African Journal of Social and Behavioural Sciences (AJSBS)
Volume 14, Number 3 (2024) ISSN: 2141-209X

AN ANALYSIS OF ELASTICITY OF DEMAND FOR LOCAL RICE IN NASARAWA LOCAL GOVERNMENT AREA OF NASARAWA STATE, NIGERIA

Abubakar Okuwa Abdullahi[1]* & Abigail Elisha Goyilla[2]

[1,2]Department of General Studies, School of General Studies and Pre-ND, Isa Mustapha Agwai I Polytechnic, Lafia

*abukuwa50@gmail.com

ABSTRACT: Rice consumption outweighs production in Nigeria, resulting in high demand, high prices, greater incentives for local rice production and the importation of foreign rice. Against this background, this study attempts to empirically analyse the elasticity of demand for local rice in the Nasarawa Local Government Area of Nasarawa State, Nigeria. The survey method was used for the study population of 839 personnel in the Nasarawa Local Government. Purposive and stratified random sampling techniques were used to select samples for the study. Cross-sectional data were collected from January to March 2024 using structured questionnaires and analysed using SPSS 15. The ordinary least squares (OLS) multiple regression technique was used for the model and parameter estimation. The study revealed that; the coefficient of the price of local rice (plr) is negative, less than 1 in absolute terms but significant at the 1% level, the coefficient of the income level of consumers (ilc) is positive but less than 1 and statistically significant at the 5% level, and the coefficient of the price of foreign rice (pfr) is positive but less than 1 and significant at the 10% level. Therefore, the study concluded that the price of local rice (plr), the income level of consumers (ilc) and the price of foreign rice (pfr) are significant determinants of the elasticity of demand for local rice (DLR) in the Nasarawa Local Government Area of Nasarawa State. The study recommends that the government should control prices, increase salaries and wages and encourage the importation of foreign rice to reduce the price, income and cross effects on the quantity demand of local rice.

Keywords: Elasticity, Demand, Local Rice, Foreign Rice, Nasarawa.

INTRODUCTION

Rice is a plant that is universally cultivated worldwide and in Nigeria. It is cultivated in virtually all agro-ecological zones of Nigeria. However, the volume of rice production is not sufficient to meet the increasing demand, so importation is the option to cover the shortfall. These imports are procured on the world market and represent a substantial cash outlay for the Nigerian economy (Akande 2000; Odularu, 2010). Nigeria is expected to continue to import rice for some time because it imports one-third of its total rice consumption (Omotola & Ikechukwu, 2006; WARDA report of 2007; Yusuf *et al*. 2020).

Nasarawa State is among the states known for cultivation of both rain-fed rice and upland rice. Other states are; Benue, Delta, Edo, Ekiti, Kaduna, Kebbi, Kogi, Kwara, Niger, Ogun, Ondo, Osun and Oyo (Oikeh *et al,* 2012).

On the supply side, rice consumption outweighed rice production in Nigeria, resulting in excess demand and high prices of rice and the importation of foreign rice. On the demand side, changes in the price of rice and other influencing factors lead to changes in demand as well as in the quantity demanded for both local and foreign rice.

Against this background, this study attempts to empirically analyse the effects of the price, income and price of substitute products (with other factors held constant) on the demand for local rice in the Nasarawa Local Government Area of Nasarawa State, Nigeria.

Therefore, this study seeks to answer the following research questions:

i. What is the nature of the relationship between the price of local rice and its demand in the Nasarawa Local Government Area?
ii. What is the nature of the relationship between individual income and demand for local rice in the Nasarawa Local Government Area?
iii. What is the nature of the relationship between the price of foreign rice and the demand for local rice in Nasarawa Local Government Area?

The aim of this study was to empirically analyse the elasticity of demand for local rice in the Nasarawa Local Government Area of Nasarawa State. The study has the following specific objectives:

i. to investigate the price elasticity of demand for local rice in the Nasarawa Local Government Area.
ii. to ascertain the income elasticity of demand for local rice in the Nasarawa Local Government Area.
iii. to determine the cross-elasticity of demand for local rice relative to foreign rice in the Nasarawa Local Government Area.

The hypotheses for this study are as follows:

Ho_1: There is no significant relationship between the price of local rice and its demand.

Ho_2: There is no significant relationship between individual income and demand for local rice.

Ho_3: There is no significant relationship between the price of foreign rice and demand for local rice.

The study of the elasticity of the demand for local rice will enable individuals, firms and policymakers to take necessary measures that can improve the production of local rice in the Nasarawa Local Government Area, Nasarawa State and Nigeria at large.

This study focused on the analysis of the elasticity of demand for local rice in the Nasarawa local government area of Nasarawa State. All households in the local government could not be covered due to a lack of sufficient time and funds. However, civil servants across the Nasarawa, Udege and Loko Development Areas who constitute the nucleus of local rice purchases are the target population for the study.

LITERATURE REVIEW

Conceptual Clarification

Rice belongs to the cereal class and the family Poaceae. The botanical name of rice is *Oryza*. The common types are *Oryza-sativa* and *Oryza-glaberrima* (Kassali *et al*, 2010). Rice is a carbohydrate food substance with 80% starch, and the remaining 20% is mostly water, with small amounts of phosphorus, potassium, calcium and B vitamins (WARDA, 2007). Rice can also be classified into two types according to water requirements. These are the upland rice variety, which does not need much water and can be grown on hillsides and fields, and the wet land rice variety, which is the major rice variety cultivated in the world, and it requires much water to survive even distribution of up to 1200 mm to 1600 mm throughout its growing period (Ekeleme *et al*. 2008). Rice is grown in areas where rainfall is limited through irrigation practices, flooded areas, *fadama* and valleys (Ajijola *et al.* 2012).

Rice can be grown in almost all types of soil and is planted from May to June in the savannah zone and from April to May in the rainforest zone (Ekeleme *et al*. 2008). With the breakthrough in the development of new rice for Africa (NERICA), there are varieties of upland rice available to farmers according to their maturity period. These include the following: (NERICA 1); Faro 1, 40, 45, 54, 55 and 56, which matured from 90-100 days; and (NERICA 2); Faro 48, 49 and 53, which matured between 100 to 120 days (WARDA, 2007).

However, two categories of rice were considered in this study: local rice and foreign rice. The local rice refers to the rice produced within the shore of Nigeria, which is crudely processed and made available for consumption. The parboiling process is poor which results in odour due to slight fermentation, stone particles contamination, and mineral and vegetable contamination, which results in low quality (Akaeze, 2010; Bamidele *et al.*, 2010). Foreign rice refers to either imported rice or well parboiled and refined without odour, stone particles or any unwanted mineral deposits by an agro-allied company. Some of the varieties of foreign rice include Vikor, IRS Thai Parboiled Rice, Massi, Mama's Pride, Mama Africa, Peacock, Captain, PJS, Elephant, Crystal Rice, Cap Rice, Stallion Rice and Tomato Rice.

Demand is a concept that describes the possession of human desires, needs or wants at a particular point in time and has to do with the willingness and ability of the decision maker. A person may wish to buy rice and may also have the ability to pay the price, but unless the willingness is strong enough to induce him to part with his money in exchange for the rice, it does not constitute demand in an economic sense. A person may have a great desire for rice, but if the money at his disposal is not enough to pay the price, he cannot make a demand for the rice. The individual can only effectively demand a commodity when his desire is backed by the ability and willingness to pay the price. For this reason, demand is defined as the quantity of a commodity purchased at a given price over a period of time (Michael, 1989). When demand is defined, the price and time must be stated because demand will differ across different price levels and time intervals. (Alfred, McArthur & Loveridge, 1975) defined demand as the amount of a commodity purchased at a given price in a given market area over a stated period of time. In this context, demand for local rice is defined as the quantity of local rice that buyers are willing to purchase at the prevailing price over a period of time.

Demand thus expresses a functional relationship between price and various quantities purchased, holding other factors constant (Bowden, 1986). The ordinary demand function of

a consumer, also sometimes known as the Marshallian demand function, expresses the quantity of a commodity that a consumer will buy as a function of commodity price and the consumer's income (Henderson & Quandt, 2007).

The demand function in this study expresses the quantity of local rice that a consumer can buy as a function of the price of local rice, the income of a consumer and the price of foreign rice while holding other factors constant.

This relationship is specified algebraically as follows:

$Qd = b_o+b_1X1+b_2X2+b_3X3$ _____ (2.1)

where X1 is the price of local rice, X2 is the income level of a consumer, X3 is the price of foreign rice

Theoretical Framework

The fundamental basis for this study is that of consumer behaviour. The theory of consumer behaviour analyses how a consumer allocates his limited resources among competing needs to maximize his satisfaction. According to neoclassical theory, the quantity of a commodity that a consumer will buy depends on the price of the commodity and the income of the consumer. The demand for commodities by consumers is never constant. It changes with time due to a number of factors; disposable real income, pattern of distribution of income, price of other goods, taste and fashion, advertising, availability of credit and population (Stanlake & Grant, 1999). This theory will enable us to determine how consumer demand for local rice responds to changes in its price, the price of foreign rice and income at its disposal (with other factors held constant) using the concept of elasticity. Thus, the coefficient of elasticity of demand measures the degree of responsiveness of demand to a given change in price, income or preference of a consumer.

Empirical Studies on the Determinants of Demand for Rice

Kassali *et al.* (2010) carried out a study on the Analysis of Demand for Rice in Ile Ife in Osun State, Nigeria, and found that all the independent variables except age and the frequency of rice purchase were not significant.

Odusina (2008), for instance, conducted a survey on urban rice demand analysis in Ijebu Ode town and discovered a negative relationship between income and the demand for local rice which led him to conclude that Rice is an inferior good.

Bamidele *et al.* (2010) also carried out a study on the economic analysis of rice consumption patterns in Nigeria using Kwara State as a case study and found that the major factors that significantly influence household preferences for either local rice or imported rice were household income, household size and the educational status of the household heads. According to these authors, the price per kilogram of rice was not a significant factor.

Similar research was conducted by Yusuf *et al.* (2020) on consumer preferences for imported rice, who reported a negative relationship between the price of rice and its demand and a positive relationship between income and the consumption of rice. The study revealed that the

significant factors that determine the consumption of rice were the price of rice, income and changes in the general price.

(Erhabor & Ojogho 2011) conducted a demand analysis for rice in the states of Edo, Delta and Lagos. The results of their work showed that rice constituted the largest share of the total household food expenditure. The consumption expenditure for rice in the low-income group was greater than that in the high-income group. This is in support of the fact that high-income earners save more and consume less as income increases. Their results also showed that rice is a normal good as well as a necessity because both expenditures and prices are inelastic. The prices of substitute goods were also significant in their study.

METHODS

The Study Area

The Nasarawa Local Government Area of Nasarawa State, Nigeria, lies between 8^0 and 32^0 N and 7^0 and 42^0 E, with a population of 189,835 (2006 census figures) and a land mass of 5,704 km^2. The postal code of the area is 962.

Nasarawa was founded in 1835 in the Eloyi (Afo) tribal territory by Umaru Usman (Makama Dogo), a dissident official from the nearby Keffi who hailed from Ruma in Katsina State. In 1900, one of his successors, – Muhammadu Dan Waji, was among the first emirs to pledge allegiance to Great Britain and has since been a Native Authority. In 1976, Nasarawa became one of the pioneering local governments in the federation created by Murtala's administration and was made part of the plateau state. With the creation of Nasarawa State in 1996, the Nasarawa Local Government Area became part of Nasarawa State (WIKIPEDIA, 2024).

The Nasarawa Local Area comprises the Nasarawa District, Udege District and Loko District which were made separate local government areas by Governor Abdullahi Adamu Administration in 2002, but the Udege and Loko local governments were later converted to development for political reasons.

The major tribes of the area are Afo, Hausa/Fulani and Agatu. Islam, Christianity and traditional beliefs are the three dominant religions.

The major occupations of the people in the area include Farming, Trading, Civil Service and Labour Services, with Rice, Melon, Yam, Maize, Beans, Soybeans, Benn seed and groundnut as major agricultural products in the local government (WIKIPEDIA, 2024).

Research Design

This study used a survey design that involved field and sample surveys. The survey relied on information from the sampled respondents (civil servants) in the Nasarawa Local Government Area. Purposive and stratified random sampling techniques were used to generate representative samples for the study. Copies of questionnaires were used as instruments for data collection. The data were collected on the monthly salaries, monthly expenditures on local rice and foreign rice, and demographic information of the respondents in the study area. However, a common method bias test was used to ascertain the reliability of the research instrument.

Study population

The population for this study included eight hundred and thirty-nine (839) personnel in the Nasarawa Local Government Area of Nasarawa State, Nigeria (Nasarawa State Ministry for Local Government and Chieftaincy Affairs (NSMLGCA), 2023). This comprised Nasarawa (224), Udege (458) and Loko (157).

Sample Size Determination

Yamane's (1967) formula was used for the determination of the scientific sample size. The formula is expressed as:

$$n = \frac{N}{1 + N(e^2)} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots . (3.1)$$

where n = sample size, N = population of the study area and e = level of precision (level of significance).

Table 1.0: Sample size

S/N	LGA/DA Personnel	Population	Sample Size
1.	Nasarawa	224	69
2.	Udege	458	82
3.	Loko	157	61
	TOTAL	**839**	**212**

Table 1.0 is computed based on the assumption of a constant degree of variability, and the precision is ±10%. For example, by applying this formula to a population of 100 people at a precision level of 10%, the sample size can be obtained as follows:

$n= 100/1 + 100(0.1)^2 = 50$

Sampling techniques and procedure

The purposive sampling technique was used to select three (3) strata for the study – the Nasarawa Local Government Secretariat, the Udege Development Area Secretariat and the Loko Development Area Secretariat.

A random sampling technique was used to select 69 civil servants (respondents) at the Nasarawa Local Government Secretariat, 82 civil servants (respondents) at the Udege Development Area Secretariat and 61 civil servants (respondents) at the Loko Development Area Secretariat resulting in a total of 212 samples for the study.

Types of Data and Sources

This study used both primary and secondary methods of data collection. The primary data were collected through a survey using a questionnaire as the instrument for data collection. The survey was conducted on individual civil servants across local government and development area secretariats in the Nasarawa Local Government Area. The secondary data

were collected from the Nasarawa State Ministry for Local Government and Chieftaincy Affairs (NSMLGCA), textbooks, periodicals, journals and government publications/documents.

Model Specification

To estimate the parameters that form the coefficients of the variables and to determine the elasticity of demand for local rice in the Nasarawa Local Government, multiple regression analysis using the ordinary least squares (OLS) method was used. The implicit demand function or model, which expresses the demand for local rice (DLR) as a function of the price of local rice (plr), the income level of a consumer (ilc) and the price of foreign rice (pfr), is given below:

$DLR = f(plr, ilc, pfr, \mu)$ ---------- (3.2)

The explicit double or log-linear model makes it possible to estimate the model parameters as well as the elasticity of demand for local rice with respect to the explanatory variables. This is written as follows:

$\ln DLR_i = b_0 + b_1 lplr_i + b_2 lnilc_i + b_3 lnpfr_i + b_4 ln\mu_i$ ---------- (3.3)

where:

DLR_i = Demand for local rice or the quantity of local rice bought per month.

plr_i = Monthly average price of local rice (Naira/kg)

ilc_i = Monthly average income of level of a consumer (Naira)

pfr_i = Monthly average price of foreign rice (Naira/kg)

μ_i = Error term

b_0 = Model intercept

$b_1 - b_3$ = Parameters of the model.

The parameters of the model measure the effect of the changes in the independent variables (plr, ilc, pfr) on the dependent variable (DLR). They also represent the partial elasticity, which measures the responsiveness of the DLR with respect to changes in plr, ilc and pfr. The model was adopted from Kassali *et al*. (2010). The coefficient of plr is expected on a priori grounds to be negative in conformity with the laws of demand. The coefficient of ilc is expected to be positive, demonstrating that more of a commodity is demanded at a higher level of income. The sign of the coefficient of pfr is uncertain because foreign rice could be a substitute or a complementary commodity to local rice

Variable Description and Measurements

Variable Description and Measurement

S/N	Variable Name	Variable Type	Categorization	Variable Measurement
1.	DLR_i	Continuum	As stated by the respondent	Quantity of local Rice bought in kg per month
2.	plr_i	Continuum	As stated by the respondent	Amount of local Rice bought in Naira divided by the quantity bought in kg
3.	ilc_i	Continuum	As stated by the respondent	Total annual income divided by 365 days
4.	pfr_i	Continuum	As stated by the respondent	Amount of foreign Rice bought in Naira divided by the quantity bought in kg

Technique of Data Analysis

This study used the ordinary least squares (OLS) multiple regression technique for the model and parameter estimation as well as analysis using SPSS 15.0.

RESULTS AND INTERPRETATION

Table 4.0: Regression Results

Variable	Coefficient/ Elasticity	Std. Error	z-Statistic	Prob.
b_0	2.4425**	1.1374	-1.9855	0.0456
plr	-0.5497***	0.0389	-3.2785	0.0000
ilc	0.3884**	0.0537	-2.5328	0.0032
pfr	0.0752*	0.0053	-2.1739	0.0834

$R^2 = 0.74$; F = 37.334**
Note that * Significant at 10%, ** Significant at 5%, *** Significant at 1%
Source: SPSS 15 Output, 2023

General Equation for the Demand of Rice

DLR = 2.4425 – 0.5497plr + 0.3884ilc + 0.0752pfr ---------- (3.4)

(1.1374) (0.0389) (0.0537) (0.0053)

The equation (3.4) is the estimated demand function for local rice in the Nasarawa Local Government Area of Nasarawa State. The figures in parentheses are the standard errors. The equation indicates an autonomous level of demand for local rice – meaning that even if all the independent variables remain at zero percent, the demand for rice in the study area will be equal to 2.4425%.

Table 4.0 shows the summary of ordinary least squares (OLS) regression results. The coefficient of determination (R^2) is 0.74, implying that approximately 74% of the variation in the demand for rice (DLR) is explained by joint changes in the price of local rice (plr), the income level of the consumer (ilc) and price of foreign rice (pfr). The F-statistic is 37.334, and it is statistically significant at the 5% level, which is an indication that the model is a good fit.

Table 4.0, shows that the coefficient of plr (-0.5497) – the price elasticity of demand – is negative, less than 1 in absolute terms but significant at the 1% level. The negative sign reflects the law of demand, which states that the lower the price is, the greater the quantity demanded, and vice versa. A less than 1 absolute value of the price elasticity of demand implies that the demand for local rice in the Nasarawa Local Government is price inelastic, – meaning that a change in price leads to less than a proportionate change in quantity demanded. The results further reveal that the price of local rice (plr) is a significant determinant of its demand (DLR) in the Nasarawa Local Government Area of Nasarawa State. We therefore reject the null hypothesis, which states that there is no significant relationship between plr and DLR in the Nasarawa Local Government Area.

The results in Table 4.0 show that the coefficient of ilc (0.3884) – the income elasticity of demand – is positive but less than 1 and statistically significant at the 5%. The positive sign implies that as income increases, so does the demand for local rice in the Nasarawa Local Government Area. A value less than 1 value for the income elasticity of demand reveals that local rice in the Nasarawa Local Government Area is a normal good – a change in the income level of consumers (ilc) leads to less than a proportionate change in demand for local rice (DLR). The results also reveal that the income level of consumers (ilc) is a significant determinant of its demand (DLR) in the Nasarawa Local Government Area of Nasarawa State. We therefore reject the null hypothesis, which states that there is no significant relationship between ilc and DLR in Nasarawa Local Government Area.

According toTable 4.0, the coefficient of pfr (0.0752) – cross elasticity of demand – is positive but less than 1 and significant at the 10% level. A positive sign implies that foreign rice is a substitute for local rice, meaning that as the price of foreign rice (pfr) increases, the demand for local rice (DLR) increases, and vice versa. The results further revealed that the price of foreign rice (pfr) is a significant determinant of the demand for local rice (DLR) in the Nasarawa Local Government Area of Nasarawa State. We therefore reject the null hypothesis, which states that there is no significant relationship between pfr and DLR in the Nasarawa Local Government Area.

DISCUSSION OF MAJOR FINDINGS

The results reveal that the demand for local rice in the Nasarawa Local Government Area is price inelastic, – meaning that a change in price leads to less than a proportionate change in quantity demanded. This finding implies that local rice suppliers can easily increase their price by knowing fully well that the consumer will not react sharply. This means that local rice is necessary in the Nasarawa Local Government Area. The results also reveal an inverse relationship between the price of local rice and its quantity demand, which is consistent with the findings of Yusuf *et al*. (2020), who asserted that changes in the price level determine consumers' demand for rice

The results reveal that local rice in the Nasarawa Local Government is a normal good due to the positive relationship that exists between income and demand – meaning that an increase in the income level of consumers (ilc) leads to an increase in the quantity demanded for local rice. This implies that a buyer increases the demand for local rice as his income level increases. This finding is in agreement with the findings of Erhabo and Ojogho (2011), who revealed that the proportion of income spent on food increases with an increase in income level.

The results show that foreign rice is a true substitute for local rice, meaning that as the price of foreign rice (pfr) increases, the demand for foreign rice decreases in accordance with the law of demand, while the demand for local rice (DLR) increases and vice versa. This implies that people will substitute local rice for foreign rice as the price of foreign rice increases in the Nasarawa Local Government Area. This finding is inconsistent with that of Kassali *et al.* (2010), who argued that the price of foreign rice is not a significant determinant.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study analysed the elasticity of demand for local rice in the Nasarawa Local Government Area of Nasarawa State. A total of 212 people were selected using purposive, stratified and random sampling techniques. The data collected were estimated using the OLS multiple regression technique on Stata 15.0.

The results show that the price elasticity of demand for local rice is inelastic, making it a necessity; the income elasticity of demand for local rice is positive but less than 1, making it a normal good; and the cross elasticity of demand with respect to foreign rice is positive, implying that foreign rice is a true substitute for local rice in the Nasarawa Local Government Area.

Conclusions

The conclusion from the foregoing results is as follows:

The price of local rice (plr), the income level of consumers (ilc) and the price of foreign rice (pfr) are significant determinants of the elasticity of demand for local rice (DLR) in the Nasarawa Local Government Area of Nasarawa State.

Recommendations

Based on the findings of the study, the following recommendations are made:

I. The government should control prices because local rice prices are inelastic (necessity), and suppliers can capitalize on buyers who cannot respond proportionally.
II. The Government should provide significant incentives to local rice farmers to boost their production. This would ensure a steady supply of local rice and reduce the tendency of the supplier to manipulate the price.
III. Since income level has a positive influence on the demand for local rice, the government should increase the salaries and wages of workers to meet the effective

demand for local rice. This would in turn boost supply/production, create employment and increase revenue for local rice farmers and associated labourers.

IV. Since foreign rice has been found to be a substitute for local rice, the government should open foreign borders and encourage the importation of foreign rice. This would create competition and stabilize the price of local rice. Even though local rice has been found to be price inelastic, suppliers cannot contemplate increasing prices when cheap substitutes (foreign rice) are available.

REFERENCES

Ajijola, S., Usman, J. M., Egbetokuin, O. A., Okoun, J., & Osalusi, C. S. (2012). *Appraisal of rice production in Nigeria: A case study of north central states of Nigeria*. Research Paper, Institute of Agricultural Research Training, Ibadan.

Akaeze, O. H. (2010). *Consumer preference for imported rice in Nigeria-perceived quality differences or habit persistence?* (Master's thesis, University of Michigan).

Akande, T. (2000). *An overview of the Nigerian rice economy*. The Nigerian Institute of Social and Economic Research (NISER), Ibadan, Nigeria.

Alfred, G. M., & Loveridge, J. W. (1975). *Economic theory and organisation*. MacDonald and Evans Limited, London.

Bamidele, F. S., Abayomi, O. O., & Esther, O. A. (2010). Economic analysis of rice consumption pattern in Nigeria. *Journal of Agricultural Science and Technology, 12*.

Bowden, A. V. (1986). *Economics, the science of economic sense*. South-Western Publishing Company, Cincinnati, Ohio.

Ekeleme, F., Kamara, A. Y., Omoigui, L. O., Tegbaru, A., Mshelia, J., & Onyibe, J. E. (2008). *Guide to rice production in Borno State Nigeria*. International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria.

Erhabo, P. O. I., & Ojogho, O. (2011). Demand analysis for rice in Nigeria. *Journal of Food Technology, 9*.

Henderson, J. M., & Quandt, R. E. (2007). *Microeconomic theory: A mathematical approach*. Tata McGraw-Hill Publishing Company Ltd, New Delhi, India.

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*.

Nasarawa State Ministry for Local Government and Chieftaincy Affairs (NSMLGCA). (2023). *List of staff across local government and development areas*.

Odularu, G. O. (2010). Rice trade policy option in an open developing economy: The Nigerian case study. *Journal of Development and Agricultural Economics, 2*(5).

Odusina, O. A. (2008). Urban rice demand analysis: A case study of Ijebu Ode Township. *Middle-East Journal of Scientific Research, 3*(2).

Omotola, J. T., Effiong, J. A. L., & Pepple, I. D. (2006). Analysis of the demand for locally processed rice in Niger State, Nigeria. *Journal of Agriculture and Social Research (JASR), 6*(1).

Oikeh, S. O., Nwilene, F. E., Agunbiade, T. A., Oladimeji, O., Ajayi, O., Semon, M., Tsunematsu, A., & Samejima, H. (2012). *Growing upland rice: A production handbook*. International Institute of Tropical Agriculture, Ibadan, Nigeria.

Stanlake, G., & Grant, S. J. (1999). *Introduction to economics*. Longman Group Ltd, London.

WARDA. (2007). *Overview of recent development in Sub-Saharan African rice sector*. Africa Rice Centre Brief, Kotonou. Available at www.warda.org

Wikipedia. (2024). *Nasarawa, Nasarawa State*. Retrieved July 4, 2024, from en.m.wikipedia.org/wiki/Nasarawa,_Nasarawa_State

Yamane, T. (1967). Sample size determination formula. Available at https://www.academia.edu/33027/DETERMINATION_OF_SAMPLE_SIZE_IN_MANAGEMENT_RESEARCH_docx

Yusuf, W. A., Yusuf, S. A., Adesope, A. A. A., & Adebayo, O. Z. (2020). Determinants of rice import demand in Nigeria. *Journal of Applied Sciences and Environmental Management, 24*(5), 923-931. Available at https://www.ajol.info/index.php/jasem