1.290 |
| **Locally processed rice is more nutritious than imported rice** | 23.00 | 54.00 | 8.00 | 4.00 | 9.00 | 3.10 | 1.187 |
| **Imported is more nutritious than locally processed rice** | 12.00 | 10.00 | 53.00 | 15.00 | 10.00 | 1.58 | 0.905 |
| **Locally Processed Rice is Easy to Cook, More Palatable.** | 64.00 | 26.00 | 5.00 | 3.00 | 2.00 | 3.00 | 1.059 |
| **Imported is easier to cook, more palatable** | 9.00 | 19.00 | 32.00 | 35.00 | 5.00 | 1.27 | 0.665 |
| **Locally processed rice is cheaper than imported one** | 80.00 | 17.00 | 1.00 | 1.00 | 1.00 | 3.36 | 0.846 |
| **Imported rice is cheaper than the locally processed rice** | 5.00 | 2.00 | 45.00 | 43.00 | 5.00 | 1.58 | 0.802 |
| **Locally processed rice is more available in the market** | 49.00 | 47.00 | 2.00 | 1.00 | 1.00 | 3.42 | 0.745 |
| **Imported rice is more available in the market** | 7.00 | 46.00 | 30.00 | 15.00 | 2.00 | 1.30 | 0.675 |

**Indicator 1* = Strongly Agree, 2*= Agree, 3* = Neutral, 4* = Disagree & 5* = Strongly Disagree**

six percent (96.00%) of the consumers agreed that locally processed rice is more available in the market. This can be connected with the federal government order not import rice from the outside country because the federal government of Nigeria wants to improve the rice that is being produced in the country. There are generally seven attributes on which consumers rate the qualities of rice. These include the color, aroma, stickiness, taste, absence/presence of foreign materials, expansion and percentage of broken rice. The attributes of local rice were rated in comparison with imported rice. Three attributes considered here include color, absence/presence of foreign materials and percentage of broken rice. This indicates that most of the consumers in the study area strongly agreed with the statement mention above. Result in the Table 2 shows that eighty-eight percent (88.00%) of the consumers range from strongly disagreed and disagree that imported rice is cheaper than the locally processed rice only seven percent (7.00%) agreed with the statements in study area. This indicate that the high proportion of the consumer disagreed that imported rice is cheaper than the locally processed rice this is due to the fact that the imported rice considered to follow many steps before it reaches the consumers more than that of locally processed rice. While five (5%) percent are neutral. Respondents who have received information on rice were then asked whether locally processed rice is cheaper than the imported rice. It was indicated in the Table, eighty percent (80.00%) of the consumers strongly agreed and agree that locally processed rice is cheaper than the imported rice. While only two percent (2.00%) disagreed and strongly disagree with the statements respectively. While twelve percent (12%) are neutral on the statements. indicates that majority of the consumers strongly agreed that locally processed rice is cheaper than the imported rice this may be due to it is processed by human when conferred with the imported rice which is totally processed by the engine right from removing of husk to packaging of the rice.

## Binary Logistic Model Result

The binary logistic model was used in measuring the perception of the respondents toward purchasing locally processed rice. The respondents were asked whether if they purchased locally processed rice or not. The demographic characteristic of the respondents is likely to affect their perception on the choice of rice to be purchased. The inclusion of these

**Table 3.** Binary Logistic Model Result.

| Variable | Coefficient | Standard Error | Sign | Exponential β |
|---|---|---|---|---|
| **Age** | 0.022 | 0.830 | 0.362 | 1.0.22 |
| **Marital Status** | 2.800 | 4.116 | 0.42 | 16.451 |
| **Educational** | 1.928 | 8.258 | 0.004 | 6.876 |
| **Constant** | 3.162 | 6.310 | 0.012 | 0.000 |

**Hosmer and Leme show** = 4.731; 0.786, **Chi-square** = 4.731, **Cox and Snell = $R^2$** = 1.34, **Nagelkerke $R^2$** = 0.191.

variables in the model enables accounting for preference of the respondents toward choosing locally processed rice over imported one.

To determine the impact of the respondents socio-demographic variables on locally processed rice purchase, the variable included in the model are age, marital status and educational level of the respondents were estimated. The result of binary logistic model of perception of respondents toward locally processed rice was presented in Table 3. The chi-square is 13, significant at 1% significant level, indicating that the independent variables considered jointly have a statistically significant impact on choice of locally processed rice purchased. Likewise, the Cox and Snell and Nagelkerke $R^2$ are 0.134 and 0.191 respectively. Although the value of $R^2$ is small it is within the range of other researches. Hosmer and leme show chi-square (4.7) as expected because the smaller the value the better the model fit. As expected, the result to be the coefficients of variables have positive sign thus significant is measured using it is only education is significant among the independent variables. All the variables have positive correlation with choice of locally processed rice purchased. The results show that the older the consumers are the higher the chance (7%) Exp (β) -1= 0dd%. This high percentage of choice of locally processed rice over imported one could be attributed to the fact that older people are more on health conscious than younger one and that is why they have in case preference on local rice than imported one. In case of marital status, a married man has almost 15% chance of choosing locally processed rice [Exβ-1] over imported one. This also could be the reasons of high responsibility of the married people over the un married.

## CONCLUSION

Based on the results obtained from this study, consumer's perception toward locally processed and imported rice was examined. Higher proportion of the consumer agree that locally processed rice is cheaper than the imported rice this is due to the fact that the imported rice considered to follow many steps before it reaches the consumers more than that of locally processed rice. The older the consumers are the higher the chance of patronizing the local processed rice. This high percentage of choice of locally processed rice over imported one by the older people could be attributed to the fact that they are more on health conscious than younger one and that is why they have in case preference on local rice than imported one. It is therefore recommended that Nigeria should produce rice that have these attributes such as high nutritional content, aroma and long grain since the attributes were found to affect market and consumers acceptance.

Based on this research, the policy makers as well as private sectors should be encouraged to focus on those attributes considered by the locally processed rice consumers for improvement. This will increase the demand and satisfaction of the consumers which will eventually increase the economy of individual farmers as well as the national economy at large. In term of the perception of consumers on the nutritional content of the locally processed rice, there is needed to provide adequate storage and preservation method of locally processed rice in order to improve and maintain its nutrients content and avoid spoilage since the consumers choose local rice because of its nutritious contents.

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