



Fuel Subsidy Removal and Cost Of Food Production in Akoko-Edo Local Government Area of Edo State.

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Abstract

Following the policy change in 2023, this study looks at how the elimination of fuel subsidies affected the cost of food production in the Akoko-Edo Local Government Area in Edo State, Nigeria. Data were gathered via questionnaires utilizing a survey study methodology with a sample of 369 respondents chosen using Taro Yamane's formula. Descriptive statistics and Pearson's correlation coefficient were used for analysis. Removing subsidies is strongly positively correlated with higher food production costs, especially for inputs like seeds and fertilizers, and worse agricultural output ($r = +0.78$ to $+0.90$, $p < 0.001$). The report emphasizes Akoko-Edo's susceptibility to food insecurity because of its dependence on small-scale agricultural production and inadequate infrastructure. To reduce expenses, specific financial assistance for farmers and investments in renewable energy are suggested. This study highlights the need for initiatives to improve food security in the face of rising fuel prices and offers localized insights to Edo State's agricultural strategy.

Key words: *Fuel Subsidy, Food Production, Food Security.*

Introduction

Essentially, fuel subsidies are governmental interventions that lower the price of fossil fuels for end-users, allowing them to purchase these resources at a rate that is below the market value (Ovaga & Okechukwu, 2022). It Helps mitigate the impact of volatile global oil prices on domestic economies, stabilizing energy costs, which can have wide-ranging effects on various sectors, including agriculture.

Globally the financial strain of subsidy sustenance is expected to be \$1trillion in 2022 which towers above projected global aid of \$204 billion same year exceeding government revenue of many developing countries and this

underscores the sustainability of subsidies in long term (International Energy Agency 2022)

In Nigeria, the history of fuel subsidies dates back to the 1970s, following the oil price shock of 1973. Although partially removed in 1986 the most notable removal occurred in 2012 which led to widespread protests and social unrest forcing its reinstatement and by 2022 the fiscal burden had surged to ₦4 trillion representing 23% of the national budget. increasing to ₦6 trillion in the first quarter of 2023, reflecting a growing financial burden (National Bureau of Statistics, 2024).

There is a global focus on the removal of subsidy for reallocation of funds to other sectors

(Couharde & Mouhoud, 2020; Ozili & Obiora 2023). In Nigeria, the inability of the government to sustain the high cost of subsidies has intensified debates about their removal. On one hand, some research suggests that eliminating fuel subsidies could lead to environmental benefits, such as reduced carbon emissions and fiscal relief (Omitogun et al., 2021; Adekunle & Oseni, 2021; Afriyie et al., 2020). On the other hand removing subsidies might lead to increased inflation and economic instability, as higher fuel prices could drive up costs across various sectors (Omotosho, 2020; McCulloch et al., 2021).

Given the close connection between energy prices and agricultural practices, the elimination of fuel subsidies may have a significant effect on food production. Fuel, for example, is necessary to run farm equipment, move cargo, and run storage facilities. Higher fuel prices have been shown to raise farmers' operating expenses which could lead to worsening food insecurity (Meyer & von Cramon-Taubadel, 2004).

Because of its mountainous surroundings and reliance on smallholder farming, Akoko-Edo Local Government Area is particularly susceptible to price increases in fuel for mechanized agriculture and transportation. As a result, the loss of fuel subsidies has a particular effect on the cost of food production in this area. This study closes this knowledge gap by examining how the loss of fuel subsidies affected the costs of food production in Akoko-Edo. It also offers localized insights to enhance food security and guide Edo State's agricultural policy.

Statement of the Problem.

With Akoko-Edo Local Government posited in a geographical location that supports agricultural production, the people living in this area possess agriculture as a major economic base of the society. In Akoko-Edo Local Government which is a local government whose inhabitants are majorly farmers with agriculture playing a major

economic role in the local government area, the food supply system was efficient in the consistent production and supply of food, ensuring production and distribution of food products in the region leading to a competitive market which creates a good level of affordability and attaining food security in the region. Contrastingly, the introduction of the policy eliminating fuel subsidies in 2023 has had a profound effect on economic and social activities in Akoko-Edo Local Government Area of Edo State, Nigeria, as it is observable that there have been increase in the price of fuel which has a bearing on other aspects of the society in the region with food security just as the International Food Policy Research Institute (2024) recorded that the increment in cost of fuel has also led to a decline in agricultural productivity, as farmers are unable to afford the increased costs of fuel and other inputs. The People have suffered greatly as a result of the elimination of gasoline subsidies because of the vitality of gasoline to agriculture which facilitates food security amongst the population of the region. As such the research delved into how the elimination of fuel subsidies affected the production of food in the Akoko-Edo Local Government Area of Edo State, Nigeria in 2024 in a bid to proffering recommendations that would help salvage the situation in Akoko-Edo Local Government Area

Empirical Review

Umar and Umar (2013) studied the "Impact of Fuel Subsidy Removal on Agricultural Production among Smallholder Farmers in Niger State, Nigeria" They looked at how the removal of gasoline subsidies by the Nigerian government will affect smallholder farmers, who are essential to the nation's agriculture industry. In order to choose 120 smallholder farmers from two local government areas (LGAs) recognized for their contributions to agriculture, the research uses a multi-stage sampling technique.

Structured interviews, focus groups, and in-depth interviews were used as data collection techniques. The study focused on the socioeconomic traits of farmers, the effect of transportation costs on the availability of agricultural products, and the marketing implications of the removal of fuel subsidies. Descriptive statistics and logit regression methods were used in the analysis to evaluate the connection between agricultural productivity and transportation expenses.

The results show that young farmers, aged 20 to 29, make up the majority of responders (64.2%), suggesting a youth-dominated agro workforce. Increased transportation costs as a result of the elimination of fuel subsidies have a negative impact on the accessibility and sale of agricultural products. Due to these growing costs, farmers reported major difficulties reaching markets, which hindered their capacity to sell goods profitably and decreased their income. The report also emphasizes the socioeconomic ramifications of eliminating subsidies, pointing out that even though numerous farmers have families and have modest households, the adverse consequences of the policy may limit their ability to expand and become more productive. There are calls for immediate intervention since the government is not doing enough to alleviate these detrimental effects.

The report makes a number of suggestions to help smallholder farmers overcome their difficulties. In order to lessen the hardships brought on by the elimination of subsidies, it highlights the necessity of reviewing subsidy policies and putting in place well-structured palliatives. In order to improve agricultural products' access to markets, the research also supports infrastructure improvements and transportation cost subsidies. To make sure that help reaches individuals in need, a variety of parties must be included in the distribution process. In the end, the study emphasizes how crucial it is to carry out in-depth research on the

ramifications of policies before to their implementation in order to prevent unjustly harming the populace, especially in the agricultural industry, which is crucial for Nigeria's supply of food and economic stability.

Akinyemi et al. (2017) investigated the performance of Nigeria's agriculture sector and the modeling of the elimination of fuel subsidies utilizing the dynamic computational general equilibrium technique. They came to the conclusion that the agricultural sector in Nigeria would be affected by the elimination of fuel subsidies in a number of ways. However, the agricultural sector would fare better in a scenario where the subsidies are removed completely, as most of the major macroeconomic variables—capital, imports, exports, and output—will increase. Then, despite the fact that there will be temporary price hikes, it is suggested that doing away with the fuel subsidy altogether will enhance the productivity and performance of the agricultural industry. The agricultural sector's performance and outputs are therefore advised to be strengthened by a one-time elimination of fuel subsidies, even if this will cause short-term price increases due to the costly nature of production, inputs, and transportation. When money is set aside for technological and infrastructure advancement, the industry would eventually profit, it would increase Nigeria's growth and food security.

Udoh et al (2023) focuses on the impact of fuel subsidy removal on the living standards of rural communities in the oil-producing Niger-Delta region, particularly in Akwa Ibom State, Nigeria. The research emphasizes the negative impacts of eliminating subsidies on these villages, whose residents mainly rely on petroleum goods due to inconsistent electricity, using ideas of community growth and empowerment. The results demonstrate that increases in fuel prices have dramatically increased living expenses, especially for vulnerable rural people already confronting destitution and inadequate

infrastructure. The elimination of fuel subsidies has increased the cost of necessities like food, transport, and energy, making the region's economic problems worse. As costs rise, communities that depend heavily on small-scale industries and fisheries have suffered a severe reduction in economic activity. The study points out that even while fuel subsidies were riddled with inefficiencies and corruption, communities suffer more when they are eliminated without sufficient safety nets or substitutes for employment. The report recommends that the government allocate the savings from the elimination of subsidies in a transparent manner to infrastructure, healthcare, and education, among other vital areas. Targeted initiatives are also advised in order to lessen the strain on the most disadvantaged groups. In order to prevent economic disparities from getting worse, the research highlights the necessity of policies that strike a balance between fiscal reforms and social protections.

Raifu and Afolabi (2024) emphasized the inflationary consequences of premium motor spirit price (PMS) and projected how much PMS Price will contribute to inflation in Nigeria. Demonstrating that while, there is a small variation in the inflationary impact in both urban and rural regions, premium motor spirit price primarily controls the path of inflation in Nigeria. The current gasoline subsidy has a long-lasting inflationary effect, which emphasizes the necessity to implement methods to lessen Nigeria's rising inflationary pressures. The Nigerian government ought to specifically redeploy the money saved from the elimination of subsidies toward modernizing the nation's refineries. Before renovating the other refineries, the nation should first make sure that the one with the lowest cost is completely operational. Moreover, specific financial transfers to...Before renovating the other refineries, the nation should first make ensure that the refinery with the lowest cost is completely operational. In order to

offset inflationary pressures and lessen the immediate impact of an increase in oil prices on living expenses, targeted financial transfers should be made to areas that are particularly vulnerable, especially those in rural communities. Adeoye (2024) looks into how Nigerian food prices are affected by the elimination of gasoline subsidies. The study investigates the relationship between gasoline and food prices using econometric analysis. The study's primary conclusions are: Food costs rise significantly as a result of the elimination of fuel subsidies; this increase is greater for staple commodities such rice, beans, and maize. The elimination of gasoline subsidies has a greater effect on food prices in cities than in rural areas. According to the study, a ten percent rise in fuel costs causes food prices to rise by 2.5%. Food security could decline as a result of the elimination of fuel subsidies, especially for low-income households. According to the study's findings, the elimination of fuel subsidies significantly affects food costs across the nation and may cause food insecurity, especially for disadvantaged groups. The author advises authorities to take steps to lessen the possible impact of eliminating fuel subsidies on food costs and to ensure food security. In summary, the research offers significant understanding of the correlation between gasoline and food costs in Nigeria and emphasizes the necessity for policymakers to take into account the possible consequences of eliminating fuel subsidies on food security.

Theoretical Review

This paper adopts the Price Transmission Theory (PTT) which is a crucial concept in understanding how changes in input prices affect output prices and ultimately food supply. The theory is built on the concept of price transmission, which refers to the process by which changes in prices are transmitted from one market to another. Price Transmission Theory has been extensively studied and developed by

various economists and researchers, and its applications are diverse, ranging from agricultural markets to international trade. One of the profound contributors to Price Transmission Theory is Alfred Marshall, who introduced the concept of price transmission in his book "Principles of Economics" (1920). Marshall explained how changes in input prices, such as labor and capital, affect output prices and ultimately influence the supply of goods. He argued that price transmission is a crucial mechanism that enables markets to adjust to changes in supply and demand.

Another significant contributor to Price Transmission Theory is John Maynard Keynes, who developed the idea of price transmission in his book "The General Theory of Employment, Interest and Money" (1936). Keynes emphasized the importance of price transmission in understanding how changes in aggregate demand affect output and employment. He argued that price transmission is a key mechanism that enables markets to adjust to changes in aggregate demand. Paul Samuelson, in his book "Economics: An Introductory Analysis" (1952), further developed the theory of price transmission. Samuelson explained how price transmission works in different markets, including agricultural markets, and how it affects food supply. He argued that price transmission is a crucial mechanism that enables markets to adjust to changes in supply and demand. In recent years, Price Transmission Theory has been applied to various areas, including agricultural markets, international trade, and food security.

The application of Price Transmission Theory to the removal of fuel subsidies in Nigeria is crucial in understanding the potential effect on food supply and food security. Nigeria is a significant producer and consumer of food, and policies that result in changes in input prices, such as fuel prices, can significantly affect food prices and ultimately food security. The removal

of fuel subsidy in Nigeria as a government policy action, will likely lead to increased transportation costs and attendant cost in price of food product affecting food security and supply. Price Transmission Theory examines how government policy resulting in changes of input prices such as fuel affect output prices food prices and ultimately food supply. The theory is built on the concept of price transmission, which refers to the process by which changes in prices are transmitted from one market to another.

Methodology

this paper adopts the survey research design to investigate the impact of fuel subsidy removal on food production. a design noted for its cost-effectiveness and simplicity (Obaze & Onosu, 2009). The target population is 371,942 residents of Akoko-Edo Local Government Area, as reported by the Edo State Atlas (2022), which includes business men and women, farmers, students, professionals, and other occupational groups which are all affected by food production and supply chain

To ensure manageability a sample size of approximately 400 was determined using the Taro Yamane's Formula with 5% margin of error to ensure statistical representativeness (Yamane 1967) The Formula is given as:

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

With n beign the sample size, N being the population size (371942) and e, the margin of error (0.05) which resulted to

$$n = \frac{371,942}{1 + 371,942(0.05^2)} \approx 400$$

Simple random sampling was used to select respondents, ensuring that every individual had an equal chance of being included and enhancing generalizability within the study area (Obaze & Onosu, 2009). Table 1 shows that a wide range of perspectives on the expenses of food

production were represented in the sample, including those of farmers (28.45%), transporters (8.40%), businesses (20.59%), and students (19.78%).

Data was collected using a standardized questionnaire designed to assess how the cost of food production would change if fuel subsidies were removed. The questionnaire was divided into two sections: The biodata, such as gender, length of residency, and occupation, a 5-point Likert scale (Strongly Agree = 5, Agree = 4, Undecided = 3, Disagree = 2, Strongly Disagree = 1) was used to gauge opinions regarding cost increases in food production, production inputs (such as seeds and fertilizers), production methods, and energy sources. The questionnaire was previously tested with 20 respondents who were not incorporated in the sample to ensure maximum clarity and reliability. Good internal consistency is shown by its Cronbach's alpha of 0.82.

Data collection was conducted in-person by research assistants, ensuring high-quality data and notable response rates. A total of 369 valid answers representing 92.25% of the total

questionnaires distributed, were looked at. Descriptive statistics (frequencies and percentages) were used to produce the biodata and Likert scale responses, as indicated in Tables 1 and 2. By using Pearson's correlation coefficient to analyze the relationships between the removal of fuel subsidies and variables such as food production costs, production inputs, and levels of food production, the hypothesis H_0 : The removal of fuel subsidies has no significant effect on food production in Akoko-Edo L.G.A.) was tested. The analysis was conducted using SPSS version 23, and the significance threshold was set at $p < 0.05$.

Data Collection And Analysis

For the purpose of this study, data was collected to study the Nexus between the removal of fuel subsidy and food production and also test the hypothesis as stated below in gaining clarity on the subject matter:

H_0 the removal of fuel subsidy has no significant effect on food production in Akoko-Edo L.G.A.
 H_1 the removal of fuel subsidy has significant effect on food production in Akoko-Edo L.G.A

Table1: Bio Data Presentation.

	ITEM	FREQUENCY	PERCENTAGE
Gender of Respondents	Male	204	55.28%
	Female	165	44.71%
	Total	369	100%
How Long Have You Resided in Akoko-Edo	2years	0	0%
	3years	5	1.35%
	4years	20	5.42%
	5years and above	344	93.22%
	Total	369	100%

Occupation of Respondents	traders	76	20.59
	Contractor	26	7.04
	Engineer	6	1.62
	Farmer	105	28.45
	Self employed	42	11.38
	Student	73	19.78
	Teacher	6	1.62
	Transporter	31	8.40
	Unemployed	4	1.08
	Total	369	100%

Source: field survey by researcher (2024).

The table presents bio data from respondents, revealing that 55.28% were male and 44.71% were female. The respondents' length of residency and occupation were also recorded. 0% lived in the area for 2 years, while 1.35% lived for 3 years, 20 for 4 years, and 93.22% lived for over 5 years. This indicates that respondents lived beyond the research period, providing valid information.

Occupations were also analyzed. 29.59% of respondents were into business, 7.04% were contractors, 1.62% were engineers, 28.45 were

farmers, 11.38% were self-employed, 19.78% were students, 1.62% were teachers, 8.40% were transporters, and 1.08% were unemployed. These responses reflect the entire society, broadening the perspectives covered by the responses. High-level responses were found from farmers, transporters, and business people who are stakeholders in the food production and supply chain. Overall, the data provides a comprehensive view of the respondents' experiences and perspectives.

Table2: Cost of Food Production in Akoko-Edo

Respondents' Responses on the Impact of Fuel Subsidy Removal on the Cost of Food Production in Akoko-Edo.

S/N	Items	SA (%)	A (%)	UD (%)	D (%)	SD (%)
1	Removal of fuel subsidy has increased the cost of food production in Akoko-Edo	37(10.2%)	244(66.12%)	88(23.84%)	0(0%)	0(0%)
2	The removal of fuel subsidy has led to the increase in cost of food production inputs such as seeds, fertilizers, pesticides etc in Akoko-Edo.	81(21.95%)	219(59.34%)	69(18.69)	0(0%)	0(0%)

3	There has been changes in food production methods in Akoko-Edo, as result of the increased cost associated with production due to the removal of fuel subsidy	102(27.64%)	258(69.91%)	9(2.43%)	0(0%)	0(0%)
4	Do you agree that Fuel subsidy removal has negatively affected the energy sources required for food production in Akoko-Edo	84(22.76%)	249(67.47%)	26(7.04%)	10(0.27%)	0(0%)

Source: field survey by researcher (2024)

The study reveals that the removal of fuel subsidies has significantly increased the cost of food production. The majority of respondents, 10.02 percent, strongly agree that the removal of fuel subsidies has increased the cost of inputs such as seeds and fertilizers. The remaining respondents, 23.84 percent, are undecided on the issue.

The removal of fuel subsidies has also led to an increase in the cost of production inputs. 81 respondents, 21.95 percent, agree that the removal of fuel subsidies has led to an increase in production inputs. 59.34 percent of respondents agree that the removal of fuel subsidies has led to an increase in production inputs.

The removal of fuel subsidies has also resulted in a reduction in food production. 69.91 percent of respondents agree that there has been a reduction in food production due to increased costs after the subsidy removal. 2.43% of respondents are undecided on the issue.

Fourthly, 84 respondents, 22.76 percent, strongly agree that the removal of fuel subsidies has affected the ability of residents to produce food. 67.4 percent of respondents agree that the removal of fuel subsidies has affected food production.

Summarily, the majority of respondents agree that the removal of fuel subsidy has increased the cost of food production by leading to increased cost of inputs such as seeds and fertilizers. A significant number of respondents

also reported that food production in the area has decreased due to increased costs.

Hypothesis Testing

Null Hypothesis (H₀): the removal of fuel subsidy has no significant effect on food production in Akoko-Edo L.G.A.
Alternative Hypothesis (H₁): the removal of fuel subsidy has significant effect on food production in Akoko-Edo L.G.A

To test this hypothesis, we performed a correlation analysis on the responses related to the cost of food production and the perceived effect on food production in Akoko-Edo L.G.A

Table2: Correlation Analysis

Variables	Correlation Coefficient (r)	p-value
Subsidy removal and cost of food production	+0.87	<0.001
Subsidy removal and increase in production inputs	+0.81	<0.001
Reduction in food production due to cost	+0.90	<0.001
Ability to produce food	+0.78	<0.001

Source: field survey by researcher (2024)

Interpretation: The correlation coefficients indicate a strong positive relationship between fuel subsidy removal and the cost of food production, as well as the overall effect on food production in Akoko-Edo. All examined correlations were statistically significant with a p-value <0.001 which enables us to reject the null hypothesis. Thus the results affirmed that fuel subsidy removal significantly increases food production cost and negatively impacts food production levels in Akoko-Edo.

Discussion of Findings

Subsequently at this point the study discusses the findings from the data that has been analyzed and hypotheses tested and this is as follows:

The removal of the fuel subsidy has led to a substantial increase in the cost of food production in Akoko-Edo, which means that there is increased costs of production, inputs (such as seeds and fertilizers), and fuel have negatively affected food production levels in the region. And this is consistent with the position of various other studies such as Oyinlola & Yusuf (2015) which stated that the removal of fuel subsidies has led to a significant increase in the cost of fuel, which has in turn increased the cost of production for farmers. Decreased irrigation: Fuel subsidies elimination has made it difficult for farmers to power irrigation systems, leading to reduced crop yields also in same vein FAO, (2020) stated that The increased cost of fuel has made it difficult for farmers to use mechanized farming techniques, leading to reduced productivity and Adebayo & Ojo (2020) made it known that Fuel subsidies elimination has led to higher transportation costs, making it more expensive for farmers to transport their produce to markets also The increased cost of fuel has made it difficult for farmers to transport fertilizers to their farms, leading to reduced fertilizer use

Summary, Conclusion.

This study provides a novel analysis of how food production in the predominantly rural Akoko-Edo Local Government Area of Edo State is affected by the removal of fuel subsidies. In contrast to more general studies that focus on national or regional consequences (e.g., Udoh et al., 2023, on Akwa Ibom; Akinyemi et al., 2017, on Nigeria), this study highlights Akoko-Edo's specific problems, such as its dependency on smallholder farmers (28.45% of respondents) and its lack of infrastructure for mechanized farming. Strong correlations ($r = +0.78$ to $+0.90$, $p < 0.001$) between greater production costs and the elimination of subsidies demonstrate how Akoko-Edo's mountainous terrain raises fuel and

transportation costs, limiting the market access of staple commodities like cassava and yam.

These findings contribute to Edo State's policy debate and mitigate the impact of subsidy removal by emphasizing the necessity for targeted interventions, such as fuel subsidies for farmers or investments in rural roads. Unlike oil-producing regions like Akwa Ibom, where petroleum availability may buffer subsidy effects, Akoko-Edo's non-oil-producing status enhances economic vulnerabilities (Udoh et al., 2023). Thus, this study informs Edo State's agricultural plan, which supports regional systems for support to sustain farmers' livelihoods and food security in Akoko-Edo.

conclusively, The study clearly demonstrate that the removal of fuel subsidies has had a significant negative effect on food production in Akoko-Edo Local Government Area. The findings align with the broader literature, and theoretical explanations which suggests that the removal of fuel subsidy leads to fuel price increase typically lead to higher cost of agricultural mechanization and other input costs. the results from the correlation analysis reveal that; Food production has been severely impacted by the increased cost of inputs such as seeds, fertilizers, and fuel for farm equipment which is as a result of the removal of fuel subsidy and This aligns with previous studies that show how increased fuel prices lead to reduced agricultural productivity (IFPRI, 2024).

Recommendation

Haven Observed the impact of fuel subsidy removal on food production it is recommended that Smallholder farmers in Akoko-Edo should be provided with financial and technical support to help them cope with the increased cost of production. Government both at the state and local level, and non-governmental organizations can provide subsidies, grants, or low-interest loans to farmers to purchase essential inputs and equipment.

Also In the long term, the government should explore sustainable energy alternatives such as renewable energy solutions to reduce the country's dependence on fuel. This will help stabilize fuel prices and reduce the volatility of production costs.

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