

EFFECTS OF OIL PRICE SHOCKS ON RURAL HOUSEHOLD WELFARE AND COPING STRATEGIES IN ZING LOCAL GOVERNMENT AREA, TARABA STATE, NIGERIA

Ali Musa Ali¹, Ibrahim Victor Janar²

Department of Economics, College of Education, Zing, Taraba State, Nigeria
alimusa@coezing.edu.ng

Abstract

This study examined the effects of oil price shocks on rural household welfare and coping strategies in Zing local government area, Taraba state. The study adopted a cross-sectional survey research design. Data were collected from 373 rural household heads and adult household representatives selected through a multi-stage sampling technique. A structured questionnaire was used for data collection, while descriptive statistics and Wilcoxon Signed-Rank Test were employed for data analysis using (SPSS). The findings revealed that respondents generally perceived rising fuel prices as having adverse effects on household welfare, with a grand mean score of 3.09. Specifically, respondents reported that rising fuel prices worsened household economic conditions ($\bar{x} = 3.32$), increased transportation costs for farm produce ($\bar{x} = 3.18$), reduced household purchasing power ($\bar{x} = 3.12$), and weakened income stability ($\bar{x} = 3.10$). The findings further revealed that the major coping strategies adopted by households included reduced food consumption ($\bar{x} = 3.47$), occasional skipping of meals ($\bar{x} = 3.41$), increased use of firewood and charcoal for cooking ($\bar{x} = 3.37$), and trekking instead of paid transportation ($\bar{x} = 3.29$). The Wilcoxon Signed-Rank Test showed a statistically significant difference between household income before and after fuel price increases ($Z = -4.541$, $p = 0.000$), indicating perceived declines in household income conditions following rising fuel prices. The study concluded that rising fuel prices placed severe welfare pressures on rural households and recommended improved rural transportation support, efficient fuel distribution systems, and stronger social protection measures.

Keywords: *Fuel Price Increases, Household Welfare, Coping Strategies, Rural Households, Purchasing Power, Nigeria.*

Introduction

Recent oil price shocks have become a major global economic challenge affecting both developed and developing countries, including the United States, Italy, France, Bangladesh, Ghana, and Nigeria (Khalil, 2022; Emon, 2023; Gamette & Oteng, 2024; Kudabayeva et al., 2024). These shocks refer to sudden changes in crude oil and petroleum product prices that trigger inflation pressures, exchange rate instability, higher transportation costs, and increased production expenses (Hamilton, 2019). In oil-dependent economies such as Nigeria, volatility in the global oil market significantly contributes to domestic inflation and macroeconomic instability through exchange rate movements (Effiong et al., 2025). Because petroleum products are central to transportation, agriculture, manufacturing, and commercial activities, changes in fuel prices may negatively influence household welfare and economic productivity (Bawa et al., 2020). The recent removal of fuel subsidies has further increased the country's exposure to external oil market fluctuations, raising concerns over rising living costs and the vulnerability of rural households that depend mainly on agriculture and informal economic activities (Kayode & Idera, 2025). In the context of this study, oil price shocks refer specifically to the sharp increases in petroleum product prices experienced in Nigeria following fuel subsidy removal and related fluctuations in domestic fuel prices. The study focuses primarily

on the household welfare implications of rising fuel prices rather than broader international oil market dynamics.

Despite being one of Africa's largest oil-producing countries, Nigeria continues to experience widespread rural poverty and economic hardship (Dauda, 2019; Abanigbe & Olutola, 2025). Rural households depend largely on agriculture, petty trading, and transportation-related activities for their livelihoods. Since these activities rely heavily on petroleum products, increases in fuel prices often lead to higher transportation costs, rising prices of farming inputs, and increased costs of basic goods and services (Adekunle & James, 2023). These conditions may reduce household income, purchasing power, and overall welfare, particularly among low-income rural populations. Previous studies have shown that increases in fuel prices contribute to food inflation, higher household expenditure, and declining living standards among vulnerable households in Nigeria (Oladipo et al., 2024; Bassey & Arene, 2022). In this study, household welfare is conceptualized in terms of perceived household economic conditions, purchasing power, transportation costs, income stability, and household coping responses associated with rising fuel prices. Consequently, rural households remain among the most vulnerable groups affected by fuel price increases in the country, thereby necessitating further investigation into the implications of oil price shocks on their livelihoods and welfare.

Several empirical studies have shown that rural households in developing economies are highly vulnerable to macroeconomic shocks arising from fluctuations in oil prices. Oil price shocks often generate inflationary pressures, rising transportation costs, and increased production expenses, which negatively affect household welfare and purchasing power (Hamilton, 2019). Bacon and Kojima (2006) argued that poor households are disproportionately affected because transportation and energy expenditures constitute a large share of their income. In Nigeria, rural households remain economically vulnerable due to widespread poverty, dependence on agriculture, and limited access to social protection mechanisms (Ayantoye et al., 2024). Previous studies further revealed that fuel price increases contribute to food inflation, rising household expenditure, declining living standards, and reduced real household income among vulnerable populations (Siddig et al., 2014; Oladipo et al., 2024). These effects are particularly severe in agrarian rural communities where farming, petty trading, and transportation activities depend heavily on fuel and transportation networks.

Households often adopt different coping strategies in response to rising fuel prices and associated economic pressures. Existing studies indicate that vulnerable households commonly respond by reducing food consumption, limiting non-essential expenditures, engaging in additional income-generating activities, and relying on informal social support systems (Rentschler, 2016; Animashaun & Wossink, 2024). In rural Nigerian communities, coping mechanisms associated with fuel price increases include trekking instead of using commercial transport, switching to alternative energy sources such as charcoal and firewood, skipping meals, and adjusting farming activities to minimise operational costs (Okoroh, 2024). These responses demonstrate how oil price instability influences household consumption patterns, expenditure behaviour, and livelihood strategies in rural communities.

Although extensive literature exists on oil price shocks and household welfare, most previous studies have focused on national or cross-country analyses with limited attention to specific rural communities in Taraba State. No previous study has quantified the income, expenditure, and coping responses to oil price shocks specifically in Zing Local Government Area, which is characterized by dependence on agriculture, cultivation of yam, cassava, and groundnut, high

transportation reliance, and limited infrastructural and social protection support. These structural characteristics may expose rural households in the area to unique welfare challenges associated with rising fuel prices that are not adequately captured in broader national studies. Therefore, this study examines the impact of oil price shocks on rural households in Zing Local Government Area of Taraba State, with focus on socio-economic characteristics, income and expenditure patterns, and coping strategies, in order to provide context-specific evidence for policy and rural welfare interventions.

Research Objectives

The study was guided by the following specific objectives

- i. To describe the socio-economic profile of rural households in Zing Local Government Area.
- ii. To assess the perceived effects of oil price shocks on household income among rural households in Zing Local Government Area
- iii. To identify and rank coping strategies adopted in response to oil price shocks.

Hypotheses

H0₁: There is no significant effect of oil price shocks on household income among rural households in Zing Local Government Area, Taraba State.

Literature Review and Theoretical Framework

This study is principally rooted in the arguments of household welfare theory by Deaton and Muellbauer (1980), who explained that household welfare depends largely on the ability of households to allocate available income efficiently in order to satisfy essential needs such as food, healthcare, transportation, shelter, and education. Deaton and Muellbauer (1980) posit that changes in prices and expenditure obligations significantly influence household consumption behaviour and welfare conditions because households attempt to maximize utility within the limits of available resources. They further explain why households may adjust consumption patterns and adopt coping mechanisms during periods of economic stress. This perspective implies that in rural communities, where many households depend heavily on farming and transportation-related activities, rising fuel prices may increase transportation costs, food prices, healthcare expenses, and educational expenditure, thereby affecting household welfare conditions and livelihood sustainability.

This position is reinforced by Blanchard (2017), who argued that increases in fuel and transportation costs frequently generate wider inflationary pressures because transportation constitutes an important component of production and distribution systems. Increases in production and transportation costs are often transferred to consumers through higher prices of goods and services (Blanchard, 2017). This argument helps explain the perceived increases in food prices, transportation costs, and household expenditure burdens reported by respondents within the study area. Similarly, Chambers (1989) argued that poor households are generally more vulnerable to economic shocks because they possess limited savings, unstable income sources, and weak adaptive capacity. Adger (2006) further maintained that vulnerability is influenced by the degree of household exposure to economic risks and the capacity to cope with adverse conditions. These arguments are particularly relevant to the present study because rural households within Zing Local Government Area are predominantly agrarian and low-

income households that may experience greater welfare pressures during periods of rising fuel prices.

The arguments of Chambers (1989) and Adger (2006) further help explain why households adopt coping mechanisms such as meal reduction, trekking instead of paid transportation, reduced healthcare spending, increased reliance on traditional household energy sources, and expenditure adjustment during periods of rising fuel prices. The perspectives also support the assumption that the effects of fuel price increases may vary across households depending on income level, occupation, household size, and livelihood structure. Furthermore, Kilian (2008) argued that fuel price increases affect household welfare indirectly through multiple economic channels, including transportation costs, inflationary pressures, production costs, and reductions in real household income. Increases in fuel prices influence transportation systems, agricultural production activities, and commodity distribution networks, thereby transmitting economic pressures across households and local economies. This argument is particularly relevant to the present study because rural households within the study area depend heavily on transportation for the movement of agricultural produce, access to markets, healthcare services, and educational facilities.

The arguments of Deaton and Muellbauer (1980), Blanchard (2017), Chambers (1989), Adger (2006), and Kilian (2008) provide a comprehensive explanation of how rising fuel prices may affect household welfare conditions, expenditure patterns, and coping strategies among rural households. The perspectives explain that increases in fuel prices may weaken purchasing power, increase living costs, intensify household vulnerability, and compel households to adopt various adaptive survival strategies during periods of rising fuel prices and household economic pressure.

Conceptual Framework

The conceptual framework for this study is based on the assumption that increases in fuel prices generate direct and indirect economic pressures on rural households. Rising fuel prices increase transportation costs, the cost of agricultural inputs, and the prices of essential household commodities. These conditions may reduce household purchasing power, income stability, savings capacity, and overall perceived economic wellbeing. In response to these welfare pressures, households are likely to adopt various coping strategies such as reducing food consumption, skipping meals, trekking instead of using transportation, increasing dependence on alternative energy sources, and engaging in additional income-generating activities. The framework therefore conceptualizes fuel price increases as the independent variable influencing household welfare conditions and coping responses among rural households.

Methodology

This study adopted a cross-sectional survey research design to examine the effects of oil price shocks on rural household welfare and coping strategies in Zing Local Government Area. The cross-sectional survey design was considered appropriate because it enabled the collection of quantitative data from a relatively large number of respondents at a single point in time regarding their socio-economic characteristics, perceived welfare conditions, and coping responses to rising fuel prices. The design was particularly relevant to the present study because rising fuel prices associated with fuel subsidy removal generated immediate welfare concerns that required rapid household-level assessment across multiple rural communities. The study

therefore focused on respondents' lived experiences, perceived welfare changes, and adaptive responses during the period of fuel price increases. The welfare dimension of the instrument focused on respondents' perceived changes in purchasing power, transportation costs, household savings, income stability, and household economic conditions following fuel price increases.

The study was conducted in Zing Local Government Area of Taraba State, Nigeria. Zing LGA is one of the administrative local government areas in Taraba State, located in the North-East geopolitical zone of Nigeria. The area is predominantly rural and agrarian, with farming, petty trading, and localized transportation services constituting the major livelihood activities of the population. Major crops cultivated within the area include yam, cassava, maize, and groundnut, all of which depend heavily on transportation networks for movement to surrounding markets. Politically, Zing LGA is divided into ten electoral wards, including Bitako, Bubong, Dinding, Lamma, Monkin A, Monkin B, Yakoko, Zing A I, Zing A II, and Zing B. The area is characterized by inadequate infrastructural facilities, weak transportation systems, irregular fuel supply, and limited institutional social protection structures. These structural conditions increase household vulnerability to fluctuations in petroleum prices and transportation costs. The area was considered suitable because rural households within the LGA depend substantially on transportation-intensive agricultural activities and informal economic systems that are highly sensitive to changes in fuel prices. Furthermore, the considerable distance between the area and major fuel distribution depots often contributes to fuel scarcity and elevated transportation costs during periods of fuel price volatility. These conditions make the area appropriate for investigating the welfare implications of oil price shocks among vulnerable rural populations.

The target population for the study comprised rural households within Zing Local Government Area, particularly household heads and adult representatives actively engaged in farming, petty trading, transportation-related activities, and other informal livelihood occupations. These categories of respondents were considered appropriate because they are directly involved in household economic management and are more likely to experience the welfare implications associated with rising fuel prices. The sample size for the study was determined using Cochran's (1977) sample size formula for large populations: $n = \frac{Z^2 pq}{e^2}$, where n represents the required sample size, Z represents the standard normal deviation at 95% confidence level (1.96), p represents the estimated proportion of the population possessing the attribute (0.5), q represents $1-p$, and e represents the margin of error (0.05). The application of this formula produced an initial sample requirement of approximately 384 respondents. A final pool of 373 valid, fully completed questionnaires was successfully retained and audited for analysis, representing a robust 97.1% active response rate.

A multi-stage sampling technique was employed to ensure adequate geographical representation across the study area. The sampling process involved three major stages. At the first stage, six (6) electoral wards were randomly selected from the ten wards constituting Zing LGA using simple random sampling through balloting without replacement. The selected wards included Zing A, Zing B, Bitako, Dindi, Yakoko, and Munky. At the second stage, two rural communities were randomly selected from each sampled ward, producing a total of twelve (12) communities for the study. This stage enabled broader spatial coverage and reduced location-based selection bias. At the third stage, households were selected proportionately from

the sampled communities. Simple random sampling was then used to identify household heads or adult household representatives for questionnaire administration.

Data for the study were collected using a structured questionnaire developed by the researchers after extensive review of relevant literature on oil price shocks, household welfare, and coping strategies (Hamilton, 2019; Rentschler, 2016; Siddig et al., 2014). The questionnaire utilized a five-point Likert scale consisting of Strongly Agree (5), Agree (4), Neutral (3), Disagree (2), and Strongly Disagree (1). The validity of the instrument was established through face and content validation procedures. The draft questionnaire was submitted to three experts in Economics, Measurement and Evaluation, and Social Science Research Methodology for critical assessment. The experts examined the instrument for clarity of language, item relevance, adequacy of coverage, structural consistency, and alignment with the research objectives and hypotheses. To determine the reliability of the instrument, a pilot study was conducted using twenty-five respondents from a neighbouring rural area outside the main study location but sharing similar socio-economic characteristics with the target population. Responses obtained from the pilot study were analysed using Cronbach's Alpha reliability technique through the Statistical Package for the Social Sciences (SPSS). The reliability analysis produced a Cronbach's Alpha coefficient of 0.92 for the welfare effects subscale and .94 for the coping strategy subscale, while the overall reliability coefficient of the instrument was .92. which is considered excellent (George & Mallery, 2003).

Ethical considerations were strictly observed during the study. Respondents were informed about the purpose of the research and participation was entirely voluntary. Informed consent was obtained from participants prior to questionnaire administration, while confidentiality and anonymity of responses were assured throughout the research process. Data collected were coded and analysed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics including frequency counts, percentages, means, standard deviations, and rank ordering were used to analyse respondents' socio-economic characteristics, perceived welfare conditions, and coping strategies. A benchmark mean score of 3.00 was adopted for decision-making on Likert-scale items. Inferential statistical analysis involving the Wilcoxon Signed-Rank Test was used to examine the effect of oil price shocks on household income among rural households in the study area. The test was considered appropriate because household income was measured using ordered income categories coded numerically for inferential analysis.

Results

Objective One: To Describe the Socio-Economic Profile of Rural Households in Zing Local Government Area

Table 4.1: Socio-Economic Profile of Rural Households in Zing Local Government Area (N = 373)

Variables	Categories	F	%
Gender	Male	208	55.8
	Female	165	44.2
	Total	373	100.0
Age Group	18–30 years	109	29.2
	31–40 years	125	33.5

Variables	Categories	F	%
Marital Status	41–50 years	91	24.4
	51 years and above	48	12.9
	Total	373	100.0
	Single	70	18.8
	Married	240	64.3
	Divorced	37	9.9
	Widowed	26	7.0
Educational Qualification	Total	373	100.0
	No Formal Education	78	20.9
	Primary Education	104	27.9
	Secondary Education	119	31.9
	Tertiary Education	72	19.3
Main Occupation	Total	373	100.0
	Farming	156	41.8
	Trading	81	21.7
	Transportation	30	8.0
	Civil Service	35	9.4
	Artisan	34	9.1
	Others	37	9.9
	Total	373	100.0
Household Size	1–5 persons	128	34.3
	6–10 persons	198	53.1
	11 persons and above	47	12.6
	Total	373	100.0
Monthly Income Before Fuel Price Increase	Below ₦30,000	90	24.1
	₦30,000–₦59,999	150	40.2
	₦60,000–₦99,999	97	26.0
	₦100,000 and above	36	9.7
	Total	373	100.0
Current Monthly Income	Below ₦30,000	160	42.9
	₦30,000–₦59,999	123	33.0
	₦60,000–₦99,999	60	16.1
	₦100,000 and above	30	8.0
	Total	373	100.0
Distance to Fuel Retail Point	Less than 5 km	130	34.9

Variables	Categories	F	%
Land Ownership Status	5–10 km	143	38.3
	Above 10 km	100	26.8
	Total	373	100.0
	Personally Owned Land	127	34.0
	Family/Inherited Land	136	36.5
	Rented Land	69	18.5
	No Land	41	11.0
Main Cooking Energy Source	Total	373	100.0
	Fuel/Kerosene	63	16.9
	Gas	32	8.6
	Firewood	174	46.6
	Charcoal	80	21.4
	Solar/Electricity	24	6.4
	Total	373	100.0

Table 4.1 presents the socio-economic characteristics of rural households sampled for the study in Zing Local Government Area, Taraba State, Nigeria. The variables examined included gender, age, marital status, educational qualification, occupation, household size, monthly household income before and after fuel price increases, distance to fuel retail points, land ownership status, and primary household energy sources.

The findings revealed that male respondents constituted a slightly higher proportion (55.8%) than female respondents (44.2%). Most respondents were within the economically active age categories, with 33.5% aged between 31–40 years and 29.2% aged between 18–30 years. The majority of respondents (64.3%) were married, indicating substantial family and household responsibilities among respondents. The educational profile showed moderate educational attainment, as 31.9% possessed secondary education, while 27.9% had primary education. Farming constituted the dominant occupation among respondents (41.8%), reflecting the agrarian nature of the study area. In addition, more than half of the respondents (53.1%) had household sizes between 6–10 persons, indicating the predominance of medium- to large-sized households. The income distribution further revealed that before fuel price increases, 40.2% of respondents earned between ₦30,000–₦59,999 monthly, whereas after fuel price increases, 42.9% reported earnings below ₦30,000 monthly. This suggests a decline in household income levels following fuel price increases. The findings also showed that 38.3% of respondents travelled between 5–10 kilometres to access fuel retail stations, while 36.5% relied on family or inherited land for livelihood activities. Furthermore, traditional household energy sources predominated, as 46.6% relied on firewood and 21.4% relied on charcoal for cooking and domestic energy needs. The findings indicate that respondents were predominantly low-to-middle income rural agrarian households characterised by relatively large household sizes, dependence on farming-related livelihoods, and substantial reliance on traditional household energy sources.

Objective Two: To assess the effects of oil price shocks on household income and expenditure among rural households in Zing LGA.

Table 4.2: Descriptive Statistics on the Effects of Oil Price Shocks on Household Income and Expenditure Among Rural Households in Zing Local Government Area (N = 373)

S/N	Items	Mean	Std.
1	Rising fuel prices have reduced my household purchasing power.	3.12	1.427
2	Fuel price increases have increased household transportation costs.	3.06	1.412
3	Oil price shocks have increased food prices in my community.	3.02	1.285
4	Rising fuel prices have reduced my household savings.	3.09	1.418
5	Fuel price increases have made healthcare expenses more difficult to afford.	2.93	1.381
6	Rising fuel prices have negatively affected children's educational expenses.	2.97	1.333
7	Transportation of farm produce has become more expensive.	3.18	1.439
8	Fuel price increases have reduced household income stability.	3.10	1.523
9	Household expenditure on essential goods has increased significantly.	3.11	1.406
10	Rising fuel prices have worsened the economic condition of my household.	3.32	1.404
Grand Mean		3.09	1.403

Table 4.2 presents the descriptive statistics on the perceived effects of oil price shocks on household income and expenditure among rural households in Zing Local Government Area, Taraba State. The findings revealed a grand mean score of 3.09 and standard deviation of 1.403, indicating that respondents generally agreed that oil price shocks negatively affected household income and expenditure. Specifically, respondents agreed that rising fuel prices worsened the economic condition of households ($\bar{x} = 3.32$, $SD = 1.404$), increased the cost of transporting farm produce ($\bar{x} = 3.18$, $SD = 1.439$), reduced household purchasing power ($\bar{x} = 3.12$, $SD = 1.427$), increased household expenditure on essential goods ($\bar{x} = 3.11$, $SD = 1.406$), and reduced household income stability ($\bar{x} = 3.10$, $SD = 1.523$). Respondents also agreed that rising fuel prices reduced household savings ($\bar{x} = 3.09$, $SD = 1.418$), increased transportation costs ($\bar{x} = 3.06$, $SD = 1.412$), and increased food prices within the community ($\bar{x} = 3.02$, $SD = 1.285$). However, respondents disagreed that fuel price increases significantly affected healthcare affordability ($\bar{x} = 2.93$, $SD = 1.381$) and children's educational expenses ($\bar{x} = 2.97$, $SD = 1.333$), as both mean scores fell below the benchmark mean of 3.00. The findings suggest that respondents perceived oil price shocks as having adverse effects on household economic welfare, particularly through increased transportation costs, rising commodity prices, reduced purchasing power, and declining income stability among rural households in the study area ($\bar{x} = 3.09$, $SD = 1.403$).

Objective three: To identify and rank coping strategies adopted in response to oil price shocks
 Table 4.3: Descriptive Statistics on Coping Strategies Adopted in Response to Oil Price Shocks Among Rural Households in Zing Local Government Area (N = 373)

S/N	Coping Strategies	Mean	Std.	Rank
1	Reduced food consumption	3.47	1.428	1st
2	Household members skip meals occasionally	3.41	1.356	2nd
3	Increased use of firewood and charcoal for cooking	3.37	1.432	3rd
4	Household members trek more often instead of using transportation	3.29	1.390	4th
5	Engaged in additional income-generating activities	3.26	1.478	5th
6	Reduced frequency of travelling outside the community	3.08	1.450	6th
7	Reduced spending on non-essential items	3.06	1.461	7th
8	Reduced educational expenditure	2.91	1.415	8th
9	Reduced healthcare spending	2.74	1.326	9th
10	Borrowed money or relied on relatives for support	2.48	1.311	10th
Grand Mean		3.11	1.405	

Table 4.3 presents the descriptive statistics on coping strategies adopted by rural households in response to oil price shocks in Zing Local Government Area, Taraba State. The findings revealed a grand mean score of 3.11 and standard deviation of 1.405, indicating that respondents generally adopted several coping strategies in response to rising fuel prices. Specifically, respondents highly adopted reduced food consumption ($\bar{x} = 3.47$, $SD = 1.428$), occasional skipping of meals by household members ($\bar{x} = 3.41$, $SD = 1.356$), and increased use of firewood and charcoal for cooking ($\bar{x} = 3.37$, $SD = 1.432$). Respondents also adopted trekking instead of using transportation ($\bar{x} = 3.29$, $SD = 1.390$), engagement in additional income-generating activities ($\bar{x} = 3.26$, $SD = 1.478$), reduced travelling outside the community ($\bar{x} = 3.08$, $SD = 1.450$), and reduced spending on non-essential items ($\bar{x} = 3.06$, $SD = 1.461$). However, respondents disagreed with reduced educational expenditure ($\bar{x} = 2.91$, $SD = 1.415$), reduced healthcare spending ($\bar{x} = 2.74$, $SD = 1.326$), and borrowing money or relying on relatives for support ($\bar{x} = 2.48$, $SD = 1.311$) as major coping strategies adopted in response to oil price shocks. The findings suggest that rural households primarily coped with oil price shocks through consumption adjustment strategies, alternative domestic energy use, and behavioural adjustments aimed at reducing transportation and living costs ($\bar{x} = 3.11$, $SD = 1.405$).

Test of Hypothesis

H0₁: There is no significant effect of oil price shocks on household income among rural households in Zing Local Government Area, Taraba State.

Table 4.4: Wilcoxon Signed-Rank Test on the Effect of Oil Price Shocks on Household Income Among Rural Households in Zing Local Government Area (N = 373)

Variables Compared	N	Mean Rank	Sum of Ranks	Z	Sig. (2-tailed)
Negative Ranks	164	138.93	22785.00		
Positive Ranks	99	120.52	11931.00		
Ties	110	–	–		
Current Monthly Income – Monthly Income Before Fuel Price Increase	373	–	–	-4.541	0.000

Table 4.4 presents the Wilcoxon Signed-Rank Test on the effect of oil price shocks on household income among rural households in Zing Local Government Area, Taraba State. The result revealed 164 negative ranks, indicating respondents whose current monthly income decreased after fuel price increases, while 99 respondents recorded positive ranks and 110 respondents reported no change in income status. The Wilcoxon Signed-Rank Test further revealed a statistically significant difference between household income before fuel price increase and current household income after fuel price increase ($Z = -4.541$, $p = 0.000$). Since the probability value was less than the 0.05 level of significance, the null hypothesis was rejected. This indicates that oil price shocks had a significant effect on household income among rural households in the study area.

Discussion of Findings

The findings of this study revealed that rural households in Zing Local Government Area were predominantly low- and middle-income agrarian households characterised by relatively large household sizes, dependence on farming-related livelihoods, and substantial reliance on traditional household energy sources. The predominance of farming as the major occupation among respondents suggests that household livelihoods within the study area depend significantly on transportation systems for the movement of farm produce, access to markets, and acquisition of agricultural inputs. The findings further showed a noticeable shift in household income distribution after fuel price increases, as the proportion of respondents earning below ₦30,000 monthly increased from 24.1% before fuel price increases to 42.9% after the increases. This pattern suggests that rising fuel prices may have contributed to perceived reductions in household income stability and purchasing power among respondents. This finding aligns with the argument of Deaton and Muellbauer (1980), who maintained that changes in prices and expenditure obligations significantly influence household welfare and consumption behaviour. The finding is also consistent with the studies of Oluwatayo and Alagbe (2015), Okoroh (2024), and Nasiru et al. (2025), which reported that increases in fuel prices often exert pressure on household purchasing power and living conditions among vulnerable households in Nigeria.

The findings further revealed that respondents generally perceived rising fuel prices as having adverse effects on household welfare conditions, particularly through increased transportation costs, rising food prices, reduced household savings, declining purchasing power, and weakened income stability. The study reveals that transportation of farm produce had become more expensive following fuel price increases. This outcome suggests that fuel price increases may generate wider household economic pressures through transportation and commodity distribution systems. The finding supports the argument of Blanchard (2017), who argued that

increases in fuel and transportation costs frequently contribute to broader increases in the prices of goods and services through production and distribution channels. The finding is similarly consistent with the studies of Abdullahi and Tukur (2025), Adeleke and Rasak (2025), and Kayode and Idera (2025), which reported that fuel subsidy removal and transportation cost increases contributed to rising household expenditure burdens and higher commodity prices in several parts of Nigeria.

The study also revealed that rural households adopted several coping strategies in response to rising fuel prices. The most prominent coping responses included reduced food consumption, occasional skipping of meals, increased use of firewood and charcoal for cooking, trekking instead of using transportation, and engagement in additional income-generating activities. These findings suggest that rural communities adjusted household consumption patterns and daily behavioural practices in order to manage rising living costs and transportation expenses. The findings support the position of Chambers (1989) and Adger (2006), who argued that vulnerable households often adopt adaptive survival strategies during periods of economic stress due to limited savings, unstable income sources, and weak institutional support systems. The findings are also consistent with the studies of Animashaun and Wossink (2024), Bosede (2026), and Njoku and Mmoubuo (2025), which reported that households frequently respond to fuel price increases through consumption adjustment strategies, alternative energy use, and supplementary livelihood activities. The increased dependence on firewood and charcoal observed among respondents may additionally reflect attempts by rural households to reduce dependence on relatively expensive modern energy sources. However, it is important to note that respondents' coping behaviours may also be influenced by long-standing rural poverty conditions, household size, seasonal income fluctuations, and existing infrastructural limitations within the study area rather than fuel price increases alone.

The Wilcoxon Signed-Rank Test further revealed a statistically significant difference between household income before fuel price increases and current household income after fuel price increases ($Z = -4.541$, $p = 0.000$). The higher number of negative ranks compared to positive ranks suggests that more respondents perceived a decline in household income categories following rising fuel prices. This finding supports the argument of Kilian (2008), who maintained that fuel price increases may indirectly affect household welfare through transportation costs, inflationary pressures, and reductions in real household income. The finding is similarly consistent with Siddig et al. (2014) and Rentschler (2016), who reported that fuel subsidy reforms and rising energy prices may adversely affect vulnerable households through increased living costs and declining purchasing power.

Conclusion

This study examined the effects of rising fuel prices on rural household welfare and coping strategies among households in Zing Local Government Area. The findings revealed a consistent pattern of perceived adverse welfare conditions associated with rising fuel prices, particularly through increased transportation costs, reduced purchasing power, declining income stability, and rising household expenditure pressures. The study further showed that households adopted coping strategies such as reduced food consumption, meal skipping, increased use of firewood and charcoal, trekking instead of paid transportation, and engagement in additional income-generating activities. The Wilcoxon Signed-Rank Test also revealed a statistically significant difference between household income categories before and

after fuel price increases. While the study cannot establish direct causal relationships due to its cross-sectional and perception-based design, the consistent pattern of perceived adverse effects across 373 rural households suggests that rising fuel prices constitute a significant economic stressor for vulnerable rural populations within the study area. The findings therefore reveal the need for targeted and context-sensitive interventions aimed at reducing the welfare pressures associated with rising fuel prices among rural households.

Recommendations

- i. Community-based grain storage and food reserve programmes should be strengthened to help cushion the effects of food price increases during periods of rising fuel prices and transportation costs.
- ii. Local and state governments should invest in rural feeder roads and non-motorised transportation infrastructure to reduce transportation difficulties and dependence on expensive fuel-based transport systems within rural communities.
- iii. Rural households should be supported through small-scale livelihood diversification programmes such as vocational training, cooperative support schemes, and microenterprise development in order to improve household income resilience during periods of economic pressure.

References

- Abanigbe, S., & Olutola, A. A. (2025). Poverty and food insecurity: The gaps and solution for the Nigerian rural economy. *Interdisciplinary Journal of Economics and Business Law*, 14(Special Issue), 112–128.
- Abdullahi, A., & Tukur, B. (2025). Effects of fuel subsidy removal on rural household transportation costs in Soba and Kubau LGAs, Kaduna State. *Journal of African Innovation & Advanced Studies*, 10(2). <https://doi.org/10.70382/ajaias.v10i2.052>
- Adeleke, A. O., & Rasak, A. O. (2025). The impact of transportation cost on the price of agricultural commodities in Delta and Rivers States, Nigeria. *International Journal of Research and Innovation in Social Science*, 9(4), 4698–4709. <https://doi.org/10.47772/IJRISS.2025.90400333>
- Adger, W. N. (2006). Vulnerability. *Global Environmental Change*, 16(3), 268–281. <https://doi.org/10.1016/j.gloenvcha.2006.02.006>
- Animashaun, J., & Wossink, G. (2024). How do households cope during aggregate shocks? Evidence from the 2009–2015 oil crisis in Nigeria. *Resources Policy*, 95, 105170. <https://doi.org/10.1016/j.resourpol.2024.105170>
- Ayantoye, K., Fanifosi, G. E., & Amao, J. O. (2024). Assessment of poverty persistence and vulnerability of rural households in Nigeria. *Nigerian Journal of Agriculture and Agricultural Technology*, 4(3), 70–80.
- Bawa, S., Abdullahi, I. S., Tukur, D. S., Barda, S. I., & Adams, Y. J. (2020). Asymmetric impact of oil price on inflation in Nigeria. *CBN Journal of Applied Statistics*, 11(1), 115–128.
- Bitana, E. B., Lachore, S. T., & Utallo, A. U. (2024). The influence of household size on socioeconomic conditions of rural farm households in Damot Woyde District, Wolaita Zone, Southern Ethiopia. *Cogent Social Sciences*, 10(1), Article 2358153. <https://doi.org/10.1080/23311886.2024.2358153>

- Blanchard, O. (2017). *Macroeconomics* (7th ed.). Pearson Education.
- Bosede, A. A. (2026). Effects of fuel price fluctuations on agricultural production, marketing, and coping strategies among rural farming households. *European Journal of Agriculture and Forestry Research*, 14(1), 26–35. <https://doi.org/10.37745/ejafr.2013/vol14n12635>
- Chambers, R. (1989). Vulnerability, coping and policy. *IDS Bulletin*, 20(2), 1–7. <https://doi.org/10.1111/j.1759-5436.1989.mp20002001.x>
- Dauda, R. S. (2019). The paradox of persistent poverty amidst high growth: The case of Nigeria. In R. Kanbur, R. Sandbrook, & P. Shaffer (Eds.), *Immiserising growth: When growth fails the poor*. Oxford University Press.
- Deaton, A., & Muellbauer, J. (1980). *Economics and Consumer Behavior*. Cambridge University Press.
- Effiong, U. E., Okijie, S. R., & Udofia, L. E. (2025). The interaction of oil price shocks, exchange rate volatility and inflation in Nigeria. *SSR Journal of Arts, Humanities and Social Sciences*, 2(7), 103–115. <https://doi.org/10.5281/zenodo.16257971>
- Emon, M. H. (2023). A systematic review of the causes and consequences of price hikes in Bangladesh. *Review of Business and Economics Studies*, 11(2), 49–58. <https://doi.org/10.26794/2308-944X-2023-11-2-49-58>
- Fang, D. (2022). The effect of household dependency ratio on the mental health of workforce: Evidence from China. *Frontiers in Public Health*, 10, Article 848114. <https://doi.org/10.3389/fpubh.2022.848114>
- Gamette, P., & Oteng, C. (2024). Fuel subsidy removal in global south oil-producing economies: A review of literature. *The Extractive Industries and Society*, 18, 101468. <https://doi.org/10.1016/j.exis.2024.101468>
- George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference* (4th ed.). Allyn & Bacon.
- Hamilton, J. D. (2009). Causes and consequences of the oil shock of 2007–08. *Brookings Papers on Economic Activity*, 40(1), 215–283. <https://doi.org/10.1353/eca.0.0047>
- Kayode, W. F., & Idera, A. T. (2025). Assessment of the impact of fuel subsidy removal on market prices in Kwara State, Nigeria. *Malaysian Journal of Business, Economics and Management*, 4(1), 23–30. <https://doi.org/10.56532/mjbem.v4i1.94>
- Khalil, M. (2022). Oil prices, manufacturing goods, and nontradeable services. *Journal of International Economics*, 134, 103553. <https://doi.org/10.1016/j.jinteco.2021.103553>
- Kilian, L. (2008). The economic effects of energy price shocks. *Journal of Economic Literature*, 46(4), 871–909. <https://doi.org/10.1257/jel.46.4.871>
- Kudabayeva, L., Abubakirova, A., Zurbayeva, A., Mussaeva, G., & Chingentbayeva, G. (2024). The relationship between oil prices and inflation in oil importing countries (1980–2022). *International Journal of Energy Economics and Policy*, 14(1), 359–364. <https://doi.org/10.32479/ijeep.15060>
- Lupapa, R., & Silwimba, P. (2025). The impact of household size on economic welfare: A case study of Lilayi Township, Lusaka, Zambia. *Journal of Economics, Business and Commerce*, 2(2), 361–368. <https://doi.org/10.69739/jebc.v2i2.1122>
- Nasiru, A. U., Ado, U., Mgbechi, U. V., Uchegbulam, J. C., Balogun, M. A., & Adeniyi, S. A. (2025). A systematic review on the impact of petroleum price volatility on household purchasing power and consumption patterns in Nigeria (2020–2024). *World Journal of*

- Advanced Research and Reviews*, 27(2), 1516–1525.
<https://doi.org/10.30574/wjarr.2025.27.2.3016>
- Njoku, E. C., & Mmougbo, C. C. (2025). Assessing the impact of the 2023 fuel subsidy removal on low-income families in Nigeria. *Alvan Journal of Social Sciences*, 2(1).
<https://ajsspub.org/publications>
- Okoroh, J. P. (2024). Perceived effect of fuel price hike on farming households in Imo State. *African Journal of Agriculture and Food Science*, 7(2), 231–242.
<https://doi.org/10.52589/AJAFS-ASYSIAYG>
- Oluwatayo, I. B., & Alagbe, S. A. (2015). Fuel price hike and vulnerability of households in Nigeria: Empirical evidence from Ibadan metropolis. *Journal of Social Sciences*, 43(3), 301–309.
- Rentschler, J. (2016). Incidence and impact: The regional variation of poverty effects due to fossil fuel subsidy reform. *Energy Policy*, 96, 491–503.
<https://doi.org/10.1016/j.enpol.2016.06.025>
- Siddig, K., Aguiar, A., Grethe, H., Minor, P., & Walmsley, T. (2014). Impacts of removing fuel import subsidies in Nigeria on poverty. *Energy Policy*, 69, 165–178.
<https://doi.org/10.1016/j.enpol.2014.02.006>