Rice grain quality and consumers preference in Lavun and Paikoro local government areas of Niger State, Nigeria

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Abstract

The study analyzed the rice grain quality and consumers preference in Lavun and Paikoro Local Government Areas of Niger state, Nigeria. A total of 198 respondents were selected through a multi-stage sampling procedure from the three ward headquarters from each of the local government. Data were collected through structured questionnaire administered to the sampled respondents. Analysis of the data collected was done using descriptive statistics, Logit and multinomial regression models. Results showed that an average respondent was 37 years old, it was revealed from the study that rice consumption and purchase, was dominated by women in the study area. This implies that the actual purchase of rice is done mostly by women. The current study revealed that knowledge and awareness level among the surveyed consumers about local rice was adequate but the level of satisfaction with the quality was low. The study is therefore of the view that advertising and packaging of rice products, should be done to appeal to the emerging customers. The empirical results from the study shows that consumer choice of rice was influenced by certain quality attributes, and consumers were willing to pay for those desirable attributes. Food safety, aroma and long grain were the quality characteristics that most consumers preferred. It was recommended that government through relevant agencies should develop appropriate policies and strategies to promote the commercialization of smallholder agriculture in Niger State and farmers should effectively make worthwhile the efforts of government and other stakeholders to form and maintain effective farmer groups to take advantage of credit facilities other financial services offered by microfinance and other financial institutions available in the area. The study concluded that consumer choice of rice is influenced by food safety, aroma and long grain attributes, and consumers were willing to pay for those desirable attributes. Therefore, it is recommended that farmers should produce rice that have these attributes, since these attributes were found to affect market, consumer acceptance and willingness to pay.

Keywords: Rice, Grain, Quality, consumers, Preference

Introduction

Rice belongs to the family *"Gramineae''* and the genus *"Oryza"*.Rice is the seed of the grass species *Oryza sativa* (Asian rice) or *Oryza glaberrima* (African rice). Rice is the most commonly cultivated cereal throughout the world today (Oko and Ugwu, 2010). The African rice is believed to have originated from the wild rice (O. barthii) about 3500 years ago and was domesticated in the inland Delta area of Nigeria from where it spread to other parts of Africa. Rice accounts for over 20% of global caloric intake and has been an important food commodity for most people in Sub-Saharan Africa particularly in the West African region. Driven by changing food preferences in the urban and rural areas and compounded by high population growth rates, rice consumption in sub- Sahara Africa has been growing by 6 percent per annum, more than double population growth rate (African Agriculture Technology Foundation, 2012).

As a cereal grain, it is the most widely consumed staple food for a large part of the world's human population (Dutta, 2014). It is considered as the most important food crop and primary source of food for more than 30 percent of the world population. The planting of rice covers about 146 Million hectares of land annually representing about 11 percent of the world cultivated land (Kassali *et al.*2010). Other cereals of paramount importance include maize, sorghum, wheat and millet. Rice is the fastest growing staple food source in most African countries, providing the bulk of dietary energy to the growing population in most developing countries of Africa, rice accounts for 715kcal/caput/day, 27 percent of nutritional supply of energy, 20 percent of nutritional protein and 3 percent of nutritional fat (Kassali *et al* 2010). Rice is positioned as the 5th most prominent source of energy in diet responsible for about 9 percent of caloric intake (FAOSTAT, 2012). Rice also serves as raw materials for industries. In 2006, paddy rice production in the Sub-Saharan Africa (SSA) was estimated at 14.6 million tonnes. Rice production in Africa grew at 3.23% per annum from 1961 to 2005 (Kassali *et al*, 2010).

Rice is grown in every region in Nigeria including in semi-dry savannah of Middle Belt and the North. Cultivation is largely by small-holder farmers who are also involved in paddy processing by means of small scale mills with average capacity of two tonnes per day. Nigerians consume around 5.5 million tonnes of rice annually, of which about 3.6 million tonnes are produced locally, mostly subsistence farmers while the balance of 1.9 million tonnes is imported. The large size of the rice market in Nigeria, as well as the high duties and costs associated with importing the commodity, makes local production a fundamentally attractive industry (Claude,2011). According to Takele (2010), rice is sold and consume in all parts of the country , including Lavun and Paikoro Local Government Areas.

918

Rice quality is judged based on attributes, which could be classified several ways. Product characteristics could either be intrinsic, such as taste, texture, or color; or extrinsic to the product, such as packaging, brand, or label. Another attribute classification distinguishes between search, experience, and credence attributes. Search attributes are available for product evaluation before purchase, such as price, appearance, brand, and packaging. Experience attributes can be evaluated only upon product experience, thus after purchase or product use examples are taste, texture, ease of cooking, and swelling capacity. Credence attributes are attributes that consumers cannot evaluate or verify themselves. Instead, they rely on people or institutions, such as government controls or industry claims. Attributes relating to production, processing, and product contents are typical examples of the credence-type attributes. The aim of the study is to study rice grain quality and consumer's preference for foreign and local rice attributes in Lavun and Paikoro local government area of Niger State. The specific objectives to be achieved are to: i. describe the socio-economic characteristics of local and foreign rice consumers in the study area and assess the household willingness-to –pay for various characteristics of rice by income group.

Materials and Method (Methodology)

Study Area

The study was undertaken in two selected Local Government Areas (LGAs) Lavun and Paikoro (LGAs) of Niger State Nigeria. Niger State is located between Latitudes $8^0 22'N$ and $11^0 30'N$ and Longitudes $3^0 30'E$ and $7^0 20'E$.

Method of Data Collection

Primary data was used for the study. The data was collected using a well-structured questionnaire administered to the respondents by the researcher through multi stage sampling techniques. Information on the socio-economic characteristics of the farmers such as age, gender, marital status, farm size, level of education, average income per month, householdweekly expenditure for food, household weekly expenditure for rice in the study area were the data required for the study.

Analytical Techniques

Combinations of analytical techniques were used to collect data in the study area. These include descriptive statistics and Logit regression was employed to analyze the data elicited from the

field. Specifically, Objectives (i) was achieved using descriptive statistics such as frequency distributions and means. Logit regression was also used to achieve objective (ii)

Results and Discussions

Socioeconomic Characteristic of Farmers in the Study Area

The findings from the field survey reveal some personal and household characteristics of the respondents in this study are presented in Table 1. Results in Table 1 shows that greater proportions (74.2%) of respondents were females whiles (25.8 %) were males. This finding may not be unconnected with high female participation in the household work in traditional African household. Gender wise, rice purchase is dominated by female consumers. In a traditional Nigerian household, women (females) are responsible for purchasing and preparing of food. It is the women's duty in most African households Nigerian inclusive to take decisions on the types of food that are made available and the forms in which they are prepared for consumption by members of the household (Isife and Emodi,2000). The findings from the pool survey reveal that the mean age of respondents was 37 years with a minimum age of 19 years and a maximum age of 71 years. This implies that most of the respondents are within the working age group, likely to have some disposable income for household expenditure. It was also indicated in the table that majority (81.2%) of the respondents were married while the remaining (18.8%) were single. Cooking remains the exclusive responsibility of women that are married and the preferred food is rice (Basorun, 2008).

The findings on the size of household is determinant of both the amount of food that would be consumed and purchased by the household to a very large extent .The mean household size as shown in table 4.1 was approximately 510persons per household with the minimum household member of 1 and the maximum household members of 10 persons. Earlier studies (Stewart et al., 2004) have suggested that household size and a large number of dependants partly influence food choices. The Respondents stated the highest level of education obtained when answering questionnaires. Result from the table 1 indicates that about (12.6%) have attended, (24.2%) have attended secondary school, (16.1%) have attended tertiary, (19.1%) have attended adult education while, the remaining (28.0%) have attended informal education such as Quaranic school. The findings from the field signify that most of the consumers captured in this study are to some extent educated. Respondent occupation status of the respondents was examined and the findings reveals civil servants workers recorded 20.3% of the respondents, 25.8% of the respondents are into farming and 43.8% were traders respectively. For respondents 'employment,

920

the categories of employment were divided into four categories. The categories were; the government sector, self-employed, agricultural sector, and others. Respondents working with the government sector recorded 21.2%, 46.8% were from self- employed, 25.2% and 6.8% were working in the agricultural sectors and others respectively. The average monthly income of the survey consumers was indicated in the table as 54,400 Naira, with the minimum monthly income of 18,000 Naira and a maximum monthly income of 150,000 Naira. The results indicate that most of the respondents are probably in a more convenient financial position to buy rice. average respondents indicated that their household spent 12,500 Naira weekly on grocery stores and other food stuffs. On the other hand respondents indicated that their household spent 4000 Naira weekly on rice.

Table 1: Distribution of respondents according to personal and household characteristics

Characteristics	Frequency (n= 198)	Consumers (%)	Mean
Sex			
Male	51	25.8	
Female	147	74.2	
Age			37
Average household size			10
Marital status			
Single	37	18.8	
Married	161	81.2	
Educational level			
Primary	25	12.6	
Secondary	48	24.2	
Tertiary	32	16.1	
Adult education	38	19.1	
Informal education	55	28.0	

Occupation status

Civil servant	59	30.3
Farming	50	25.8
Trading	89	43.9
Main source of income		
Government	42	21.2
Self-employed	93	46.8
Agriculture	50	25.2
Other	13	6.8
Average income per month		54,400
Household weekly expenditure for food		12,500
Household weekly expenditure for rice		4000

Source: Field survey, 2020

Marginal willingness to pay estimates

The MWTP as shown in table 3 indicates, for each attribute, the average amount that a person would prepare to pay, indefinitely, for an increase (decrease) of one unit in the attribute level. Result in the table indicates that consumers are willing to pay more for food safety, with an associated MWTP estimated of 3.80. The size of the rice grain (long grain) which has significant utility for consumers is the second most favored attribute, with an associated WTP estimate of 2.64. This empirical result agrees with the studies conducted by Juliano *et al.*, (1992) for consumers in Hong Kong which showed that consumers pay high premiums for long grain. This clearly indicates that consumers are more willing to pay for long grain rice than medium grain rice which had an estimated MWTP value of -0.20. This therefore creates opportunity for local rice farmers to produce more long grain rice to attract the needed consumers'.

The third preferred attribute is aroma with estimated MWTP value of 1.40. This appears to support previous results that consumers generally have a strong preference for aromatic rice. The obtained result is similar to that of Galawat and Yabe (2010) study in Brunei where consumers were willing to pay for this attribute. However, consumers are found not willing to pay for the taste attribute where MWTP estimate showed negative sign (-3.20).

Table 3: Marginal Willingness to Pay (MWTP) estimates from conditional logit model

Attributes	Coefficients	Standard Error	Z-values	P>{z}	MWTP
Taste	-1.60	0.30	-4.56	0.004	- 3.20
Food safety	1.90	0.31	7.24	0.003	3.80
Aroma	0.70	0.30	1.20	0.038	1.40
Long	1.32	0.40	4.13	0.001	2.64
Medium	-0.10	0.35	-0.37	0.687	-0.20
Price	-0.50	0.02	-21.00	0.000	

Source: Author's own calculation, 2020

Conclusion and Recommendation

From the findings of this study, it was conclude that consumer choice of rice is influenced by food safety, aroma and long grain attributes, and consumers were willing to pay for those desirable attributes. Therefore, it is recommended that farmers should produce rice that have these attributes, since these attributes were found to affect market, consumer acceptance and willingness to pay. Also private sector should invest in modern processing facilities for local rice this would place the commodity in a better position when compared with imported rice commodity. This will encourage local rice consumption and also afford the farmers a good price for the local commodity being produced.

References

Adeyeye, J.A., Navesero, E.P., Ariyo, O.J. & Adeyeye, S.A., (2010). 'Consumer preference for rice consumption in Nigeria', *Journal of Humanities, Social Science and Creativity Arts* 5(1), 26–36.

Akaeze, H.O., (2010). 'Consumer preference for imported rice in Nigeria – Perceived quality differences or habit persistence?', Unpublished M.Sc. thesis, Department of Agricultural, Food and Resource Economics, Michigan State University.

Africa Rice, (2012). *Boosting Africa's rice sector: A research for development strategy 2011–2020*, Africa Rice Research Centre, Cotonou, Benin.

Ayanwale, A.B. and Amusan, C.A. (2012). Gender Analysis of Rice Production Efficiency in Osun State: Implication for the Agricultural Transformation Agenda. Paper presented at the 13th National Conference of the Nigerian Association of Agricultural Economists, Obafemi Owolowo University, Ile –Ife, Nigeria, September 25th – 27th.

Basorun, J.O. (2008). Analysis of the Relationships of Factors Affecting Rice Consumption in a Targeted Region in Ekiti – State, Nigeria. *Journal of Applied Quantitative Methods 4(2):* 145-153.

Dutta, A. K. (2014). Narrow Range of Adaptability of Hybrid Rice Production to Abiotic Stresses utilizing CGMS. System. *International Journal for Pharmaceutical Research Scholars* 3(2): 70-76.

Erhabor, P.O. & Ojogho, O., (2011). 'Demand analysis for rice in Nigeria', *Journal of Food Technology* 9(2), 66–74. https://doi.org/10.3923/jftech.2011.66.74

Food and Agriculture Organization of the United Nations Statistics Division (FAOSTAT). (2014). Crop production and trade. Rice production, importation harvested area.

Galawat, F. and Yabe, M. (2010).Assesing Consumer's Preference for Local Rice in Brunei: An Appplication of Choice Model. *J. ISSAAS.* 16 (2):104 – 115.

Kassali, R., Kareem, R.O., Oluwasola, O. & Ohaegbulam, O.M., (2010), 'Analysis of demand for rice in Ile Ife,

Osun State, Nigeria', *Journal of Sustainable Development in Africa* 12, 2.