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The Impact of Fuel Subsidy Removal on Public Transport Operations in Lokoja Metropolis

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ABSTRACT
This study investigates the impact of the 2023 fuel subsidy removal on public transport operations in Lokoja. The major aim of the study is to ascertain the Impact of fuel subsidy removal on public transport operations in Lokoja metropolis and objective is to examine the impact of fuel subsidy removal on the cost of operating public transport. The study adopted cross sectional survey, research instrument used was questionnaire. Analysis of Variance (ANOVA), descriptive and regression (linear) and, Chi square test was used for analysis. Statistical package for the social science (SPSS)v25 was used for the analysis of the research, 323 operators were sampled. Regression (linear) analysis was carried out on the impact of fuel subsidy removal on the cost of operating public transport, results show p=0.00<0.05 meaning there is statistically significant relationship between independent variable fuel expenditure and dependent variables maintenance after subsidy removal and other expenses. Chi square test was carried out between various variables vehicle type, route plied, fuel expenditure and passenger per trip. The results from the chi square test shows there is a statistical relationship between variables p=0.00 <0.05. The study concluded that the removal of fuel subsidy has had a profound impact on public transport operations in Lokoja metropolis. The study recommends the government should consider investing in mass transit, providing incentives on fuel efficient vehicles and transitioning to alternative energy sources for public transport.

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INTRODUCTION

The major factor that influences public transport operation in Nigeria is fuel. According to Okwanya *et al* (2015), fuel plays a significant role in the production of goods and services in all sectors of the economy, that is why countries find it necessary to subsidize and ensured citizens have access to fuel which is of national importance. Onyishi, *et al* (2012) stated that government subsidize fuel to address cases of market failure-mainly poverty especially in developing countries where subsidies are given to allow the poor participate in economic activities. Also, fuel subsidy protects fragile economies from shocks in the international market.

The issue of subsidies has gained momentum in the last three decades, especially in developing economies. Subsidies can mean the cash transfer payments that the government provides to the consumers and producers. The government often subsidizes fuel so that the high prices of fuel do not create any burden on the producers or the consumers. According to World Bank (2010), a fuel subsidy is when the government cushions the cost of fuel production by lessening charges paid by customers and increasing income for fuel producers.

May 29, 2023, the Nigerian government announced immediate removal of subsidy on petroleum products. This announcement sent shock waves throughout the economy with

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immediate upward adjustment in prices of goods and services. Economic analysts and thinkers blamed the rashness in total removal of subsidy while failing to address the underlying structural constraints and social dislocations, hence undermining the intended benefits of subsidy reform initiatives.

Clements *et al*, (2013) posited that the timing and sequencing of subsidy removal can significantly influence its economic and social ramifications. It is in the light of this, that the removal of fuel subsidy in Nigeria raised a serious question among the citizens of its economics, social and environmental implications. The recent pronouncement on the removal of fuel subsidy resulted to the high price of petroleum and consequently affects the prices of other goods and service of the country. The subsidy removal, while driven by the intent of aligns with global trends of fossil fuel subsidy reduction and enhances fiscal sustainability Al Jazeera, (2023), presents a host of challenges. Foremost among these challenges is the potential exacerbation of socioeconomic inequality. Subsidy removal without correspondent economic benefit can lead to increase in fuel prices and subsequent rise in the cost of living. This predicament brings a lot of concern as raised by Ude (2023), emphasizing that while subsidy elimination might hold long-term benefits, it can strain the financial resources of households.

Subsidy reforms have been a focal point of economic restructuring efforts, particularly in developing and emerging economies, where subsidies often constitute a significant portion of government expenditure Clements et al.(2013).
The removal of fuel subsidy by the federal government also generated inflation in the country which bought about a high cost of fuel and other items in the market, not only did it bring about inflation, it was also accompanied with mass poverty because the price of goods and services increased while the income of people still remained constant.

In addition to the immediate effects on transportation costs and operational dynamics, the removal of fuel subsidies also stimulates structural changes within the transportation sector. According to Owoeye and Sanusi (2020) there is a shift in consumer preferences towards alternative modes of transportation, such as motorcycles and tricycles, which are perceived as more fuel-efficient and cost-effective options in the absence of subsidized fuel. This shift not only impacts the demand for traditional modes of transport but may also poses regulatory challenges as informal transport services gain prominence in the absence of robust public transportation infrastructure.

According to Ovaga and Okechukwu, (2022), any changes in the cost or availability of fuel have an immediate and significant impact on this system, affecting not only the personal mobility patterns of individuals but also the larger dynamics of the economy. A large amount of operational expenditure for both commercial and public transport operators is attributed to fuel prices. Higher ticket and freight costs are frequently imposed on consumers as a result of the removal of subsidies and rising fuel prices Ogunode, *et al* (2023).

The movement of people and commodities throughout Nigeria, including Lokoja, is influenced by the transport system, which is an essential aspect of daily life. Historically, the purpose of fuel subsidies has been to stabilize gasoline prices and lower the cost of transportation for the general public. However, removing the incentives leads to catastrophic consequences. The impact of removing fuel subsidies in the short run is an increase in transportation costs and transportation rates, which directly and indirectly affect the costs of physical distribution, material handling, marketing, logistics and overall production. In the middle run, the citizenry struggles to adjust for the market competition to surface and in the long run, market competition is expected to lower the price of fuel.

Nonetheless, there are few thorough studies examining the precise effects of fuel subsidy removal on the Lokoja Metropolis' transport networks. It is as a result of this challenge that this study focuses on investigating the impact of fuel subsidy removal on the public transportation system in Lokoja Metropolis.

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LITERATURE

Subsidy by definition is a measure kept in place that helps consumers pay less for good or product Adebiyi, (2011). According to the Academics Dictionary of Economics (2006), subsidy can be defined as the cash incentive given by the government to an industry with a view to lower the price of the product of the concerned industry and to raise its competitive power. This may be given as a counter balancing measure to the imposition of the custom duty by an importing country government. Fuel subsidy is a government discount on the market price of fossil fuel to make consumers pay less than the prevailing market price of fuel Ovaga and Okechukwu, (2022). Adeniran and Adetayo (2016) defined subsidy as any measure that keeps prices consumers pay for a goods or products below market levels for consumers or for producers above market. According to him, Subsidies take different forms. Some subsidies have a direct impact on price. These include grants, tax reductions and exemptions or price controls.

Adeniji (2018) defines public transport as "a system that not only moves people but also shapes the socio-economic fabric of African cities by providing access to opportunities, reducing poverty, and promoting inclusive growth." His definition acknowledges the broader impact of public transport in African contexts, particularly in terms of social and economic development. Ogunbodede (2019) describes public transport as "the backbone of urban mobility in Nigeria, essential for equitable access to jobs, education, and health services, while also being a critical factor in addressing environmental challenges." He focuses on the dual role of public transport in serving both economic and environmental needs. Aribisala and Olorunfemi (2021) define public transport as "a service that must adapt to economic policy changes while ensuring that the mobility needs of the populace, particularly the vulnerable, are met." This definition reflects on the economic resilience and social responsibility of public transport systems in Nigeria

The work of Akanle et al. (2014) on governance and social protest in Nigeria touches upon how operators might respond to increased fuel costs, including reducing service on less profitable routes or downsizing fleets. Some studies suggest that the pressure of higher fuel costs could lead to innovation, like the adoption of cleaner or more efficient technologies Nwachukwu, (2010), although this might not be immediate due to financial constraints.

Prabawet *et al* (2022), analyzed the economic price of liquid petroleum gas, poverty and subsidy removal compensation in Indonesia. The paper adopts econometric analysis approach in analysis data collected through primary and secondary sources. The paper concluded that subsidy removal scenarios can have economic implications, especially for Low-income households. The paper therefore, recommends, that government should use such money gathered as a result of subsidy removal judiciously in order to alleviate the suffering of the masses

Obiora and Ozilli's (2023) analysis of the macroeconomic and microeconomic implications of the 2023 fuel subsidy removal in Nigeria, employing the discourse analysis methodology, provides valuable insights into the potential consequences of this policy shift. They highlight several positive outcomes, including the freeing up of financial resources for other sectors, incentivizing domestic refineries, reducing dependence on. Imported fuel, boosting employment, and addressing critical public infrastructure needs. However, their study also acknowledges the negative implications, such as potential short-term economic growth reduction, increased inflation, poverty levels, fuel smuggling, and job losses in the informal sector. While the study offers a comprehensive overview of these aspects and provides policy recommendations, it is important to note some limitations.

One significant drawback is the absence of empirical data to substantiate the claims regarding the impact 'of fuel subsidy removal. Additionally, the study does not delve into the potential challenges of implementing these policies, the complexities of subsidy removal in practice, or the Political and social implications in detail. A more robust analysis that incorporates empirical evidence and a deeper exploration of the

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practical challenges would enhance the study's credibility and utility for policymakers.

Furthermore, Ovaga and Okechukwu (2022) assert that fuel subsidy fosters corruption in Nigeria. They suggest that a group of corrupt individuals actively undermines efforts to maintain existing refineries and obstructs the construction of new ones, thus perpetuating fuel importation and the retention of fuel subsidy for their self-serving interests. Greve and Lay (2023), denote on the assessment of fossil fuel subsidy in developing countries. The paper used dynamic general equilibrium model for analyzing data collected. The paper therefore, concluded that, subsidy removal can affect the consumption pattern of the citizens, GDP, and welfare, with varying impacts on different income groups. The paper therefore, recommended that, government should provide the basic necessity to the citizen using such monies realize through subsidy, government should also make diversification in different sectors of the economic so that, the rate of unemployment in the society will reduce.

Studies from other parts of Africa and the Global South, like those reviewed by Ovaga and Okechukwu (2022), provide insights into the broader regional trends where subsidy removals have led to significant shifts in transport dynamics, including higher operational costs and changes in consumer behavior. Umeji and Eleanya (2021) argue that despite the introduction of fuel subsidy, Nigeria's oil wealth has not translated into an improved standard of living. They contend that while removing fuel subsidy could have severe repercussions, transparency in the government's utilization of the saved funds for infrastructure development could help mitigate these effects.

Omotosho (2020) warns that fuel subsidy removal may result in heightened macroeconomic instability, characterized by rising energy prices and inflation in Nigeria. Additionally, McCulloch, Moerenhout, and Yang (2021) highlight the prevailing skepticism among many Nigerian citizens regarding fuel subsidy removal or reforms. This skepticism arises from a deep-seated belief that the government is weak and lacks the capacity to implement transparent reforms effectively).Antimiani et al (2023) analyzed the implications of fossil fuel subsidy removal for the EU carbon neutrality policy. The paper adopts computable general equilibrium model and CGE in analyzing data collected. The paper concludes that subsidy removal supports carbon neutrality goals but can influence energy prices, industrial competencies and household.

Considering the unique local context, there is a lack of studies that measures association among fuel prices and travel behavior of urban residents in Lokoja metropolis context, wherein high car dependency is notable. Thus, study slips its focus, on the impact of fuel price increase that is recently applied in the contemporary ambitious country fiscal scenario. Accordingly, this paper strives to analyze the effect of fuel prices increase on transport demand and operations in the city of Lokoja.

METHODOLOGY

The study was carried out in Lokoja local government of Kogi state Lokoja is a multi-ethnic town which owed its development due to its role in the pre-colonial and colonial commerce in Nigeria. Lokoja served as a commercial rendezvous during the pre-colonial commerce in Nigeria.

Firstly, in this study, the cross -sectional survey type of design was adopted. The cross-sectional survey design was preferred in this study because the research data was collected at single point in time after the subsidy removal to capture its current effect on transport operators and it has allowed for efficient analysis for relationship between variables.

Secondly target population was identified and collected from respected unions of motorcycle, tricycle and buses in total of 4266 operators. thirdly taro Yamane formula was adopted to get a sample size of 366 and in determining sample size for each operator, stratified sampling was used to calculate the size for each operator which equate to 279 for tricycle, motorcycle 84 and 3 for buses. Data was collected with questionnaires and in-depth interview.

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Table 1. Sample Size for Each Transport Operator.

Operators	Registered number	Each Stratum Sample size x %	Sample size
Tricycle	3250	366 x 0.7618	279
Motorcycle	978	366 x 0.2292	84
Buses	38	366 x 0.0089	3
Total	4266		366

Data Processing and Analysis Statistical Package for Social Science (SPSS) version 25 was used to analyze quantitative data obtained from the respondents. Descriptive statistics (frequency and percentages) were used to summarize the data gathered from the respondents. Summaries of data analyzed were presented using tables. Analysis of Variance (ANOVA) was used for testing of hypothesis.

Regression analysis was conducted to determine the relationship between the dependent variable (Y) and independent variables (x). Dependent variables that was used for the objectives are as follows maintenance cost after subsidy, other expenses. Independent variable is fuel expenditure.

Regression formula: $y = \beta_0 + \beta_1 x + \Sigma$

Where y = maintenance after subsidy
x= fuel expenditure

and

Regression formula: $y = \beta_0 + \beta_1 x + \Sigma$
Where y = other expenses
x= fuel expenditure

Chi square test was carried out in this study to test the relationship between various variables in this study.

RESULT AND DISCUSSION

Operational characteristics

Table 2: Vehicle Type

		Frequency	Percent
Valid	Bus	1	.3
	Minibus/taxi	2	.6
	Motorcycle	82	25.4
	Tricycle	238	73.7
	Total	323	100.0

The table 2 above shows the various types of vehicles been used by the operators. From the table above, 0.3% uses bus, 0.6 make use of mini bus, 25.4% make use of motorcycles while 73.7% make use of tricycles. This shows that the majority of public transport operators in the study area use tricycle. The popularity of tricycles shows that Lokoja's operators are adapting to the higher fuel cost, by choosing tricycle operators keep their expenses low as tricycle use less fuel per trip compared to buses and carry more passengers in comparison to motorcycle. Ijeoma (2023) highlighted that tricycles are key transport mode in Nigerian urban centers offering affordable mobility despite hike in fuel price.

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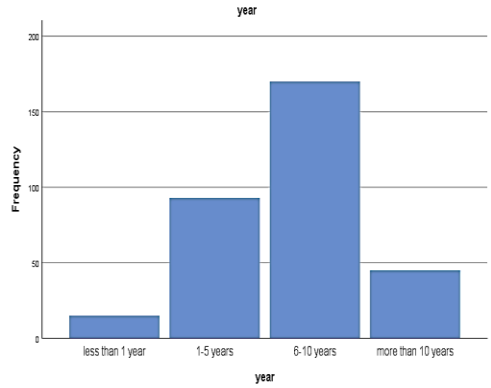

Fig 1: Number of Years in Operation

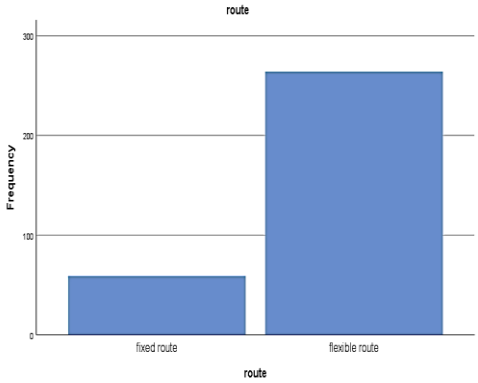

Fig 2. Type of Route Plied

Figure 1 shows the number of years the operators has been in operation. From the fig..... above, 4.6% of the operators have been in operation for less than a year, 28.8% between 1-5 years, 52.6% between 6-10 years and 13.9% have been in operation for more than 10 years. This implies that majority of the operators have been in operation between 6-10 years. It also implies that majority of the operators are experienced and established in Lokoja's transport sector and it means they operators may have strategies to cope with the removal of subsidy like using fuel efficient vehicles, optimizing routes or finding other means to sustain their transport business.

From figure 2 above, 18.3% of the operator's plies fixed route while 81.7% plies flexible route. This shows that majority of the operators in the study area plies flexible route and implies that they adapt their route based on passenger demands, traffic conditions or other factors. Plying a flexible route help operators manage cost by allowing them seek out areas with more passengers such as market areas and school areas to earn more and cover expenses. Soile et al (2014) noted that operators in Nigerian cities adapt routes dynamically to cope with high fuel cost.

Table 3: Passengers Per Trip

		Frequency	Percent
Valid	1-3	82	25.4
	4-6	238	73.7
	6 above	3	.9
	Total	323	100.0

The table 3 above shows the number of passengers carried per trip by the operators. 25.4% of the operators carries between 1-3 passengers, 73.7% carries between 4-6 passengers while 0.9% carries 6 and above passengers. This implies that majority of the operators carries between 4-6 passengers during a single trip and it is based on vehicle capacity.

Table 4: Trips Per Day

		Frequency	Percent
Valid	0-20	237	73.4
	20-40	82	25.4
	50 above	3	.9
	Total	323	100.0

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The table 4 above shows the number of trips per day. Majority of the operators 73.4% makes between 0-20 trips per day, 25.4% makes 20-40 trips per day while 0.9% makes 50above trips per day. Total number of trips made per day is highly based on demand, type of vehicle and the distance needed to be covered per trip. For example, demand for bus is specific to the university in Lokoja, with peak demand before school hours and after school hours, it cannot make above 20 trips per day.

The Impact of Fuel Subsidy Removal on the Cost of Operating Public Transport.

The impact of fuel subsidy on the cost of operating public transport in the study area was analyzed using regression analysis.

Table 5: Fuel Expenditure (Independent Variable)

	Frequency	Percent
3000-5000	75	25.7
5000-10000	208	71.2
10000 above	9	3.1
Total	292	100.0

From the table 5 above which shows the fuel expenditure of the operators daily, 25.7% of the operators spend between #3000-5000 on fuel, 71.2% of the operators spend between #5000-10000 and 3.1% spend #10000 above on fuel. This implies that majority of the operators spend between #5000-10000 on fuel for their operation. 30 other operators, majority tricycle responded that they don't make use of petrol hence the total amount of 292. It highlights financial strain caused by subsidy removal and it's also suggests that operators are trying to keep cost low possibly by using smaller vehicles hence the popularity of tricycles or by limiting the number of trips. Oni (2014) highlighted that urban operators in Nigeria manage costs within a limited range to balance expenses after subsidy removal.

Table 6: Maintenance Cost After Subsidy (Dependent Variable)

		Frequency	Percent
Valid	1000-10000	82	25.4
	10000-20000	233	72.1
	20000 above	8	2.5
	Total	323	100.0

The table 6 above shows the cost of maintenance after subsidy, with 25.4% of the operators spending between #1000-10000, 72.1% between #10000-20000 and 2.5% above #20000 on maintenance, showing that majority of the operators spend between #10000-20000. It reflects a significant increase in expense compared to pre subsidy levels. Higher fuel prices will likely force operators to redirect income to fuel and leaving less for maintenance to maximize profit. for example, operator can decide to manage expired tires instead of changing which increases safety risk on commuters. Ibitoye (2016) found out that in Nigerian cities, maintenance costs for public transport vehicles increased significantly after subsidy removal with operators spending more to maintain service reliability.

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Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.885[a]	.783	.782	.2102

a. Predictors: (Constant), fuel expenditure

The output Table 7 shows the model summary and overall fit statistics. The adjusted R^2 of the model is 0.782 with the R^2 = 0.783 that means that the linear regression explains 78.3% of the variation in fuel expenditure among the operators in Lokoja can be explained by cost of maintenance after subsidy. The high 78.3% indicates a strong relationship as most of the changes in maintenance cost are accounted for in changes in fuel expenditure, it also suggests that fuel expenditure is a major driver of maintenance cost. The high adjusted r square confirms that fuel expenditure is a reliable predictor of maintenance cost.

Table 8: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	46.153	1	46.153	1044.102	.000[b]
	Residual	12.819	290	.044		
	Total	58.973	291			

a. Dependent Variable: maintenance cost after subsidy
b. Predictors: (Constant), fuel expenditure

The table 8 above is the ANOVA table that shows the relationship between the variables. With F = 1044.102 at a sig level of 0.000 which is less than P=0.05 shows that there is a statistically significant relationship between the variables and the null hypothesis is rejected.

Table 9: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.269	.047		5.785	.000
	fuelperday	.817	.025	.885	32.313	.000

a. Dependent Variable: maintenance after subsidy

The coefficient table 9 above shows the relationship between fuel expenditure and maintenance cost. The fuel expenditure coefficient 0.817 and sig. at 0.000 reveals a significant positive effect indicating that higher fuel cost after subsidy removal significantly drive-up maintenance cost likely due to inflation in spare parts.

Table 10: Other Expenses (Dependent Variable)

		Frequency	Percent
Valid	2000-5000	78	24.1
	5000-10000	230	71.2
	10000 above	15	4.6
	Total	323	100.0

Other Expenses

From table 10bove, 24.1% of the operators spend #2000-5000 on other expenses, 71.2% spend between #5000-10000 while 4.6% spend #10000. This means that majority of the operators (71.2%) spend between #5000-10000. Fuel cost now consuming a larger portion of operator's income, operators must allocate for taxes, dues to union etc. which will strain them. These costs, combined with higher fuel and maintenance expenses reduces operators profit

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which leads to higher fare charge or reduced services.

Table 11: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.913[a]	.833	.833	.1812

a. Predictors: (Constant), fuel expenditure

The output table 11 shows the model summary and overall fit statistics. The adjusted R^2 of the model is 0.833 with the R^2 = 0.833 that means that the linear regression explains 83.3% of the variation in fuel expenditure among the operators in Lokoja can be explained by cost of other expenses after subsidy. The high 83.3% indicates a strong relationship as most of the changes in other expenses are accounted for in changes in fuel expenditure, it also suggests that fuel expenditure is a major driver of other expenses. The high adjusted r square confirms that fuel expenditure is a reliable predictor of other expenses.

Table 12: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	47.643	1	47.643	1451.147	.000[b]
	Residual	9.521	290	.033		
	Total	57.164	291			

a. Dependent Variable: other expenses
b. Predictors: (Constant), fuel expenditure

The table 12 above is the ANOVA table that shows the relationship between the variables. With F = 1451.147 at a sig level of 0.000 which is less than P=0.05 shows that there is a statistically significant relationship between the variables and the null hypothesis is rejected.

Table 13: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.260	.040		6.475	.000
	fuelperday	.830	.022	.913	38.094	.000

a. Dependent Variable: other expenses

The coefficient table 13 above shows the relationship between fuel expenditure and other expenses cost. The fuel expenditure coefficient 0.830 and sig. at 0.000 reveals a significant positive effect indicating that higher fuel cost after subsidy removal significantly drive up the cost of other expenses likely due to increase in price of vehicle parts

Table 14: Crosstabulation Between Vehicle Type and Route Plied

			Route		
			fixed route	flexible route	Total
Vehicle	Bus	Count	1	0	1
		% within vehicle type	100.0%	0.0%	100.0%
		% within route	1.7%	0.0%	0.3%

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		Route		
		fixed route	flexible route	Total
	% of Total	0.3%	0.0%	0.3%
Minibus/taxi	Count	2	0	2
	% within vehicle type	100.0%	0.0%	100.0%
	% within route	3.4%	0.0%	0.6%
	% of Total	0.6%	0.0%	0.6%
Motorcycle	Count	56	26	82
	% within vehicle type	68.3%	31.7%	100.0%
	% within route	94.9%	9.8%	25.4%
	% of Total	17.3%	8.0%	25.4%
Tricycle	Count	0	238	238
	% within vehicle type	0.0%	100.0%	100.0%
	% within route	0.0%	90.2%	73.7%
	% of Total	0.0%	73.7%	73.7%
Total	Count	59	264	323
	% within vehicle plied	18.3%	81.7%	100.0%
	% within route	100.0%	100.0%	100.0%
	% of Total	18.3%	81.7%	100.0%

The table 14 above shows the cross tabulation between vehicle types and route plied. From the table above, 0.3% of the bus operator ply 6 fixed routes, 0.6% representing mini bus also ply fixed route ,17.3% motorcycle ply fixed route, 8% motorcycle ply flexible route and 73.7% of tricycle ply flexible route, showing majority tricycle 73.7% ply flexible route. It implies that bus operators ply fixed route which is majorly from the university main campus to town and plying flexible won't be favorable because buses will have to compete which motorcycle and tricycles which are the majority and it is also easier for motorcycle and tricycle to ply flexible because of their size and ease of accessing smaller and inner routes.

Table 15: Table Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	204.069[a]	3	.000
Likelihood Ratio	204.671	3	.000
Linear-by-Linear Association	195.891	1	.000
N of Valid Cases	323		

A chi square analysis in table 15 also established a significant relationship between vehicle type and route plied. This was indicated by a chi square value (X^2 =204.069 p=0.000). The type of vehicle an operator uses strongly influences route plied e.g. motorcycle can easily ply flexible route because they can access any kind of routes which cannot be said about buses. This relationship is significant and not random.

Table 16: Crosstabulation Between Fuel Expenditure and Passenger Per Trip

			Passenger per trip		
			1-3	4-6	Total
Fuel expenditure	3000-5000	Count	75	0	75
		% within fuel expenditure	100.0%	0.0%	100.0%

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		Passenger per trip		
		1-3	4-6	Total
	% within passenger per trip	91.5%	0.0%	25.7%
	% of Total	25.7%	0.0%	25.7%
5000-10000	Count	7	201	208
	% within fuel expenditure	3.4%	96.6%	100.0%
	% within passenger per trip	8.5%	95.7%	71.2%
	% of Total	2.4%	68.8%	71.2%
10000 above	Count	0	9	9
	% within fuel expenditure	0.0%	100.0%	100.0%
	% within passenger per trip	0.0%	4.3%	3.1%
	% of Total	0.0%	3.1%	3.1%
Total	Count	82	210	292
	% within fuel expenditure	28.1%	71.9%	100.0%
	% within passenger per trip	100.0%	100.0%	100.0%
	% of Total	28.1%	71.9%	100.0%

The table 16 above shows a cross tabulation between fuel expenditure and passenger per trip. Majority of operators 25.7% who spend between #3000-5000 carry between 1-3 passengers per trip. 68.8% which is the majority that spends between #5000-10000 carry between 4-6 passengers per trip and 3.1% who spends above #10000 carries between 4-6 passengers per trip. Majority spends between #5000-10000 and carry between 4-6 passengers. The shows that more passengers' equal larger vehicles in use which tends to consume more fuel. In contrast operators carrying 1-3 passengers per trip most likely motorcycle spend less on fuel due to the small size of vehicle. This suggest that carrying more passengers per trip requires more fuel as larger vehicles or longer trips use more fuel to accommodate higher passenger loads.

Table 17: Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	258.506[a]	2	.000
Likelihood Ratio	285.493	2	.000
Linear-by-Linear Association	227.744	1	.000
N of Valid Cases	292		

Table 17 shows a chi square analysis that established a significant relationship between fuel expenditure and passenger per trip. This was indicated by a chi square value (X^2 =258.506 p=0.000). It means the number of passengers per trip is strongly linked to fuel expenditure.

CONCLUSION

This study focused on the impact of fuel subsidy removal on public transport operations in Lokoja metropolis and it reveals significant challenges stemming from the policy shift implemented in May 2023. Findings indicate that the removal of the fuel subsidy has had a profound impact on public transport operations in Lokoja metropolis which has led to the driving up of operational cost up to 150 - 300%, limit in service availability and increasing fares having a significant consequence for passengers and the local economy. These changes have disproportionately affected vulnerable groups that is including students with reports of student skipping classes and also traders experiencing low patronage and higher goods transportation

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cost. The research has confirmed the informal public transport sectors sensitivity to fuel price volatility and emphasize that urban mobility is essential for sustainable development in cities like Lokoja.

RECOMMENDATIONS

1. Government should subsidize fuel efficient vehicles or alternative energy vehicles, like providing financial incentives such as low interest loans or grants to public transport operators in Lokoja who are interested in such vehicles. Operators getting this assistance will help to reduce exploitative hikes and encourage patronage by commuters
2. Incorporation of training and financial support for transport business can enhance operators' resilience and help them adapt to increased cost, optimize operation and better serve passengers while aligning with government interest in maintaining a functional transport system.
3. There is a need for investment in more transport infrastructure like charging stations like solar powered and grid tied charging stations stationed in strategic locations in Lokoja like ganaja junction for electric vehicles which will encourage operators to opt in for more fuel-efficient vehicle or an alternative energy source of energy.

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