ANALYSIS OF RICE CONSUMPTION BY HOUSEHOLDS IN THE POST FUEL SUBSIDY REMOVAL IN ABUJA MUNICIPAL AREA COUNCIL (AMAC), FEDERAL CAPITAL TERRITORY (FCT), NIGERIA

[1]Simpa, Ondeku James, [2]Idisi, Park O. PhD., [2]Adeagbo, Benjamin A. PhD., [3]Atteh, A. P, [2]Salihu, Maimunat Umar, [4]Musa, Ganaka Kubi & [1]Ogwuegbu, C. Odinakachi

[1]Department of Agricultural Technology, Federal Polytechnic, Nasarawa, Nigeria
[2]Department of Agricultural Economics, University of Abuja, Nigeria
[3]Department of Agricultural Economics, Federal University, Lafia, Nigeria
[4]Department of Mathematics and Statistics, Federal Polytechnic, Nasarawa, Nigeria
Corresponding Author: jamessimpa2014@gmail.com GSM No: +2348066316605
DOI: https://doi.org/10.5281/zenodo.13772575

Abstract: This paper examined rice consumption by the households in the post fuel subsidy removal (PFSR) in Abuja Municipal Area Council, FCT, Nigeria. The objectives of the study include an analysis of factors that influence rice consumption in the PFSR, patterns or characteristics of rice consumption, a correlation between the quantity of rice consumed and some socioeconomic variables. A multi-stage random sampling technique was employed to select 180 respondents. Structured questionnaires were used to elicit data from the respondents. The data was analysed using inferential and descriptive statistics. The results showed that the majority of the household heads are married, educated, have a household size of 5-7 persons, and with an income level above N200,000.00. The quantity of rice consumed per meal is lower during PFRS than during PrFSR, with a mean of 3.5 kg. The number of days in between rice consumption during meals (mean of 5.2 days) and the percentage of income expended on rice consumption (increased from 5 to 14%) is higher in PFRS than pre-fuel subsidy removal (PrFRS). The household's habit, average age of household members, household size, and income level influence the quantity of rice consumed by the households during PFSR; but it is only the average age of household members and household size that were significant at the 10% alpha level. However, 60% of the variation in the quantity of rice consumption in PFSR was explained by all the variables considered in the model. The hypothesis test confirmed the difference between the quantities of rice consumed during PrFSR and PFSR. Based on these findings, this study recommends that the government should eradicate or reduce to a minimum all the factors that negatively affect the availability, accessibility and affordability of rice; rice with its ingredients (palliative) should be purchased and distributed to meet the demand of the people; the average age of the household members should be considered when formulating policies on food supply and food security; the people should be encouraged to modify their habits on rice consumption; and the government should consider giving out rice as palliative more frequently.

Keywords: Rice, Consumption, Fuel Subsidy, Quantity, Abuja

Simpa, Ondeku James, Idisi, Park O, Adeagbo, Benjamin A. PhD., Atteh, A. P, Salihu, Maimunat Umar, Musa, Ganaka Kubi and Ogwuegbu, C. Odinakachi (2024)

1.0.Introduction

Rice is one of the staple foods globally, ranking third after wheat and maize in terms of production and consumption. It is among the most important food products, with constant demand in all seasons. Nigeria is one of the leading consumers of rice; therefore, the federal government pays attention to its production and consumption (Abbas et al., 2018) in finding solutions to food insecurity. Demand for and consumption of rice is expected to increase as the Nigerian population increases. And more so, unlike in the 1960s and 1970s, when rice was consumed mostly in rich homes and during religious festivities by those who could afford it, now, more than 80 percent of Nigerians consume rice in one form or another, either imported or local, almost on a daily basis or every other day (Abbas et al., 2018). Rice consumption is expected to reach 36 million metric tons by 2050 (FMRD, 2011). Nigeria consumes an average of 7 million metric tons of rice annually (Shittu & Pradesha, 2013). It is even more than this presently, with the increasing population. Nigeria's rice per capita consumption was estimated at 40 kg, and it will continue to rise (FAO, 2017). Also, the commodity ranks first among all staple food items in terms of expenditures and is second only to cassava in terms of quantities consumed (Bamidele, Abayomi, & Esther, 2010).

Therefore, it is important to examine the factors affecting its consumption by households in Nigeria, particularly in this study area after fuel subsidy removal. Consumer behaviour is influenced by the prices of goods and services and invariably depends on the prevailing economic conditions and fiscal and monetary policies in the country. In the same vein, factors affecting rice consumption in Nigeria vary from one locality to another, from culture to culture, and from the economic status of individuals. Other factors that influence rice consumption include rapid urbanization, ease of preparation, its lightness, and its general availability among food vendors and eateries, especially in urban areas (FMRD, 2011). Children preferred rice to most other food items. Milled rice is commonly consumed in Nigeria as a household food item, and it is also being used by industries to produce other rice-based foods and pharmaceutical products (GBI, 2016). In the northern parts of Nigeria, rice is used to prepare dishes such as 'tuwo', 'masa', and coconut rice (rice cooked with coconut), while in the south, rice is consumed as 'jollof', fried rice, and boiled rice served with stew. Accordingly, it is evident from the above that rice is very important in the diet of Nigerians, but its consumption is presently threatened by some inflationary policies, such as the removal of the removal of fuel subsidies.

Prior to fuel subsidy removal, there had been food security problems in terms of availability, accessibility, and affordability. Therefore, to say that there is hunger in Nigeria today is an understatement. Even before fuel subsidy removal in May, 2023 by President Bola Ahmed Tinubu's administration, about 24.2 million people were already facing acute food insecurity (Abbas, Agada, and Rapu, 2018). A few months after fuel subsidy removal, the United Nations Children's Fund confirmed that about 25.25 million Nigerians and even more were at risk of facing hunger between June and August, 2023 due to the current food inflation in the country (UNICEF, 2023; UN HungerMap, 2023). In the 2023 Global Hunger Index assessment, Nigeria scored 28.3, which shows that the country has a serious level of hunger (GHI, 2023). Many families cannot afford essential food items, even among the so-called middle class; if at all this class exists presently, because of inflation and other poor policies and economic indices. Food inflation hit 24.45% in August, 2023 (NBS, 2023) which may be due to some unfavourable macroeconomic policies including fuel subsidy removal, floating of dollar exchange rate and farmer-herdsmen crises (Simpa, Oghenjode, Ogwuegbu & Adanu, 2023; Shehu , Bello & Abdullahi (2024). For example, according to The National Bureau of Statistics (NBS) (2024a), all measures of

inflation rate rose in June 2024. Headline inflation increased to 34.2 percent in June, 2024 from 22.8 percent in June 2023 and 34.0 percent in May, 2024. NBS (2024a) further confirmed that the inflationary pressures remain driven by currency depreciation, with the official exchange rate averaging N1,471/US$ in June compared to N769/US$ in June 2023 and rising imported food inflation of 36.4 percent. Headline inflation remains principally driven by food inflation, which rose to 40.9 percent year-on-year, up from 40.7 percent in May, 2024 and significantly higher than 25.3 percent in June 2023.

The federal government of Nigeria (FGN) subsidized private consumption of imported petroleum products. Subsidy is an instrument used to keep the prices of imported petroleum products within the reach of the citizenry to maintain a stable consumer price and, invariably, result in a low cost of living for the people. Prices of petroleum products have been regulated through subsidies for a long period of time now. Therefore, the removal of subsidies on fuel is a contentious policy because of its influence on consumption and the socio-economic activities of the citizens, especially the low-income earners. That is, the domestic prices of imported petroleum products have been below their import costs. However, the cost of the subsidy has risen astronomically in recent times due to corruption, an increasing population, and increased illegal exportation of subsidized petroleum products into nearby nations (Energy Policy, 2014). As a result of these, the estimated cost of the subsidy is about 39% of the government expenditure (Adenikinju, 2010). This growing subsidy cost has drawn attention of the government to the sustainability of the welfare policy as it is being financed at the expense of the growth of real sectors of the economy, such as infrastructure, agriculture, manufacturing, and service sectors. Again, subsidy is seen to be regressive, benefiting largely the richest group—the importers and marketers (IEA, 2011; CPPA, 2012)—rather than the poor households.

The removal of fuel subsidies has positive and negative implications for consumers and producers within the economy. It is a complex decision with multifaceted implications. It leads to positive outcomes and poses challenges to vulnerable populations. Any decision to withdraw fuel subsidies should be accompanied by a well-thought-out strategy that considers mitigation measures for the vulnerable population and promotes sustainable economic growth. On the positive side, fuel subsidy removal would free up funds for other sectors of the economy, such as the development of public infrastructure, stimulation of domestic production of petroleum products, forestalling over-dependence on imported fuel, creation of employment, reduction of budget deficits, and generation of budget surpluses. Other benefits of removing fuel subsidies include reducing environmental pollution, curbing excess borrowing by the FGN, checking corruption relating to fuel subsidies, promoting favourable terms of payment at international trade, and reducing pressure on the exchange rate.

On the contrary, subsidy removal has a distributive effect on its own commodity price and the prices of other commodities such as transportation, food, drugs, and other goods (Adenikinju, 2012; Dartanto, 2012). Subsidy withdrawal resulted in an abrupt increase in fuel prices, which led to higher costs of transportation and essential commodities and services. The fuel subsidy removal policy has pressurized the purchasing power of already stressed citizens. This has grossly affected the logistic and energy costs, which are critical to inputs in food production and the manufacturing value chain. It has resulted in post-harvest losses due to the high cost of transportation. This has resulted in high prices for commodities and foods across Nigeria. Food price inflation has risen 17 years, from 24.82 in May, 2023 to 25.25% in June 2023 and 28.2 in December, 2023 (NBS, 2023). According to the UN World Food Programme coordinated by HungerMap, empirical studies have shown that hunger incidence has increased by 0.2% since the fuel subsidy withdrawal (NBS, 2023). The rural poor households in Nigeria, which made up about 48.5% of the total households, were usually the worst hit by

Simpa, Ondeku James, Idisi, Park O, Adeagbo, Benjamin A. PhD., Atteh, A. P, Salihu, Maimunat Umar, Musa, Ganaka Kubi and Ogwuegbu, C. Odinakachi (2024)

subsidy withdrawal (Omenka and Adenikinju, 2013), and it might be more so now, in 2023. Again, subsidy removal increases the total consumption expenditures of suppliers and consumers (Oyekale and Udia, 2007; Adenikinju, 2012). The cost of living of the average consumer becomes high, thereby forcing households to change their consumption behaviour and expenditure patterns (Lutz, 2007). In the short run, it affects the production costs and output prices of economic activities, which invariably affect the income of households (Bresinger et al., 2012; Manzoor et. al., 2009). Prices of food items and other products are increased as a result of total fuel subsidy withdrawal, and these changes equally result in higher food expenditure by households. Consequently, non-farming households (urban households) experienced the largest expenditure change due to subsidy withdrawal (Nwafor et al., 2006; Fofana et al., 2009). This worsened the situation of the already impoverished Nigerians who live beyond the poverty line. Currently, Nigerians face untold hardship in terms of hunger as a result of the ill-timed and poor preparation for the removal of fuel subsidies. For instance, cost of food in Nigeria increased by 39.53 percent in July of 2024 over the same month in the previous year (NBS, 2024b; CBN, 2024). Nigerians were not given time and orientation to prepare for the consequences of fuel subsidy withdrawal. The withdrawal was haphazardly and hurriedly done without due, long, and adequate notice. As a result, there is a general assumption that the elimination of fuel subsidies will have a serious impact on the country's inflation rate and the consumption patterns of households. As a result of the manner in which the fuel subsidy was removed, there is a general assumption and expectation that the elimination of fuel subsidies will have a serious impact on the country's inflationary rate and the consumption patterns of households.

The influence of subsidy removal on prices of commodities and services, particularly food, is said to be worsened by low per capita income and acute poverty in Nigerian households. The consumer price index increases on a daily basis in such a way that household income can hardly cope with the trend, particularly after the subsidy removal. In light of the importance of rice as a staple food product in Nigeria, especially in urban centres like the study area, and the general impact of subsidy removal on the prices of agricultural and non-agricultural commodities, this empirical study uses rice as a proxy for other food products and aims to examine rice consumption in the post-fuel subsidy removal period. This work would support, approve, or disprove the general assumption of the impact of fuel subsidy removal on the prices of food items and consumption patterns of rice in particular. Therefore, the objectives of the study include: (i) determining the socio-economic characteristics of rice consumers. ii) examine factors influencing the quantity of rice consumed (own price, habit, age, household size, income level, transport cost, substitute). (iii) examine the consumption patterns of rice by households before and after fuel subsidy removal. (iv) examine the degree of association between quantities of rice demanded and their own price, habit, age, household size, income level, and substitute. Hypothesis: Ho: There is no difference between the quantities of rice consumed in pre- and post-fuel subsidy removal periods. Ha: There is a difference between the quantities consumed pre- and post-fuel subsidy removal periods.

1.2 **Theoretical Review on the Consumption**

Theory of Consumers relates the consumption of goods and services to consumption expenditures. This theory states that consumption of any goods or services responds to changes in external variables. The theory assumes that the magnitude of consumption of goods and services is determined by the price of the commodity and these external forces. Apart from income and commodity prices, which determine the quantity of goods demanded, consumption choices are limited by physical constraints such as environmental factors, institutional factors,

government policies, and economic constraints. Consumption choice is limited to those commodity bundles that one can afford (Andreu et al., 1995). The set of consumption bundles is a set of commodities represented as Q = (q_1, q_2, q_3..., qn). The affordability of a consumption bundle depends on the market price and the consumer's income level. The theory also connotes that consumer demand is objective and aims at attaining a certain level of consumer satisfaction. The consumer is therefore faced with the problem of preference, which will enable him to either achieve maximum utility within his limited income or minimize his expenditure to obtain a level of utility greater than the initial utility. Whatever happens in an economy, especially fiscal and monetary policies, affects consumption.

2.0 **Methodology**

Abuja Municipal Area Council (AMAC) in the Federal Capital Territory was the study area. AMAC consists of twelve wards, and the wards were adopted for this study. A multiple random sampling technique was used in selecting six wards at the first stage. The six wards are: Nyanya, Karu, Orozo, Garki, Wuse, and Gwaripa. In the second stage, 180 (the sample size) households were randomly selected from the wards for the study. Thirty respondents were randomly selected from each ward for the interview using a structured questionnaire. The interview was conducted with the aid of assistants. Data were solicited on the following parameters: quantities of rice consumed by households in pre- and post-subsidy removal, socio-economic attributes of the household head, and factors influencing consumption. The collected data was analyzed using frequency, multiple regression, simple linear correlation coefficient, charts, and the Z-test.

Multiple Regressions

The theoretical model specification for static demand as applies to this study is stated as follows:

$$Q = f(Pr,, H, A, Hh,.Y, F, S .., Ui) \qquad 2.1$$

Where; Q = Quantity of rice consumed (Kgs)

Pr = own price of rice (₦)

H = Habit (Yes = 1, No = 0)

A = Average Age of Household members (Nos)

Hh = household size (Nos)

Y = income of Household Head (₦)

T = Transport cost (N) per Km incurred by sellers

S = Substitute (Yes = 1, No = 0)

Ui = Error term. This economic model is modified by incorporating statistical and econometric components for the purpose of this research as follows:

$$Q = b_0 + b_1 Pr + b_2 H + b_3 A + b_4 Hh + b_5 Y + b_6 T + b_7 S + U_i \qquad 2.2$$

Where;

Pr, H, A, Hh, Y, F, S are as defined above and

b_1–b_7 = the parameters.

Ui is the error term, which takes care of other likely important explanatory variables that are not included in the model specification.

These parameters b_1–b_7 are the component elasticities that measure the magnitude of change in the dependent variable as a result of a unit change in the explanatory variables. The appropriate expectations of the parameters in this model are as follows: b_0 is the constant or the intercept (if graphically represented), and it is expected to be positive; b_1, b_3, b_6, and b_7 are expected to be negatively signed as per demand theory (this means that an

increase in these parameters will result in a decrease in the quantity of rice demanded or consumed); and b_2, b_4, and b_5 are expected to be positively signed (this means that an increase in these parameters will result in an increase in the quantity of rice demanded or consumed). The sizes of the parameters show the magnitude of the influence of each of the explanatory variables on the dependent variable (Q). The four common multiple regression functional forms were employed for the analysis. The four functional forms are: linear, semi-log, exponential, and Cobb-Douglas, and the one that provided the best fit would be selected. The choice of the best functional form was based on the magnitude of the R^2 value, the number of significant variables and the sign of the regression coefficients as they conformed to an a priori expectation. The functional forms were specified implicitly as follows:

Linear function: $Q = b_0 + b_1Pr + b_2H + b_3A + b_4Hh + b_5Y + b_6T + b_7S + U_i$ 2.3

Semi-log: $Q = Lnb_0 + b_1LogPr + b_2LogH + b_3LogA + b_4LogHh + b_5LogY + b_6LogT + b_7LogS + U_i$ 2.4

Exponential Function $LnQ = b_0 + b_1Pr + b_2H + b_3A + b_4Hh + b_5Y + b6T + b_7S + U_i$ 2.5

Cobb Douglas $LnQ = Ln\ b_0 + b_1LogPr + b_2LogH + b_3LogA + b_4LogHh + b_5LogY + b_6LogT + b_7LogS + U_i$ 2.6

Simple Linear Correlation Coefficient

Pearson Correlation Coefficient

$$r = \frac{\sum(x-\bar{x})(y-\bar{y})}{\sqrt{(\sum_{(x-\bar{x})}2)(\sum_{(y-\bar{y})}2)}}$$ 2.7

where; r = Correlation Coefficient,

x- and y- are deviations from the mean values of X and Y variables

Z-test for Hypotheses Testing Z-test was used to carry out the significance test and the formula is stated as:

$$Z_{cal} = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$ 2.8

Where;

$\bar{X}1$ = the mean scores of rice consumers in pre subsidy removal period.

$\bar{X}2$ = the mean scores of rice consumers in post subsidy removal period.

σ_1^2 = standard deviation of rice consumers in pre subsidy removal period

σ_2^2 = standard deviation rice consumers in post subsidy removal period

n_1 = number of deviation rice consumers in pre subsidy removal period

n_2 = number of deviation rice consumers in post subsidy removal period.

Decision Rule: The decision rule is that if Z-calculated is greater than Z-tabulated, the null hypotheses are rejected and the alternative hypotheses are accepted at the 5% (0.05) level of significance.

3.0 **Results and Discussion**

Table 1: Socioeconomic Characteristics Distribution of the Respondents

VARIABLE	FREQUENCY	PERCENTAGE	VARIABLE	FREQUENCY	PERCENTAGE
Age (years)			**Educational level**		
30 – 40	40	22.2	No formal education	10	5.5
41 – 50	60	33.3	Primary school	45	25.0
51 – 60	50	27.8	Secondary school	50	27.8
Above 60	30	16.7	Tertiary education	75	41.7
Total	**180**	**100**	**Total**	**180**	**100**
Marital status			**Income level (₦)**		

Single	16	8.9	0 – 30,000	20	11.1
Married	90	50	0.00 – 50,000	15	8.3
Window	20	11.1	50,001 – 100,000	45	25.0
Divorced	54	30.0	100,001 – 150,000	25	13.9
Total	**180**	**100**	150,001 – 200,000	24	13.3
			Above 200,000	51	28.4
			Total	**180**	**100**
Household size			**Occupation**		
2 – 4	40	22.2	Menial job	40	22.2
5 – 7	60	33.3	Civil servant/other employment	78	43.3
Above 7	80	44.5	Self employed	62	34.5
Total	**180**	**100**	**Total**	**180**	**100**

Source: Field Survey, 2024

Table 1 showed the distribution of the respondents according to the socio-economic characteristics. It showed that the majority of the respondents were within the age of 41 – 60 years (61%), married (50%), had household size of seven and above (44.5%), had tertiary education (41.7%), earn income of between N50,001 and N100,000 (43.3%) and they were civil servants. These characteristics revealed that the respondents were equipped to know the intricacies of the fuel subsidy removal and imports of their decisions.

Table 2: Summary Descriptive Statistics of the Variables of the Study

Variables	Mean	Maximum	Minimum	Standard Deviation
Quantity of Rice Purchased Pre FSR (kg)	19.7	22	15	1.3
Quantity of Rice Purchased Post FSR (Kg)	10.1	14	8	1.1
Price of Rice at Pre FSR (₦)	915	1000	900	34.6
Price of Rice at Post FSR (₦)	1296.1	1600	1000	159.3
Age (years)	42.5	65	30	4.9
Household size (Persona)	5	7	2	0.9
Educational level (years in school)	7.8	16	0	6.4
Income level (₦)	103,944.4	300,000	20,000	70,174
Transport (₦/Km) Pre FSR	52.3	7.2	60	40
Transport (₦/Km) Post FSR	91.3	120	70	8.4
Nos of Consumption per Month Pre FSR	12.9	15	10	2.5
Nos of Consumption per Month Post FRS	4.9	8	2	1.0
Nos of Days Interval between Consumptions Pre FRS	1.7	3	1	0.8
Nos of Days Interval between Consumption Post FRS	5.2	7	2	0.9
Quantity of Rice per Month (Kg) Pre FRS	4.9	6	4	0.6
Quantity of Rice per Month (Kg) Post FRS	2.9	4	2	0.6
Expenditure on Rice as % of Income Pre FRS	5.6	10	3	1.3
Expenditure on Rice as % of Income Post FRS	14	20	10	2.2

Source: Field Survey, 2024

Simpa, Ondeku James, Idisi, Park O, Adeagbo, Benjamin A. PhD., Atteh, A. P, Salihu, Maimunat Umar, Musa, Ganaka Kubi and Ogwuegbu, C. Odinakachi (2024)

Table 2 indicated the statistical description of the quantitative variables of the study. It revealed the general characteristics of the respondents and changes in consumption patterns of rice due to the effects of fuel subsidy removal.

Table 3: Regression analysis of factors influencing quantity of rice consumption PFSR in the study area

Variables	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	5.143	.540		9.523	.000
Own Price	.000	.000	.017	.355	.723
Habit	.090	.193	.022	.466	.642
Average age of household members	.327	.073	.266	4.455	.000***
Household Size	.688	.072	.583	9.594	.000***
Income level	6.021E-7	.000	.039	.808	.420
R-Square = 0.612;					
Adj. R-Square = 0.601					

*= significant at 10%,   PFSR = post fuel subsidy removal

Table 3: presented the results of multiple linear regression analysis that was used to test the factors influencing the quantity of rice consumed in the post fuel subsidies removal (PFSR) in the study area. The result of the data analysis revealed that the average age of the members of the household (B_4 = 0.327, $p < 0.01$) and household size (B_5 = 0.688, $p < 0.01$) have a positive and significant influence at 10% on the quantity of rice consumed after the removal of fuel subsidies. However, own price, habit, and income level have influence on the quantity of rice consumed after the removal of fuel subsidies, but not significant. The adjusted R-square value of 0.601 indicates that 60.1% of the variation in quantity of price consumed after the removal of fuel subsidies is caused by explanatory variables considered in this study.

Figure I: Consumption Pattern of the Rice Respondents
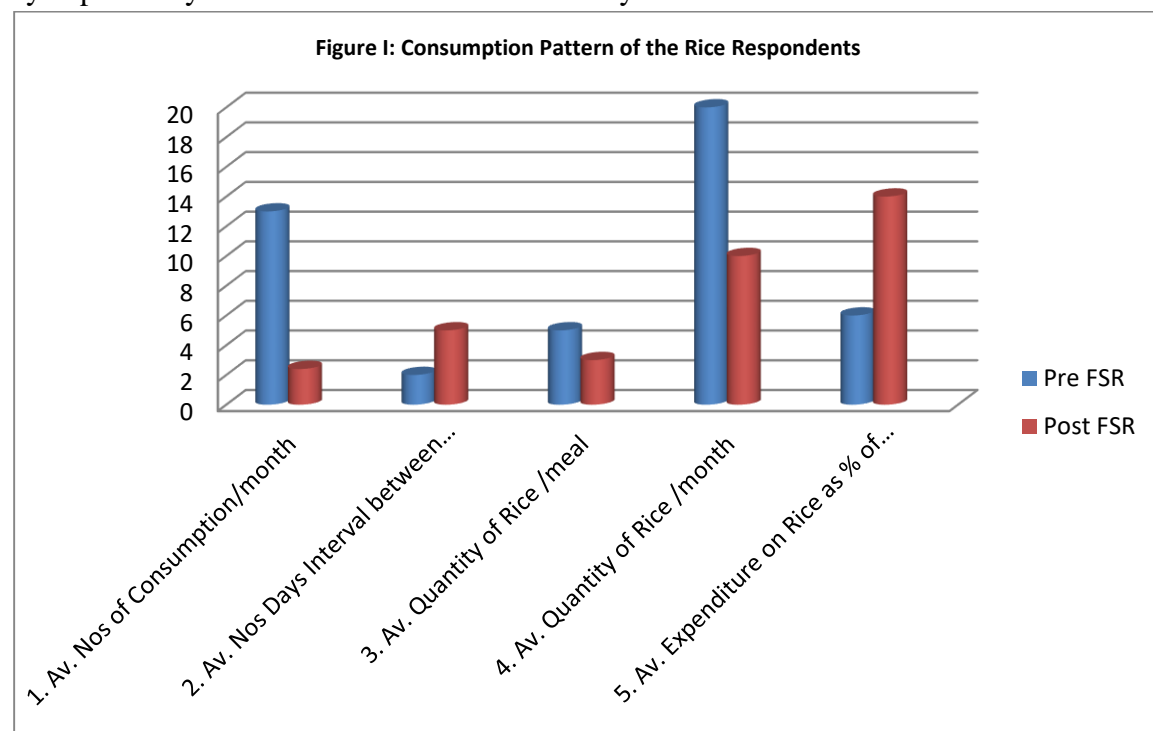
NB: Fig.I: 1= Average number of rice consumption per month; 2 = average number of days interval between rice consumption; 3 = Average quantity of rice per meal; 4 = Average quantity of rice per month and 5 = Average expenditure on rice as percentage of income.

Figure I indicated the pattern of rice consumption by the respondents before and after fuel subsidy removal. Thus, pre-FSR and post-FSR represent the patterns of rice consumption before and after fuel subsidy removal, respectively. The characteristics of rice consumption post-FSR were a result of fuel subsidy removal. This figure describes these changes in rice consumption by the respondent after fuel subsidy removal. For example, at post-FSR, the number of times households consume rice reduced from 13 at pre-FSR to 5, the interval of days between one rice consumption and another increased from 2 at pre-FSR to 5, the quantity of rice in kg per meal reduced from 5 at pre-FSR to 3, the quantity of rice in kg per month reduced from 20 at pre-FSR to 10, and the expenditure of the household on rice as a percentage of income increased from 6% at pre-FSR to 14%.

Table 4: Degree of Association between Quantity of Rice Consumed and Other Variables

Variables: Quantity of Rice versus	Correlation Coefficient (r)	Description of the Correlation Relationship
Own Price	0.040	Very weak positive
Habit	- 0.085	Very weak negative
Age	0.624	Moderate positive
Households size	0.725	Strong positive
Income level	0.202	Very weak positive

Source: Field survey: 2024

Table 5: Test of Hypothesis

Model	Null Hypothesis	No of Restriction	Z-Statistics	Critical Value	Decision
Quantity of Rice Consumed in Pre and post FSR Quantity	Ho: Pre FSR = Post FSR = 0	179	80.44	1.6539	Ho Rejected

Source: Field survey, 2024   NB: FSR = Fuel Subsidy Removal

The result of the hypothesis test, which is defined by Z-statistics distribution, showed that the computed value is 80.44 and the critical value is 1.6539 (df = 179, α = 0.05). Therefore, since the computed value was greater than the critical value, the null hypothesis is rejected. This showed that there was a significant difference between the scores of rice consumption before and after fuel subsidy removal.

Conclusion

Majority of the households are married with size of 5-7 persons, educated and are civil servants with income level of above N200, 000.00. People purchase more rice during pre-FSR than post FSR with a mean of 19.7 and 10.1 respectively. Transport, numbers of times of rice consumption, interval of days of days between rice consumption, percentage of income expended on rice are higher in post-FSR than in pre-FSR with a mean of N120.00 per Kg, seven days and 20% respectively. The household habit, average age of the household members, household size, income level influence quantity of rice consumed by the households in post-FSR, only average age households size were significant at 10% level. About 60% of the variation in rice consumption

in post-FSR is explained by the parameters considered in the regression. Rice consumption pattern showed that number of times rice is consumed in the household, quantity of rice per meal, quantity of rice per month are higher in pre-FSR than in post-FSR. FSR negatively affected rice consumption pattern in the study area. The study confirmed that there is difference between the quantity of rice consumed in pre-FSR and post-FSR.

Recommendations

The recommendations are as follows:

1. The pattern of rice consumption showed that most households consume rice almost on daily basis, therefore, the government should address some factors that negatively affect availability, accessibility and affordability of rice to either eradicate or minimise hunger.

2. Palliatives (rice and its condiments or ingredients) from either government or non-government organisations or individual should be provided to meet the demand of the majority of the people in the study area. The government should be giving rice palliative more frequently to assist the families.

3. The ratio of expenditure on rice to the total income has risen; the authority of FCT should consider improving the people's salary as this would trickle down to all and sundry in the study area.

4. The average age of the households is low and this implies that a greater population the study area are children and youth. This parameter influence rice consumption significantly. Again, household size also showed a significant influence on rice consumption. These two related factors should be considered while making policies on food security for the study area.

5. The population of the area should be controlled. There should be family planning advocacy and family heads be enlightened on child birth control visa vice the biting economy and the galloping inflation rate.

References

Abbas, A. M., Agada, I. G., and Olaoluwa O. & Rapu, S. C. (2018). Impacts of Rice Importation on Nigeria's Economy, Journal of Scientific Agriculture, 2: 71–75 doi: 10.25081/jsa.2018.v2.901 http://updatepublishing.com/journals/index.php/jsa ISSN: 2184-0261

Adenikinju. A. Ajakaiye. O. Decaluwe. B. and Iwayemi. A. (2009). Computable General Equilibrium Modeling in Nigeria; Ibadan University Press. Andreu, M., Michael, D., Whitston, T., and Jerry, R. G. (1995): Microeconomic Theory, New York: Oxford University Press.

Bamidele, F. S., Abayomi, O. O., & Esther, O. A. (2010). Economic Analysis of Rice Consumption Patterns in Nigeria. Journal of Agricultural Science and Technology, 12, 1–11.

Breisinger, C, Engelke. W. and Ecker. O (2012). Leveraging Fuel Subsidy Reform for Transition in Yemen; Sustainability, Volume 4, issue 2862–2887; doi:10.3390/su4112862

Central Bank of Nigeria (2024). https://www.cbn.gov.ng/documents/QuarterlyStatbulletin.asp. (Accessed 30 August 2024)

Chitiga, M., Fofana, I., and Mbaugu, R. (2010). Analyzing Alternative Policy Response to High Oil Prices, Using an Energy-Integrated CGE Micro-Simulation Approach for South Africa; Working Paper Number 196, Nov

CPPA (2012). Centre for Public Policy Alternatives: Nigeria Fuel Subsidy @ toluogunlesi.wordpress.com/... fuel-subsidy-desktop-study-report-by-The CPPA

Dartanto, T. (2012). Reduing Fuel Subsidies and the Implication on Fiscal Balance and Poverty in Indonesia; A Simulation Analysis. Working Paper in Economics and Business, Vol. 11, No. 6/2012

Food and Agriculture Organization (FAO) (2017). Nigeria at a Glance www. fao. org/nigeria/fao-in-nigeria/nigeria-at-a-glance/en/.; accessed 22.03.2017).

Federal Ministry of Agriculture and Rural Development (FMRD) (2011). Agricultural Transformation Agenda: We will grow Nigeria's agricultural sector (draft for discussion). Federal Ministry of Agriculture and Rural Development, Abuja, Nigeria. 2011;pp.1-105.

Energy Policy (2014). Impacts of removing fuel import subsidies in Nigeria on poverty, Elsevier, Volume 69, Pages 165–178, https://doi.org/10.1016/j.enpol.2014.02.006Get rights

Fofana, I., Chitiga, M., Mabugu, R. (2009). Oil prices and the South African economy: A macro-meso-micro analysis; Energy Policy 37 (2009) 5509–5518.

Global Agricultural Information Network (2017). Nigeria's grain and feed annual report. https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Grain%20a Sal_Lagos_Nigeria_4-21-2016. pdf. 2016; accessed 22.02.2017.

IEA (2008): "World Energy Outlook, Paris". http://www.worldenergyoutlook.org/media/weowebsite/2008-1994/weo1999.pdf

IEA; International Energy Agency (2011). World Energy Outlook 2011. Paris: OECD/IEA. @ http://www.iea.org/publications/freepublications/publication/weo2011_web.pdf

Manzoor D, Asaghar. S. and Iman. H. (2009). An Analysis of Energy Price Reform: A CGE Approach, www.iiccgov.org/iew2009/... /manzoor-etal-analysisofenergypricereform.pdf National Bureau of Statistics (2010): Annual Abstract of Statistics @ www.nigerianstat.gov.ng/nbslibrary/nbs-annual-abstract-of-statistics

National Bureau of Statistics (2013). Foreign Trade Statistic Fourth Quarter, 2012; Strong Merchandise

National Bureau of Statistics (2024a). CPI and Inflation Report January 2024. Available online at: https://nigerianstat.gov.ng/elibrary. (Accessed 30 August 2024).

National Bureau of Statistics (2024b). Premium Motor Spirit (Petrol) Price Watch (February 2023). Available online at: https://nigerianstat.gov.ng/elibrary/read/1241398. (Accessed 30 August 2024).

Nwafor, M., Ogujiuba, K., and Asogwa, R. (2006). Does Subsidy Removal Hurt the Poor? Evidence from Computable General Equilibrium Analysis; African Institute for Applied Economics. Pp.4-30.

Nwafor.M, Adenikinju. A. and Ogunjiuba. K. (2007). The Impact of Trade Liberalization on Poverty in Nigeria; Dynamic Simulations in the CGE Model, MPIA Working Paper 2007-16. Oyekale, S., and Udia, J.W. (2007): Changing Rural Households' Expenditure and Copping Strategies Under the Deregulated Fuel Price Regime in Nigeria: A Micro-Evidence from Ikene Local Government; Pakistan Journal of Social Science, Vol. 4, Issue 1. Pp. 102–106,

Nwafor. M., Ogujiuba, K., and Asogwa, R. (2006). Does Subsidy Removal Hurt the Poor? Evidence from Computable General Equilibrium Analysis; African Institute for Applied Economics. Pp.4-30.

Ojo, A.O. (2019). Households' consumption willingness for locally processed rice in Kogi State, Nigeria. Journal of Agricultural Science and Technology 11(2): 177–183 (https://agriscitech.)

Rapu, S. C. (2017). Evaluating the impact of policies on the production efficiency of Nigeria's rice economy. PhD Dissertation of Walden University, Minneapolis, Minnesota, USA. http://scholarworks. waldenu. edu/cgi/viewcontent. cgi? article=3526andcontext=dissertations. pdf. 2016; accessed 24.02.2017.

Shehu, E. , Bello, M., Abdullahi, A., M. (2024). Inflation Dynamics and Food Prices in Nigeria, Gusau International Journal of Management and Social Sciences, 6(3), 237–255. https://doi.org/10.57233/gijmss.v6i3.13

Shittu O. K. and Pradesha A. (2013). An Econometric Analysis of Rice Demand in Nigeria (IFPRI). Paper presented at the 18th annual conference on Econometric Analysis and Policy Challenges in Africa, 24-26 July 2013,

Simpa, O. J, Oghenjode, A. O, Ogwuegbu, C. O & Bashar A. A. (2023). Review of Farmers-Herdsmen Crisis In Nigeria From 2016 t0 2021**,** Nasara Journal of Sci. and Tech., Vol. 10 (1), 2023, PP. 65-78