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Households' consumption willingness for locally processed rice in Kogi State, Nigeria

A.O. Ojo*, O.M. Animoku, M.A. Ojo

Department of Agricultural Economics and Extension Technology, Federal University of Technology, P.M.B. 65, Minna, Niger State, Nigeria

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Abstract. *Importation of rice in Nigeria discourages local production and hinders the realization of the self-sufficiency goal of the Nigerian Government. With improvement in processing technology and information on its health benefits, consumers of rice are gradually shifting ground for locally produced rice. Hence, this paper explores the priority of local rice in household food expenditure in Kogi State, Nigeria. Simple randomized sampling technique was used to select a sample of 120 respondents. Primary data were sourced from civil servants within the locality. Statistical tools involved descriptive statistics and regression models for the assessment of the households' attitude, their monthly expenditure, determinants of consumption preference and demand for local rice. The findings revealed that the majority of the households preferred local rice due to the good health benefits and palatability, among others. About 58.3% of the households spent ₦ 20000 - ₦ 40000 (1 NGN = 0.0028 USD) on food while 72.2% spent about ₦ 5000 on local rice monthly. Household income, household size, age, taste, expenditure on food and non-food were the main factors that affected preference for local rice. The study also indicated that local rice in the study area was price elastic and income inelastic. Increased awareness of the nutritional benefits of local rice and its quality improvement has increased the consumers' preference for local rice in the area.*

Keywords: consumption pattern, demand, expenditure, health benefits, local rice

Introduction

Nigeria is the continent's leading consumer of rice, one of the largest producers of rice in Africa food security crop, rice is an essential cash crop because it is mainly produced by small-scale producers who usually sell 80% and consume only 20% of the total production and hence generates income for Nigerian farmers unlike any other cash crop in the country (FAO, 2016). In the past, as affirmed by Ebuechi et al. (2007), most Nigerians preferred to consume imported rice brands as compared to local rice varieties because most Nigerian rice processors benefit lacked adequate technology to meet international standard (Emodi and Madukwe, 2011). More so, imported rice was better in terms of quality, cleanliness, swelling capacity, taste and grain shape (Lancon et al., 2003; Odusina, 2008; Bamidele et al., 2010). This trend has persisted in spite of the closure of the border, rise in USD exchange rate and heavy custom duty on imported rice (Lancon et al., 2003). Though importation could sometimes be beneficial, it is detrimental as it limits local rice output, trade deficit could lead to the erosion of domestic markets and currency devaluation, it reduces the number of processing firms thereby increasing unemployment rate, discourages farmers from further production and weakens the zeal of prospective farmers. This results in reduction of national and farmers' income, increases food insecurity and hinders the realization of the self-sufficiency goal of the government. Currently, the consumption of local rice among households in Nigeria is increasing despite the importation into the country. This is because unlike the polished rice which has been stripped of its major original nutrients such as vitamins, iron, magnesium, zinc and some other nutrients during the process of refining, research has proven that the locally made Nigerian rice still maintains these basic nutrients because it still contains the aleurone layer, which makes it healthier than the polished rice (EHF, 2017). In addition, the presence of foreign matter (stones, debris and shaft) in milled rice is now gradually being eliminated with the presence of new and improved processing technology brought about by the Federal Government of Nigeria (FGN) intervention through IFAD and other agencies.

In recent times, there have also been new discoveries as regards the health benefits of local rice, which included promotion of healthy bowel movements thereby preventing constipation in humans, strong bone formation and maintenance of healthy nervous system due to the presence of magnesium, which is also needed for the absorption of calcium. In addition, its consumption increases the level of enterolactone in elderly women which reduces the risk of breast cancer. It also contains lignin, a phytonutrient that helps in reduction of risk of heart diseases. Furthermore, it lowers the blood cholesterol level due to the oil and fibre content and, controls the blood sugar level thereby reducing the risk of diabetes (EHF, 2017). These coupled with lower price tag may be some reasons why local rice is becoming the preferred in the country. Therefore, the study is aimed at analyzing households' consumption willingness for locally processed rice in Kogi State, Nigeria by examining household attitude towards local rice consumption, determining the factors affecting household consumptions preference for local rice as well as ascertaining the determinants of local rice consumption and demand by the households in the study area.

Material and methods

Study area

The study was conducted in Kogi State, Nigeria. The State

*e-mail: ojonikky@yahoo.com

is located in the north-central zone of Nigeria. The State was created in 1991 from part of former Kwara and Benue States with the headquarters in Lokoja, the Conflence town. It has a land area of 29 833 km^2 and lies within latitude 7°49'N 6°42'E and longitude 7.500°N 6.700°E with geographical feature depicting young sedimentary rocks and alluvium along the river side which promotes agricultural activities (Logbaby, 2012). It shares boundary with ten other States which are Niger State, Nassarawa State and Federal Capital Territory, Abuja to the north, Benue, Edo and Enugu States to the east, and Ekiti, Ondo, and Kwara States to the west (Online Nigeria, 2003). The State has an estimated population of 3 278 487 (National Population Census (NPC), 2006) and was projected to 4 196 741 as at 2016 by the population growth rate of 2.5% (World Bank, 2013). It has an average maximum and minimum temperature of 33.2°C and 22.8°C, respectively. In addition, it has two distinct weather types; the dry season that lasts from November to February, and the rain reason that lasts from March to October. Annual rainfall distribution ranges from 1016mm to 1524mm.The vegetation of the State consist of mixed leguminous (guinea) woodland to forest savannah with wide expanse of Fadama in the river basin and long stretches of tropical forest in the western and southern belt of the state. The State is also blessed with precious mineral resources such as columbite, coal and aquamarine (Nigeria galleria, 2015). Agriculture is the mainstay of the economy. However, besides agriculture citizens also engage in other economic activities such as trading and civil service. The main crops grown are palm oil, cashews, cassava, groundnut, maize, rice, melon, guinea corn, beans and millet while the main ethnic groups include ebira, igala and okun (Nigeria galleria, 2015).

Sampling techniques and sample size

A multistage sampling technique was employed in selecting the sample size. Kogi State is divided into 3 agricultural zones, namely Kogi west, Kogi east and Kogi central. The first stage involved the random selection of Kogi central out of the three zones. The second stage involved a simple random selection of Okene and Adavi LGAs out of the 4 LGAs in the zone while the third stage involved random selection of three towns in each of the LGAs. The fourth stage involved the selection of twenty household heads from each town/village making a total of 120 respondents in the area. Equal numbers of respondents were chosen from each of the selected towns because there was no official record of the sampling frame of local or imported rice consumers in the area.

Data collection

Primary data were sourced from civil servants who possessed formal education. Data were collected on their socioeconomic characteristics, income levels, average monthly expenditure on food and non-food items and perceived reasons for consuming local rice through well-structured questionnaire administered by trained enumerators.

Analytical techniques

To describe the attitude of the households towards local rice consumption, a 5-point likert scale was used. The response option and values assigned are strongly agree =5, agree =4, undecided =3, disagree =2 and strongly disagree =1. These values were summed up to 15 and the cut up mean was derived from the average (i.e. 15/5 = 3.0). Mean scores of 3.0 and above were regarded as those that have preference for local rice consumption and vice versa for those below 3.0. Logistic regression is a type of regression model where the dependent variable is converted into dichotomous/binary variables coded 0 and 1 (Brian and Sabine, 2004). The model uses maximum likelihood estimation (MLE) procedure. The advantage of this is that, the probabilities are bound between 1 and 0. Logit regression conceptually gives maximum estimates, overcomes the shortcomings associated with linear model of regression and provides estimates that are consistent and efficient. However, unlike the ordinary least square (OLS), although it can be used to estimate binary or dichotomous natured model, certain assumptions of the classical regression model were violated such as non-normality of the disturbance, heteroscedastic variance of the disturbance and a questionable value of R^2 as measures of goodness of fit (Gujarati, 2004). The model is expressed in equation 1. The household preference for local rice (P_i) was denoted as:

$$P_l = 1 / (1 + e^{-zi}) \quad (1)$$

The probability of households' consumption preference for imported rice ($1-P_{lr}$) is expressed in equation 2 as:

$$1 - P_{lr} = 1 / (1 + e^{zir}) \quad (2)$$

P_i ranges between zero and one and it is non-linearly related to Z_i. Z_i is the stimulus index which ranges from minus infinity to plus infinity and it is expressed as:

$$Z_i = \ln \{p_i / (1 - p_i)\} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \ldots. \beta_n X_n + u \quad (3)$$

To obtain the value of Z_i, the likelihood of observing the sample will be formed by introducing a dichotomous response variable, Y.

The explicit form of the logistic regression is specified as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \ldots.. + \beta_{12} X_{12} + e_i \quad (4)$$

Where,

Y = Dichotomous response variable (1 for households consumption preference for local rice; 0 for households consumption preference for imported rice);

X_1 = Amount spent on rice consumption per month (N);

X_2 = Household size (No.);

X_3 = Marital Status (Married=1; 0 otherwise);

X_4 = Household income;

X_5 = Food expenditure (N);

X_6 = Non-food expenditure (N);

X_7 = Age (Years);

X_8 = Price (1 if household regards price as a factor for consumption preference for local rice; 0 otherwise);

X_9 = Taste (1 if household regards taste as a factor for consumption preference for local rice; 0 otherwise);
β_0 = Constant;
$\beta_1 - \beta_9$ = Coefficients of the regresses
U = Error term.

Multiple regression analysis is a statistical technique that can be used to analyze the relationship between a single dependent variable (criterion) and several independent variables (predictors). The objective of multiple regression analysis is to use the several independent variables whose values are known to predict the single dependent value the researcher wishes to know. Multiple regression equation is as presented in equation 5:

$$Y = \alpha + B_1X_1 + ...B_nX_n + e \quad (5)$$

The implicit form of the model to determine the factors affecting local rice consumption in the area was presented as:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8) + ei \quad (6)$$

The model is specified explicitly as:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + e \quad (7)$$

Where:
Y= Quantity of local rice consumed per month (kg);
X_1 = Average monthly income of household head (N);
X_2 = Household size (No.);
X_3 = Age of respondents(Years);
X_4 = Marital status (Married = 1; 0 otherwise);
X_5 = Gender of household head (Male = 1; 0 otherwise);
X_6 = Taste (Yes = 1; 0 otherwise);
X_7 = Expenditure on Rice (N);
X_8 = Expenditure on Food (N);
ei = Error term.

The model to determine the factors influencing the demand for local Rice is presented as:

$$Y = b_0+b_1X_1+b_2X_2+b_3X_3+b_4X+b_5X_5+b_6X_6+b_7X_7+ei \quad (8)$$

Where:
Y = Quantity of local Rice demanded (kg);
X_1 = Price of local rice (N);
X_2 = Average monthly income of household (N);
X_3 = Taste (Yes = 1; 0 otherwise);
X_4 = Price of Spaghetti (N);
X_5 = Price of maize (N);
X_6 = Price of imported rice (N);
X_7 = Household size (No.);
ei = Error term.

Results and discussion

Consumers' attitudes towards local rice consumption among households

In order to know the consumers' attitude holistically, the consumption preference and the perceived reasons for the consumers' preference were discussed as follows:

Consumption preference for local rice: Table 1 showed that the majority (80.8%) of the household preferred local rice to imported rice while only 19.2% of the households were otherwise. In the same vein, about three-fifths (61.9%) of the households consumed local rice 2-3 days per week. This finding indicated that local rice was one of the major staple foods consumed by an average household in the area. This could be as a result of the initiative of the Federal Government of Nigeria to revitalize the local rice production, processing and storage to meet up with the desire of an ultimate consumer, especially the elites, who would prefer pebble and shaft-free clean white rice. This corroborates the findings of Odulari (2010) who reported that rice formed a major staple food in the diet of the households. In addition, the finding is also in consonance with Adeyeye (2012) who opined that though the market for imported and locally produced rice in Nigeria appears segmented, consumption of locally produced rice is as well on the increase as that of imported rice. However, the finding is at variance with that of Bamidele et al. (2010) who established that households preferred imported rice to local rice in the area because the imported rice is of a higher quality and grade (it has a better taste, it is polished, not broken and is free of stones and other debris).

Perceived reasons of consumers' preference for local rice in the study area: Table 2 revealed the perceived reasons of consumers' preference for local rice in the study area. As shown in the Table, it was revealed that good health benefits (WM = 4.87), price (WM = 4.58), palatability (WM = 4.49) and swelling capacity (WM = 4.49) ranked 1st, 2nd, 3rd and 4th, respectively. However, cleanliness, price and polished nature ranked least at 10th, 11th, 12th out of the 13 perceived reasons

Table 1. Consumption preference of rice in the study area

Variables	Frequency	Percentage (%)
Local rice consumption		
Yes	97	80.8
No	23	19.2
Total	120	100.0
Frequency of local rice consumption		
Daily	10	10.3
1day/week	18	10.6
2-3 days/week	60	61.9
4-5 days/week	9	9.28
Total	97	100.0

Source: Field Survey, 2017

Table 2. Perceived reasons for local rice consumption preference

Consumers' perception	SA	A	U	D	SD	WS	WM	Remark	Rank
Good health benefits	85 (70.8)	11 (9.2)	1 (0.8)	-	-	472	4.87	PLR	1st
Taste	59 (49.2)	35 (29.2)	3 (2.5)	-	-	444	4.58	PLR	2nd
Palatability	55 (45.8)	36 (30)	5 (4.2)	1 (0.8)	-	436	4.49	PLR	3rd
High swelling capacity	57 (47.5)	34 (28.3)	3 (2.5)	3 (2.5)	-	436	4.49	PLR	3rd
Ready availability	55 (45.8)	30 (25)	5 (4.2)	7 (5.8)	-	424	4.31	PLR	5th
Long shelf life	40 (33.3)	49 (40.8)	6 (5.0)	2 (1.7)	-	418	4.31	PLR	5th
Colour	34 (28.3)	48 (40)	10 (8.3)	3 (2.5)	2 (1.7)	400	4.12	PLR	7th
Stickiness	28 (23.3)	52 (43.3)	10 (8.3)	7 (5.8)	-	392	4.04	PLR	8th
Non-availability of dirts	14 (11.7)	64 (53.3)	6 (5)	10 (8.3)	3 (2.5)	367	3.78	PLR	9th
Cleanliness	11 (9.2)	37 (30.8)	36 (30)	9 (7.5)	4 (3.3)	333	3.43	PLR	10th
Price	15 (12.5)	29 (24.2)	9 (7.5)	42 (35)	2 (1.7)	304	3.13	PLR	11th
Polished nature	11 (9.2)	13 (10.8)	47 (39.2)	21 (17.5)	5 (4.2)	295	3.04	PLR	12th
Packaging	8 (6.7)	17 (14.2)	29 (24.2)	38 (31.7)	5 (4.2)	276	2.85	NLR	13th

listed. Surprisingly, price of local rice which is usually lower than that of imported rice was ranked 11th which showed that the law of demand may not be too operational in the choice of local rice against imported rice. Hence, they probably consumed the local rice based on other reasons other than price. Only packaging had weighted mean of 2.85, which showed that it was not a perceived preference for local rice in the area. This finding is in consonance with Musa et al. (2011) on determinants of consumers purchasing behavior for rice in Malaysia who reported that attributes such as flavor, taste of cooking and price significantly affected the consumers' choice of brands available on the market.

Households' food expenditure: Table 3 showed that 58.3%, of the households spent about N20001 - N40000 on food consumption monthly. A total of 27.5% of the households spent a maximum of N20000 on food monthly, while 13.4% spent between N40001 and N60000. Only an infinitesimal percentage (0.8%) spent above N60000 on food consumption/month. The mean monthly expenditure was N27458.33. This implied that households spent more of their income on food than other household expenses. In other words, households had higher propensity to consume than to save. This might not be unconnected to the present economic recession in the country. Furthermore, the result in the Table showed that 65.8% of the households spent ≤ N5000 of their monthly income on local rice purchases, while 30.8% of them spent an average of N5001-N10000 of their income on local rice consumption monthly, which showed that local rice was a cheap and affordable commodity in the area.

Households' monthly expenditure on food and non-food items: The result in Table 4 showed the households' average monthly expenditure for local rice consumers in the area. It was revealed that the total monthly food expenditure for the households stood at N9087.62 with the maximum and the minimum monthly food expenditure at N42166.00 and N3973.00, respectively. The households' average monthly expenditure on local rice, imported rice, spaghetti and maize were N4806, N1558, N1644 and N1078, respectively. The households' average total food expenditure was N9,087. The mean share on local rice, imported rice, spaghetti and maize were estimated as 48%, 19%, 19% and 12%, respectively, and this clearly showed that local rice constituted a larger proportion of the households' monthly food expenditure relative to imported rice, spaghetti and maize. This result lends credence to the growing trend in households' local rice consumption preference over other food items and therefore, the central position of rice in households' food basket. The result agrees with the findings of Omonona et al. (2009) and Erhabor and Ojogho (2011) who also established that rice had the highest proportion of households' monthly food expenditure relative to other food items in Nigeria.

Factors affecting household consumption preference for local rice

Logit regression model was utilized to estimate the parameters of the variables expected to influence household consumption preference for local rice in the area. Prior to running the logistic regression, test for multicollinearity was carried out to check for linear association of the variables and results as shown in Table 5 revealed that the log-likelihood statistic of -23.49, which tests the joint significance of the independent variables included in the model, was significant at the $P<0.001$. Out of the ten variables included in the model, household size, age and taste were positive and significant at $P<0.01$, $P<0.01$ and $P<0.001$ probability values, while expenditure on non-food items was negative but significant at $P<0.05$ probability level. Logistic regression results are better interpreted using the odd ratio values. A greater than one odd ratio shows a positive relationship, one indicates no relationship while a less than one ratio depicts a negative relationship. Hence, the odd ratios of household size (2.03), age (1.51) and taste (127.57) showed that there was a positive relationship between households' consumption preference for local rice and the three aforementioned predictors. For the continuous predictors, it revealed that one-unit increase in household size and age made the households 2.03 and 1.51

Table 3. Frequency distribution of households' food expenditure

Food Amount (N)	Frequency	Percentage %	Local rice Amount (N)	Frequency	Percentage
⩽ 20000	33	27.5	⩽ 5000	70	72.2
20001-40000	70	58.3	5001-10000	23	23.7
40001-60000	16	13.4	10001-15000	4	4.1
>60000	1	0.8	Total	97	100.0
Total	120	100.0	Mean	4.506	
Mean	27.458				

Source: Field Survey, 2017; 1 NGN = 0.0028 USD

Table 4. Household monthly expenditure on local rice and its substitutes

Variables	ME (N)	Min (N)	Max (N)	MPS (%)	MIS (%)	MAS (%)
Total Food expenditure	9087.62	3973	42166			
Local rice expenditure	4806.51	1020	37855	48.94	13.86	89.78
Imported Rice expenditure	1558.34	608	5100	19.28	02.88	62.94
Spaghetti expenditure	1644.63	400	4000	19.03	02.77	47.54
Maize expenditure	1078.57	0	3465	12.75	0	47.33

Source: Field Survey, 2017; ME- Mean expenditure; MPS-Mean percentage share; MIS-Minimum share; MAS-maximum share; 1 NGN = 0.0028 USD.

times increased in the odds of household preference for local rice consumption in the study area. Increase in consumption preference for local rice as the household size increased by one could occur probably because local rice is more economical than imported rice because of the price tag which connotes income savings for the households. In the same vein, increase in consumption preference for local rice as a result of additional one-year increment in age could results from the increased awareness of the health benefits embedded in local rice consumption. In the same vein, for the binary predictor, as the taste for local rice preference increased, the odds of household preference for local rice consumption also increased. This followed the a priori expectation as taste is one of the determinants of demand for a particular commodity. On the contrary, expenditure on non-food items with the odd ratio of 0.99 depicted a negative relationship between household consumption preference for local rice and expenditure on non-food items. This implied that a one-unit increase in expenditure on non-food items made the odds of household consumption preference for local rice decreased by one percent. The findings agree with those of Basorun (2009) in a study conducted on analysis of the relationships of factors affecting rice consumption in a targeted region in Ekiti – State, Nigeria, who discovered that strong relationship existed between rice consumption and income, price and household size of the farmers.

Marginal effect and elasticity of factors influencing consumers' preference for local rice

The marginal effect of a predictor is defined as the partial derivative of the event probability with respect to the predictor of interest. It involves a direct measure of a change in the probability of the consumer preference for local rice for a unit change in its significant determinants. Table 6 revealed that the addition of one member to the household as well as one year to the age of the household head were more likely to have increased the probability of preference for local rice by 4% and 2.5%, respectively. In addition, taste for local rice (in comparison with taste for imported rice) was more likely to have increased the probability of preference for local rice by 29%. However, expenditure on non-food items had no appreciable marginal effect on the preference for local rice in the study area. The report of the elasticity revealed that household size (0.51), taste (0.12) and non-food expenditure (-0.44) were inelastic which implied that a percentage change in each of these variables led to a less than one percentage change in local rice consumption preference in the area. On the contrary, only age had an elasticity value of 3.19, which revealed that a percentage increase in age of the households led to a more than one percentage change in local rice consumption preference in the area.

Determinants of demand for local rice

The result of the analysis of the determinants of demand for local rice as presented in Table 7 revealed linear functional form as the lead equation with R^2 of 0.40. This implied that the explanatory variables included in the model accounted for only 40% variation in the quantity of local rice demanded in the study area. An F-value of 9.55 implied that the whole model was significant at $P<0.01$. The elasticity analysis (Table 8) showed that the price elasticity of demand of -1.43 implied that the demand for local rice was inelastic in the area. This showed that a one percent change in price led to a less than one percent change (-1.43) in quantity demanded of local

Table 5. Factors affecting household consumption preference for local rice in the study area

Variable	Coefficient	Robust Odd Ratio	Z-values
Expenditure on rice consumption	-0.0000	0.99992	-0.49
Household size	0.7059	2.02587	2.72**
Gender	-1.5758	0.20683	-1.42
Marital status	-0.9508	0.38641	-0.58
Household income	0.0000	1.00003	1.66
Food Expenditure	-0.0001	0.99987	-1.83
Non-food Expenditure	-0.0001	0.99986	-2.49**
Age	0.4091	1.50551	2.56**
Price	2.1592	8.66387	1.55
Taste	4.8487	127.5694	4.65***

Source: Field Survey, 2017. ** implies significant at 1%, *implies significant at 5%; Wald chi square = 38.43; Prob > chi square = 70.29; Log pseudo likelihood = -23.49; Pseudo R^2 = 0.5994

rice, ceteris paribus. This agreed with the a *priori* expectation that most agricultural commodities are inelastic in nature. Furthermore, the income elasticity of demand was 0.07, which showed that a percentage change in income led to less than proportionate change in quantity local rice demanded which showed that local rice was a necessity in the area. The cross elasticity of demand of local rice for imported rice of 3.83 showed that local and imported rice were close substitutes in the study area. This agrees with Agboola (2003) who investigated food demand patterns in South Africa and determined the demand for grains, meat, dairy products and vegetables which were all price inelastic (i.e. the own-price elasticity were -1.73, -1.27, -1.24 and -1.31, respectively). This finding collaborates with the report of Kassali et al. (2010)

Table 6. Marginal effect and partial elasticity of the determinants of local rice consumption preference

Variable	Marginal effect (dy/dx)	Elasticity (ey/ex)
Household size	0.04220	0.5118
Non-food Expenditure	-8.11e-06	-1.4428
Age	0.02450	3.1878
Taste	0.29040	0.1212

Source: Field Survey, 2017

Table 7. Determinants of demand for local rice in the study area

Variables	Linear +	Exponential	Cobb-dogglass	Semi-log
Price of Local rice (N)	-0.7557	-0.0063	-2.1018	-242.1694
	(-2.48*)	(-2.74**)	(-2.86**)	(-2.41*)
Household Income	0.0002	1.90e-06	0.4263	51.7593
	(2.13*)	(2.84**)	(3.45**)	(2.93**)
Taste	9.2918	0.0629	0.1223	16.9407
	(0.63)	(0.64)	(0.87)	(0.79)
Price of spaghetti (N)	-0.4944	-0.0039	-1.2510	-146.876
	(-1.15)	(-1.67)	(-1.44)	(-0.90)
Price of maize (N)	0.1834	-0.0007	-0.0901	79.8191
	(0.21)	(-0.10)	(-0.08)	(0.53)
Price of Imported rice (N)	1.9395	-0.0142	-4.206	-525.0558
	(-2.39*)	(-2.80*)	(-2.17*)	(-1.93)
Household size	32.7565	0.1656	0.6373	116.0496
	(5.60**)	(5.50**)	(4.36**)	(4.36**)
R^2	0.4019	0.3486	0.3733	0.3661
R^{-2}	0.3645	0.3079	0.3341	0.3265
F-value	9.55	10.52	10.74	7.78

Source: Field Survey, 2017. ***= significant at 1% level of probability; **= significant at 5% level of probability; + = lead equation, values in Parentheses are t-value; 1 NGN = 0.0028 USD

Table 8. Elasticity of statistically significant variables linear function

Variables	Elasticity of coefficient	Remarks
Price of local rice (N)	-1.43	Inelastic
Price of imported rice (N)	3.83	Elastic
Household Size	0.85	Inelastic
Household Income (N)	0.07	Inelastic

Source: Field Survey, 2017; 1 NGN = 0.0028 USD

on the analysis of the determinants of rice in Ife Central Local Government area of Osun State, Nigeria that income and household size among other factors significantly influenced consumer's demand for rice.

Conclusion

Evidence from the study indicated that good health benefits, palatability and high swelling capacity were the major perceived reasons for local rice consumption preference. Furthermore, household size, age, taste and non-food expenditure were the major determinants of consumption preference for local rice. In addition, local rice constituted a larger share of household monthly food expenditure and it was inelastic in nature as it is for most agricultural commodities. It can be concluded that households in the area had preference for locally produced rice. Based on the findings of this research work, the following recommendations are made: a) Since consumers have shown willingness for local rice consumption, adequate mechanized rice milling stations should be established by government and non-governmental organizations (NGOs) across the country, in order to boost the quality and quantity of locally produced rice in the area; b) Adequate policy framework aimed at steady improvement in quality and more awareness in nutritional benefits of local rice should be pursued as this will enhance the demand for local rice by households as it was estimated to be own-price elastic; c) Since local rice expenditure constituted a larger share of household monthly food expenditure, the government should implement a policy that will reduce the current rate of inflation and general price index, so as to increase the purchasing power of consumers in the area.

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