



IMPACT OF FUEL SUBSIDY REMOVAL ON VEHICULAR ASSET DEPRECIATION IN MINNA METROPOLIS, NIGER STATE, NIGERIA

Mohammed Abdulkadir, Ahmad Ibn U. & Hassan Suleiman

Department of Geography, Ibrahim Badamasi Babangida University, Lapai
Niger State, Nigeria



Corresponding Author's Email: abdulkadirmohammed98@yahoo.com

Abstract

This study investigates the significant impact of fuel subsidy removal on the depreciation of vehicular assets in Minna Metropolis, Niger State, Nigeria. The research aims to understand the economic implications of this policy change on vehicle owners and the transportation sector. Both primary and secondary data sources were utilized for data collection. A total of 101 questionnaires were administered to randomly selected respondents from eleven wards in Minna Metropolis. A 93% response rate was achieved, with 96 completed questionnaires returned. The reliability of the questionnaire was ensured through the use of the Yamane and Taro sampling method. Key findings reveal that: Vehicle ownership is most prevalent among individuals aged 26-35. Employment status is a significant factor influencing vehicle ownership, with public sector employees being the most likely owners, followed by private sector employees and self-employed individuals. Students exhibit the lowest rate of vehicle ownership; vehicles aged 3-4 years are the most popular among respondents, suggesting a preference for newer vehicles or a specific price point associated with this age range, vehicles are predominantly used for personal purposes, followed by commercial use. This indicates that personal transportation needs are the primary driver of vehicle ownership in the surveyed population. Most vehicle owners drive less than 1000 kilometres per month, suggesting a prevalence of short-distance travel. Based on these findings, the study recommends Government financial assistance to vehicle owners, investment in public transportation infrastructure. Also, government should promotion of alternative fuels and regular policy evaluation to mitigate the negative impact of fuel subsidy removal on vehicular asset depreciation.

Keywords: Fuel Subsidy Removal, Vehicular Depreciation, Price, Minna and Transportation.

Introduction

Nigeria, as a major oil producer in Africa, has grappled with the issue of fuel subsidies for decades. These subsidies, which involve government subsidies on the price of gasoline and diesel, have been a contentious topic due to their economic and environmental implications. While intended to cushion the impact of rising fuel prices on consumers, fuel subsidies have also led to a number of challenges, including budgetary strains, corruption, and environmental concerns. In recent years, the Nigerian government has taken steps to phase out fuel subsidies. This decision was motivated by a number of factors, including: Subsidies have placed a significant burden on the government's budget, diverting resources from other essential sectors. Subsidies have encouraged fuel smuggling and hoarding, leading to inefficiencies in the fuel distribution system, subsidies have been linked to corruption, with government officials and fuel marketers benefiting from the subsidy scheme, subsidies have contributed to increased fuel consumption and emissions, exacerbating air pollution and climate change, climate change, which affects crop yields, livestock and food security; changes in rainfall

patterns, water availability, and water quality, spread of diseases, heat stress and malnutrition, sea-level rise, coastal erosion and saltwater intrusion (Ajide *et al.*, 2019).

The removal of fuel subsidies has had a profound impact on the transportation sector in Nigeria. Fuel prices have increased significantly, leading to higher costs for vehicle owners and operators. This, in turn, has affected the depreciation rate of vehicular assets, which tends to affect the vehicle value of usage and resale (Oni, Folarin & Ali, 2018). Depreciation refers to the decrease in the value of an asset over time. In the context of the transportation sector, depreciation is influenced by a number of factors, including: The more a vehicle is used, the faster it depreciates. Regular maintenance can help to slow down the rate of depreciation. Higher fuel prices can increase the operating costs of a vehicle, leading to faster depreciation. As new technologies are introduced, older vehicles may become less valuable (Ogunleye & Adebola, 2018).

Relevant Studies conducted on assessment of road traffic accident in Minna Metropolis, Nigeria by Ajiboye, *et al.* (2021). This study analyzed road traffic accidents in Minna Metropolis, identifying human factors as the primary cause. While it didn't specifically focus on age, it provides a foundational understanding of accident trends in the region. World Health Organization WHO (2018), Age-Related Factors in Road Traffic Accidents: A Systematic Review. Key findings, this global review examined the relationship between age and road traffic accidents, finding that older drivers are more likely to be involved in crashes due to factors like decreased vision, slower reaction times, and reduced cognitive function. Evans (2003), age-related differences in driving performance and accident risk: a review of the literature. This study explored the literature on age-related differences in driving, highlighting how older drivers may compensate for physical limitations through safer driving practices. It also discusses the potential for age-related cognitive decline to impact driving performance. Owoeye *et al.* (2020), road traffic accidents in Nigeria: a review of recent trends and challenges. Key findings; this study analyses the broader economic implications of fuel subsidy removal in Nigeria, including its potential impact on transportation costs and inflation. While it doesn't directly address vehicular asset depreciation, it provides a valuable context for understanding the indirect effects of fuel subsidy removal on the automotive sector.

However, Olanrewaju & Owolabi, (2014), "Fuel Subsidy Removal and Its Impact on the Nigerian Transport Sector: key findings, review examines the potential impacts of fuel subsidy removal on the Nigerian transport sector, including increased transportation costs and reduced access to transportation services. While it doesn't explicitly discuss vehicular asset depreciation, it highlights the potential economic consequences of fuel subsidy removal that could indirectly affect vehicle value. Olofin & Olayemi (2018), "The Impact of Fuel Price Increases on Vehicle Ownership and Use: Evidence from Nigeria" key findings, investigates the relationship between fuel price increases and vehicle ownership and use in Nigeria. It finds that higher fuel prices can lead to reduced vehicle use and potentially lower demand for new vehicles, which could affect vehicular asset depreciation. In addition, Olanrewaju & Adewale (2019), "The Economic Impact of Fuel Subsidy Removal on the Nigerian Automotive Industry" key findings of the study explores the potential economic impacts of fuel subsidy removal on the Nigerian automotive industry, including increased production costs, reduced consumer demand, and potential job losses. While it doesn't directly address vehicular asset depreciation, it highlights the broader economic consequences of fuel subsidy removal that could affect the value of vehicles. By addressing these gaps, future research can contribute to a more comprehensive understanding of the relationship between biological age and road traffic accidents in Minna Metropolis and inform evidence-based interventions to improve road safety for all ages.

Statement of the Problem

The removal of fuel subsidy in Nigeria has had far-reaching implications, particularly on the transportation sector. One of the significant impacts is the accelerated depreciation of vehicular assets. In Minna Metropolis, Niger state, this effect is pronounced due to various factors, including: Higher fuel costs compel vehicle owners to use their vehicles occasionally for longer durations, leading to increased wear and tear, poor state of roads in the metropolis exacerbates vehicle damage, as vehicles are subjected to constant shocks and vibrations, congestion leads to prolonged idling and increased engine wear, further contributing to depreciation, and due to financial constraints, many vehicle owners may delay or neglect necessary maintenance, leading to accelerated deterioration.

For instance, Olanrewaju *et al.* (2014), viewed fuel subsidy removal and its impact on the Nigerian transport sector, the study provides a comprehensive overview of the various impacts of fuel subsidy removal on the Nigerian transport sector, including its effects on vehicle maintenance and operational costs. Oni *et al.* (2018), reveals fuel subsidy removal in Nigeria is an empirical investigation of the effect on transport fare. This study examines the direct impact of fuel subsidy removal on transportation costs, specifically focusing on the increase in transport fares. Afolayan, *et al.* (2012) viewed impact of fuel subsidy removal on the Nigerian economy, the study focuses on the broader economic impact of fuel subsidy removal and it provides insights into the indirect effects on transportation, such as increased costs of vehicle maintenance and operation.

The findings of this study will contribute to a better understanding of the specific impact of fuel subsidy removal on vehicular asset depreciation in Minna Metropolis. This knowledge can inform policy decisions and strategies to mitigate the negative effects and promote sustainable transportation practices in the region.

Study Area

Location

Minna Metropolis is located in central Nigeria, serving as the capital of Niger state. It is situated along the Kaduna River, approximately 260 kilometres (160 miles) north of Abuja, the nation's capital (Uthman & Ibraheem, 2023).

Climate and Rainfall

Minna experiences a tropical savannah climate, characterized by distinct dry and wet seasons. The dry season typically runs from November to April, while the wet season extends from May to October. Temperatures are generally warm throughout the year, with average highs ranging from 28°C (82°F) to 32°C (90°F) (NiMet, 2003). Annual rainfall in Minna averages around 1,200 millimetres (47 inches), with most precipitation occurring during the wet season. Rainfall patterns can be variable, with occasional droughts or periods of excessive rainfall (NiMet, 2003).

Vegetation and Soils

The natural vegetation of the region is predominantly savannah, characterized by a mix of grasses, shrubs and scattered trees. However, due to human activities such as deforestation and agriculture, the original vegetation cover has been significantly altered in many areas (Ritter, 2003). The soils in Minna are generally sandy-loamy, with varying levels of fertility. Some areas have well-drained soils suitable for agriculture, while others may be prone to erosion or waterlogging (Ritter, 2003).

Population

Minna is a rapidly growing city with a population estimated to be around 1 million people. The population is diverse, with a mix of ethnic groups including the Nupe, Gwari, and Yoruba (Ritter, 2003).

Socio-Economic Activities

The economy of Minna is driven by a mix of agriculture, trade, and services. The city serves as a regional hub for commerce and government activities. Manufacturing industries, including food processing and textiles are also present. However, the region faces challenges such as poverty, unemployment, and limited infrastructure development (Ritter, 2003).

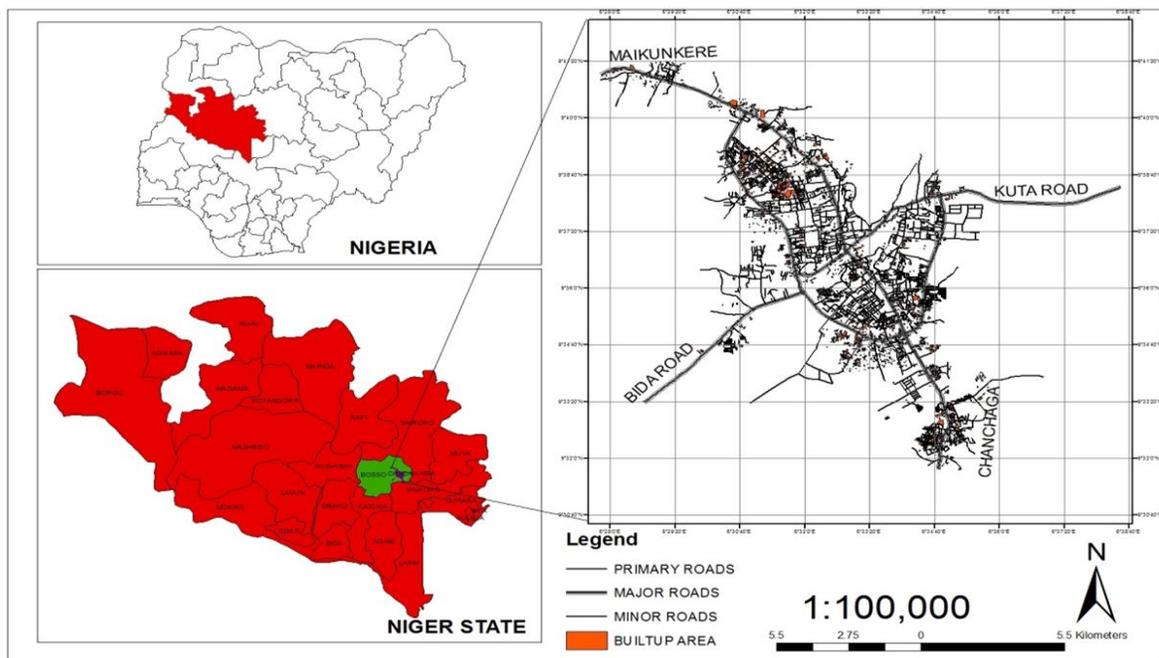


Figure 1: Location of Minna in Niger State

Source: Ministry of Land and Housing, Minna (2013)

Materials and Methods

Data Collection Source

Structured Questionnaire: The structured questionnaire was pre-coded with questions include predetermined questions with possible range of open-ended questions was used to allow the respondents use their ideas to provide answers to particular questions. The questionnaire contains questions such as. Age, gender, driving experience, vehicle type, location, frequency of driving, distance travelled, driving conditions, regular maintenance, fuel efficiency and vehicle safety, perceptions of traffic congestion, road quality and public transportation, opinions on driving regulations and road infrastructure development as well as transportation policies.



Population size: The population of Minna, Nigeria, has been steadily increasing over the years. As of 2024, the estimated metro area population of Minna is **510,000**. This represents a 3.43% increase from 2023 (<https://www.macrotrends.net/global-metrics/cities/23540/minna/population>).

Sampling: A Yamane Taro sampling technique was employed to distribute 101 questionnaires across six merged wards, proportional to their population size. Limawa (a & b): 15 questionnaires (14.85%). Mekera: 16 questionnaires (15.84%). Minna (Central & South): 21 questionnaires (20.79%). Nasarawa (a, b, c): 11 questionnaires (10.89%). Sabon-Gari: 16 questionnaires (15.84%). Tudun (North & South): 22 questionnaires (21.78%). Of the total 101 questionnaires, 96 (97.8%) were recovered, while 5 (3.2%) were unrecoverable. This formula helps determine the appropriate sample size needed to accurately represent a population. It's a valuable tool for ensuring the reliability and validity of research findings. The Yamane Taro formula is a well-established statistical method for determining sample size, ensuring a statistically significant sample. The distribution of questionnaires across wards based on population size ensures a representative sample, minimizing bias. A 97.8% recovery rate is impressive and suggests that the chosen sampling method and data collection procedures were effective.

Table 1: Distribution of Questionnaires among the Six (6) Wards of Minna Areas

S/N	L.G.A Wards	Estimated Population	Sample Size Questionnaire	%	Rate of Questionnaire Returned	Rate not Returned	%
1	Limawa (a & b)	73,438	15	14.85	15	0	15.63
2	Mekera	82,621	16	15.84	14	2	14.58
3	Minna (Central & South)	104,756	21	20.79	20	1	20.83
4	Nasarawa (a,b,c)	54,902	11	10.89	11	0	11.45
5	Sabon Gari	83,636	16	15.84	15	1	15.63
6	Tudun Wada (North & South)	110,647	22	21.78	21	1	21.88
	Total	510,000	101	100.0	96	5	100.00

Source: Author Fieldwork Survey (2021)

Results and Discussions

The Distribution of Vehicle Ownership by Age Range

The removal of fuel subsidies in Nigeria has significantly impacted the socio-economic landscape, particularly in urban areas like Minna Metropolis. One of the most noticeable consequences of this policy change has been the accelerated depreciation of vehicular assets. The pie chart represents the distribution of vehicle ownership across different age groups. Figure 2, shows a clear correlation between age and vehicle ownership. The 26-35 age groups have the highest percentage of vehicle ownership, followed by the 46 and above age group. The 18-25 age groups have the lowest percentage of vehicle ownership. The 26-35 and 46+ age groups likely have higher disposable incomes and established careers, allowing them to afford vehicles, while 18-25 age groups might

have lower incomes, student loans, or other financial obligations, limiting their ability to purchase vehicles.

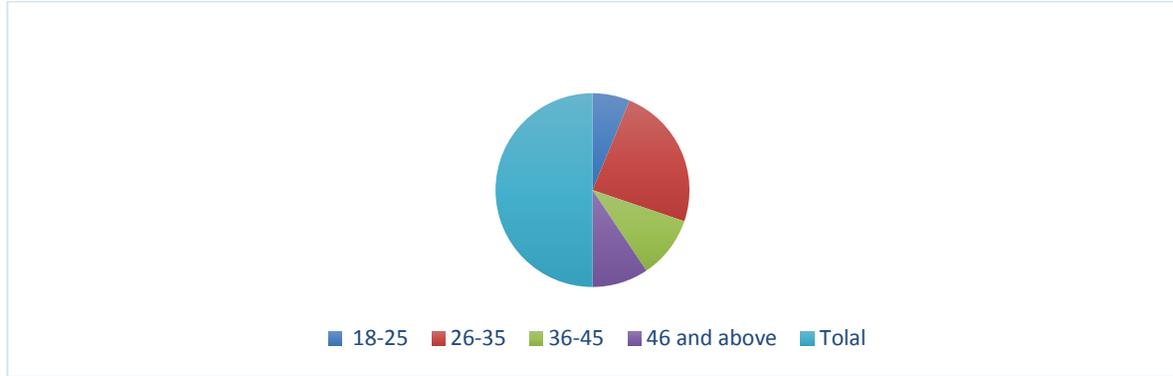


Figure 2: Distribution of Vehicle Ownership by Age Range

Source: Author’s Field Survey, 2024

In contrast, other researchers find different trends, including higher levels of vehicle ownership and earlier first-time vehicle purchases among the millennial generation, after controlling for period effects (Thakuria et al., 2010). Klein and Smart (2017), find lower vehicle ownership among Millennials but attribute this finding to economic preclarity resulting from the great recession. For example, millennial who are economically independent from their parents have higher levels of vehicle ownership than anticipated based on their socioeconomic characteristics (Klein & Smart, 2017). Studying attitudes and consumer preferences by Etezady et al. (2021); Knittel & Murphy (2019) and Kurz et al. (2018) reached similar conclusions.

Figure 3, shows the distribution of vehicle ownership by vehicle age. A total of 96 people were surveyed, and 16.66% of them owned a vehicle that was 1-2 years old. The largest group (43.67%) owned a vehicle that was 3-4 years old. Vehicles aged 3-4 years have the highest percentage of ownership (43.67%). Vehicles aged 7-8 years have the lowest percentage of ownership (4.24%). Vehicles aged 1-2 years and vehicles aged 5-6 years have similar percentages of ownership (16.66% and 32.3%, respectively).

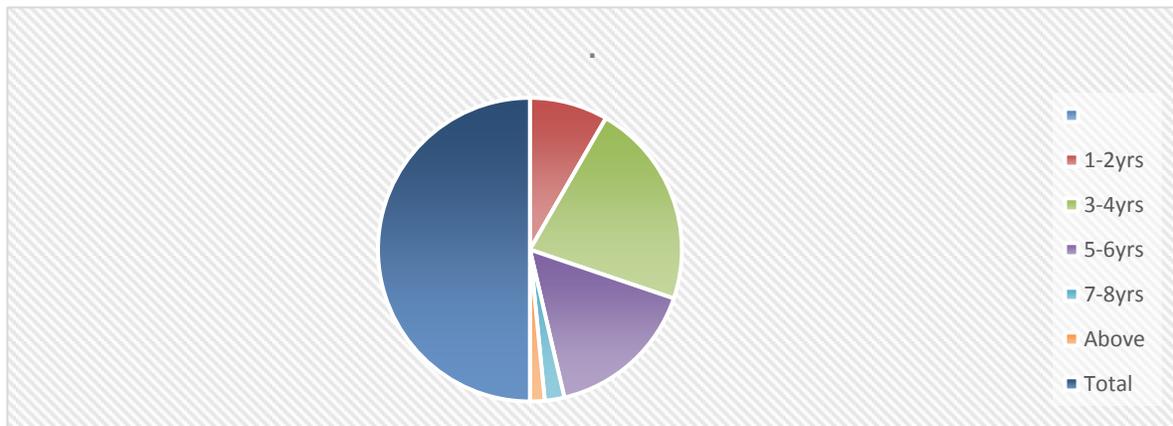


Figure 3: Distribution of Vehicle Ownership by Vehicle Age

Source: Author’s Field Survey, 2024

This study is in contrary with the study of François (2010) survey who conducted as part of statistic’s global consumer survey on consumption and media usage in 49 different countries, and discovered that people aged 60 years and older were the age group with the highest share of car ownership , were 18-29 year-olds, with 22 percent of respondents reporting they did not own a car yet, but were planning on purchasing one. The study justifies a theoretical S-shaped curve describing changes in ownership as a function of average per capita income, income's dispersion, and the 'cost/utility' ratio of owning a car. He applies the model to a panel of sixty-four countries and explains past variations in their ownership rates. Then, projections are performed to the year 2030. The finding, suggest that important technical and sociological evolutions will be needed to 'meet the challenges of sustainability'.

Distribution of Vehicle Ownership by Primary Purpose of Use

Figure 4, shows the distribution of vehicle ownership by the primary purpose of the vehicle. A total of 96 people were surveyed, and 58.33% of them used their vehicles for personal use. The largest group (33.33%) used their vehicles for commercial use. Key finding, reveal that, vehicles are primarily used for personal use (58.33%), followed by commercial use (33.33%). Only 8.33% of vehicles are used for both personal and commercial use.

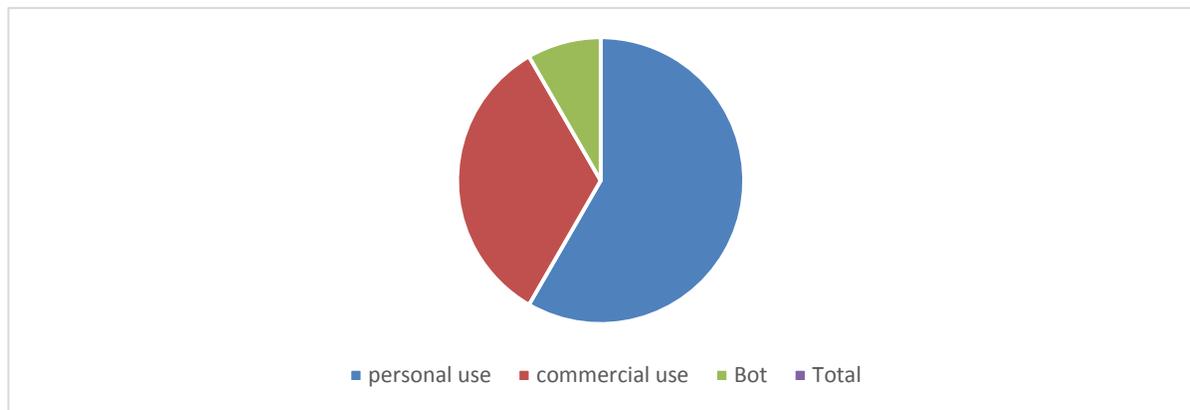


Figure 4: Distribution of Vehicle Ownership by Primary Purpose of Use
 Source: Author’s Field Survey, 2024

In a related study by Jaime (2024) reveals the distribution of vehicle ownership by purpose of use. In their paper the role of personal motives in determining car ownership and use, they explore the various factors that influence car ownership and usage decisions, including the purpose of use, which the researcher categorized into personal and commercial, to includes Personal Transportation used for daily travel to and from work or school, used for shopping, grocery shopping, for visiting friends, family, or attending social events, for leisure activities like camping, hiking, or road trips. For business-related travel, client visits, or transporting goods. Used as taxis, buses, or other forms of public transportation, for delivering goods or packages, used for transporting crops, livestock, or farm equipment, by government officials for official duties, and also used by police, fire departments, and ambulances.

Distribution of Vehicle Ownership by Number of Kilometres Driven Per Month

Figure 5, shows the distribution of vehicle ownership by the approximate number of kilometres driven per month. A total of 96 people were surveyed, and 52.08% of them drove less than 500 kilometres per month. The largest group (33.33%) drove between 500 and 1000 kilometres per

month. Vehicles driven less than 500 kilometres per month have the highest percentage of ownership (52.08%). Vehicles driven between 500 and 1000 kilometres per month have the second highest percentage of ownership (33.33%). Vehicles driven more than 150,000 kilometres per month have the lowest percentage of ownership (4.17%).

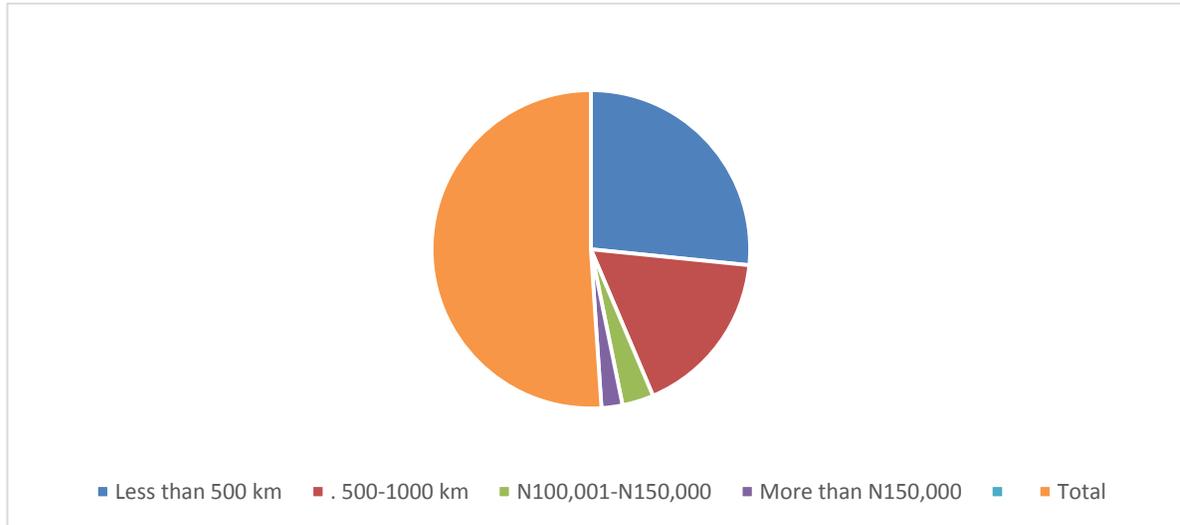


Figure 5: Distribution of Vehicle Ownership by Number of Kilometres Driven Per Month
 Source: Author’s Field Survey, 2024

This implies that vehicles are primarily driven for short distances, with most people driving less than 1000 kilometres per month. This study is in contrary with the study of Song and Wang (2017), whose research focused on the determinants of vehicle ownership, including factors like household income, number of drivers, and proximity to public transportation. These factors can influence the frequency of vehicle use and, consequently, the number of kilometres driven. Wong (2013), the study analyzed car ownership in Macao, identifying factors such as household size, income, and population density as key determinants. These factors can also impact vehicle usage patterns and the number of kilometres driven. Zegras and Hannan (2012) research examined household vehicle ownership decisions in Santiago, Chile, considering demographic, socioeconomic and land-use factors. These factors can influence the need for a vehicle and the extent of its use. Tsang *et al.* (2011) study focused on car ownership in the Sydney area, identifying factors like income, driving licenses, employment and accessibility as key drivers. These factors can also impact vehicle usage patterns and the number of kilometres driven.

Vehicle Ownership by the Average Monthly Fuel Expenditure

Figure 6, shows the distribution of vehicle ownership by the average monthly fuel expenditure after the fuel subsidy removal. A total of 96 people were surveyed, and 32.29% of them spent less than N50,000 per month on fuel. The largest group (43.75%) spent between N50,000 and N100,000 per month on fuel. Vehicles with a monthly fuel expenditure of N50,000-N100,000 have the highest percentage of ownership (43.75%). Vehicles with a monthly fuel expenditure of less than N50,000 have the second highest percentage of ownership (32.29%), while, vehicles with a monthly fuel expenditure of more than N150,000 have the lowest percentage of ownership (3.13%).

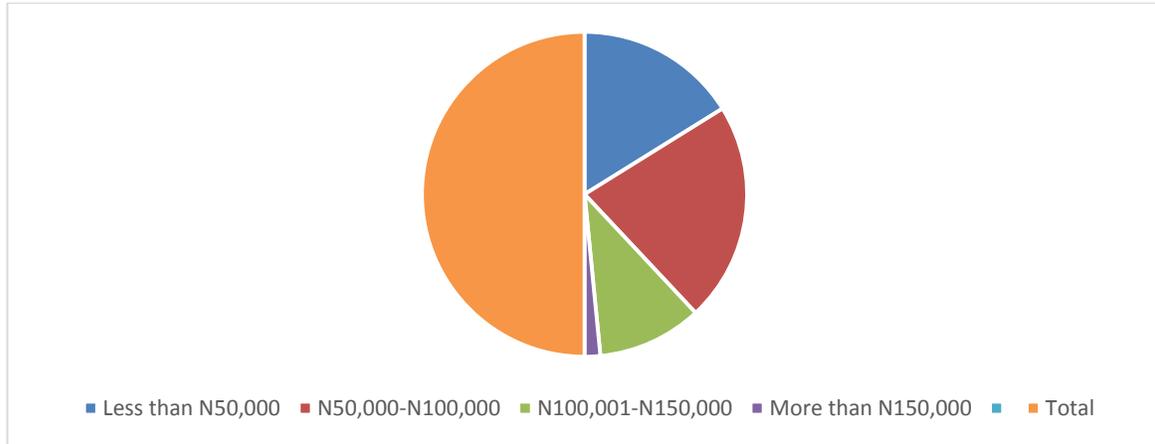


Figure 6: Vehicle Ownership by the Average Monthly Fuel Expenditure

Source: Author’s Field Survey, 2024

The finding indicated that a majority of vehicle owners in this survey have relatively low monthly fuel expenditures, indicating that many vehicles are driven for shorter distances or use fuel-efficient models. In a similar research conducted by Friesa *et al.* (2017) research focuses on the total cost of ownership for vehicles, including fuel costs. Burnham *et al.* (2021), conducted research on the total cost of ownership for different vehicle types and powertrains, considering factors like fuel costs. Soszynska *et al.* (2023) analyzed the total cost of ownership for electric vehicles, including electricity costs and fuel savings compared to traditional gasoline vehicles.

Fuel Subsidies Removal on the Effects of Resale Value of Vehicles

Figure 7, shows the distribution of respondents' opinions on how the removal of fuel subsidies has affected the resale value of vehicles. The most common response (60.42%) is that the resale value has **slightly decreased**. A significant decrease was reported by 31.25% of respondents, while only 6.25% said the resale value had slightly increased. It is conceivable that with increase in the price of petroleum, there will be less demand for cars; hence result in price crash occasioned by excess supply of petroleum.

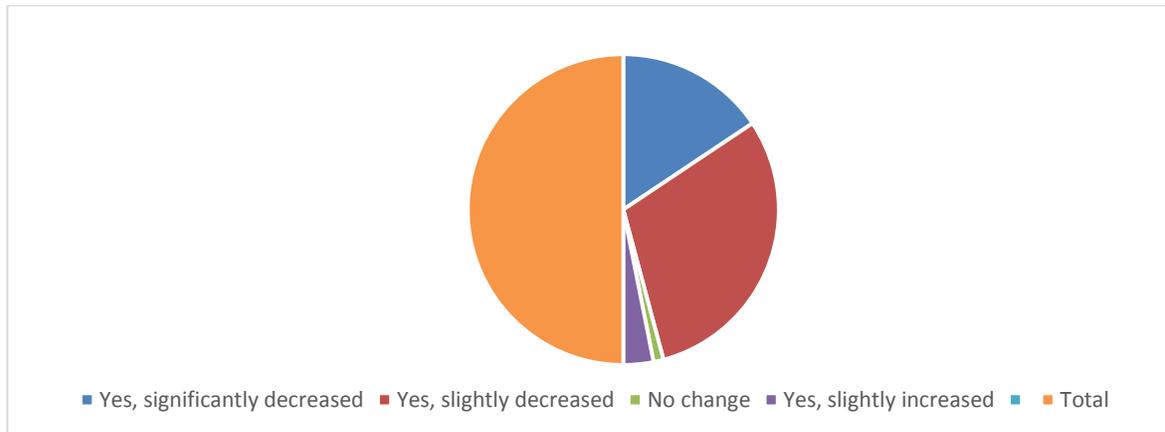


Figure 7: Fuel Subsidies Removal on the Effects of Resale Value of Vehicles

Source: Author’s Field Survey, 2024

Finding, suggests that a majority of respondents believe the removal of fuel subsidies has had a negative impact on the resale value of vehicles. However, it's important to note that this is just a survey of opinions, and not necessarily a reflection of actual market trends. World Bank WB (2022) conducted research on fuel subsidies and their impact on economic growth and development. The studies provide insights into the potential effects of subsidy removal on vehicle markets.

Rising Fuel Costs on Vehicle Disposal

Figure 8, shows the distribution of respondents' opinions on whether they have considered disposing their vehicles due to increased fuel costs. The most common response (37.5%) is "No," indicating that the majority of respondents have not considered disposing their vehicles. This research contributed to a better understanding of how individuals and businesses respond to rising fuel costs in terms of vehicle ownership and disposal decisions, and environmental consequences of increased vehicle disposal rates, including waste generation and resource depletion. Overall result shows that while a significant number of respondents have considered disposing their vehicles due to increased fuel costs, the majority have not taken this step. This could be due to various factors, such as the need for transportation, the cost of replacing the vehicle, or personal preferences.

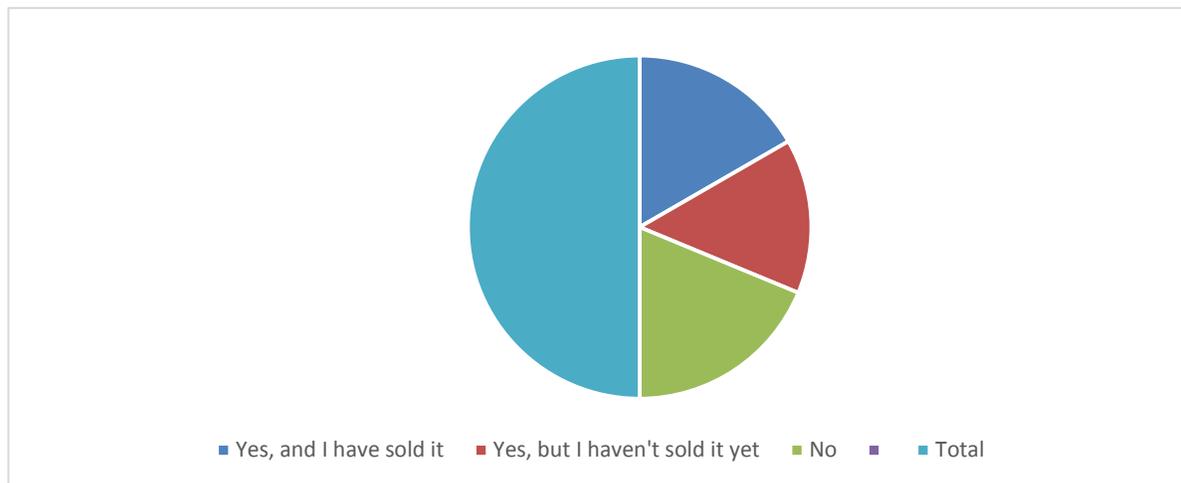


Figure 8: Rising Fuel Costs on Vehicle Disposal

Source: Author's Field Survey, 2024

Several studies have examined the impact of rising fuel costs on vehicle disposal. One notable study by Soszynska *et al.* (2024) delved into the total cost of ownership (TCO) of vehicles, including fuel costs. Their research analysed the economic and environmental implications of various vehicle types, such as electric vehicles and conventional internal combustion engine vehicles. While their study may not directly address vehicle disposal, it provides valuable insights into how fuel costs influence vehicle ownership and usage patterns. Researchers from the International Council on Clean Transportation (ICCT) conducted numerous studies on fuel consumption, emissions, and the environmental impact of vehicles. Their research often includes analyses of the factors influencing vehicle ownership and usage, including fuel costs. While they may not specifically address vehicle disposal, their work provides insights into how rising fuel costs can impact vehicle choices and usage patterns.

Researchers from the Argonne National Laboratory (ANL) conducted research on the life cycle assessment of vehicles, including the environmental and economic impacts of vehicle production, use, and disposal. While their research may not directly address vehicle disposal due to fuel costs, it provides valuable insights into the factors influencing vehicle lifecycle and the potential environmental impacts of increased vehicle disposal rates. Researchers from the University of California, Davis (UC Davis) studied the impact of fuel prices on transportation behaviour and the adoption of electric vehicles. Their work may provide insights into how rising fuel costs can influence vehicle ownership and usage decisions, which may indirectly impact vehicle disposal rates.

Reduction in Vehicle Usage Due to Higher Fuel Prices

Figure 9, shows the distribution of respondents' opinions on whether they have reduced their vehicle usage due to higher fuel prices. The most common response (64.58%) is "Yes, significantly," indicating that a majority of respondents have made significant reductions in their vehicle usage. Overall findings of the data suggest that a large majority of respondents have reduced their vehicle usage due to higher fuel prices. This could have implications for transportation patterns, energy consumption, and the environment.

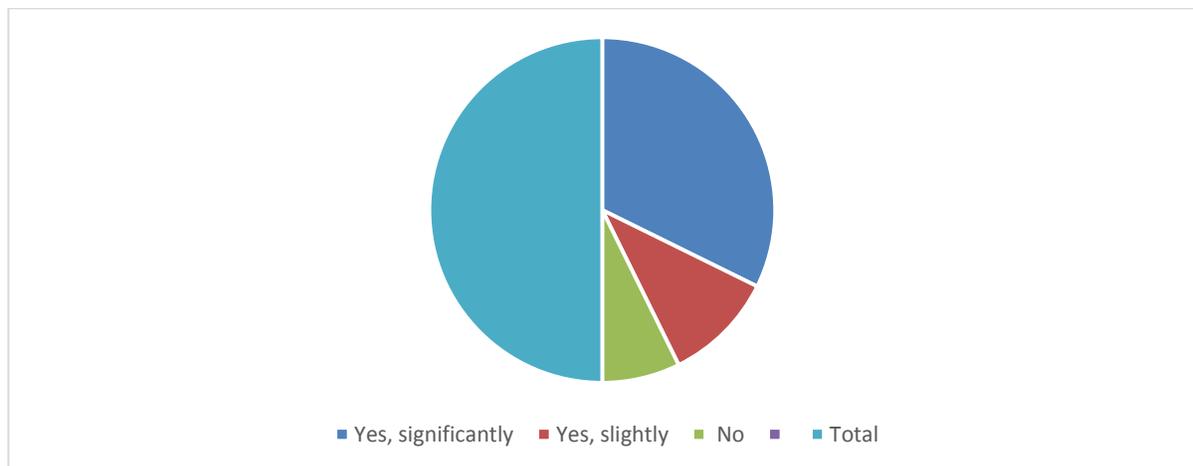


Figure 9: Reduction in Vehicle Usage Due to Higher Fuel Prices

Source: Author's Field Survey, 2024

In the study of Giulio *et al* (2019) on vulnerability to fuel price increases in the UK: A household level analysis. The relevance of these studies analyzed the impact of fuel price increases on commuting patterns, mode shift (from private vehicles to public transport), and overall vehicle usage. This provide insights into how higher fuel prices due to subsidy removal can affect vehicle depreciation by reducing usage. The study introduces the concept of "Car-Related Economic Stress" (CRES) to identify households disproportionately affected by fuel price increases. The study highlights that "Low Income, High Cost" (LIHC) households are particularly vulnerable. These households often have lower incomes but rely heavily on cars for transportation, making them more susceptible to fuel price shocks. The research demonstrates that a 20% increase in fuel prices can significantly exacerbate the economic stress for LIHC households. These households may be forced to make difficult choices, such as reducing essential spending on food or heating, to cope with higher fuel costs. The study reveals that LIHC households have limited adaptive capacity to respond to fuel

price increases. They are less likely to switch to more fuel-efficient vehicles or adopt alternative modes of transportation due to financial constraints and limited access to public transportation.

Fuel Subsidy Removal Has Accelerated the Depreciation of Vehicle

Figure 10, shows that fuel subsidy removal has accelerated the depreciation of vehicle. Overwhelming majority significant of the majority (71.88%) of respondents believe that the fuel subsidy removal has accelerated vehicle depreciation. Minor impact indicates that only 9.38% of respondents reported no change in depreciation. Moderate impact shows, that 18.75% reported a slight acceleration in depreciation.

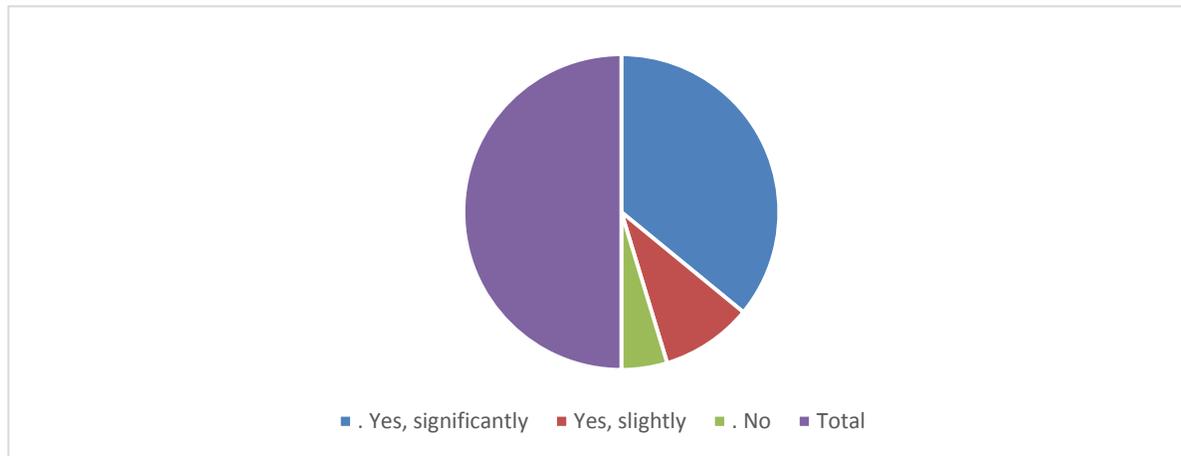


Figure 10: Fuel Subsidy Removal Has Accelerated the Depreciation of Vehicle

Source: Author’s Field Survey, 2024

The data strongly suggests that the removal of fuel subsidies has had a substantial negative impact on vehicle resale values. This finding aligns with the expectations of many experts and consumers who predicted that the increased fuel costs would lead to a decrease in demand for older, less fuel-efficient vehicles. Potential implications, increased trade accelerated depreciation could lead to more people trading in their vehicles for newer, more fuel-efficient models. This may reduce vehicle prices as decrease in resale value might lead to lower prices for used vehicles. The financial impact of higher fuel costs could accelerate the adoption of electric vehicles as a more cost-effective alternative. By conducting further research, it may be possible to provide more specific insights into the long-term consequences of fuel subsidy removal on the automotive market and the overall economy.

In the study of James *et al* (1990), the researchers have extensively studied how changes in fuel prices affect consumer behaviour, including vehicle usage and purchase decisions. Increased fuel prices due to subsidy removal can lead to reduced vehicle usage, potentially accelerating depreciation as vehicles sit idle more often.

Mitigate the Impact of Fuel Subsidy Removal on Vehicle's Depreciation

Figure 11, measures taken to mitigate the impact of fuel subsidy removal on vehicle's depreciation. The most common measure taken to mitigate the impact of fuel subsidy removal was a significant reduction in driving (68.75%). With, 20.83% of respondents reported slightly reducing their driving,

while only 3.13% improved fuel efficiency. Only 7.29% of respondents reported taking no measures to mitigate the impact.

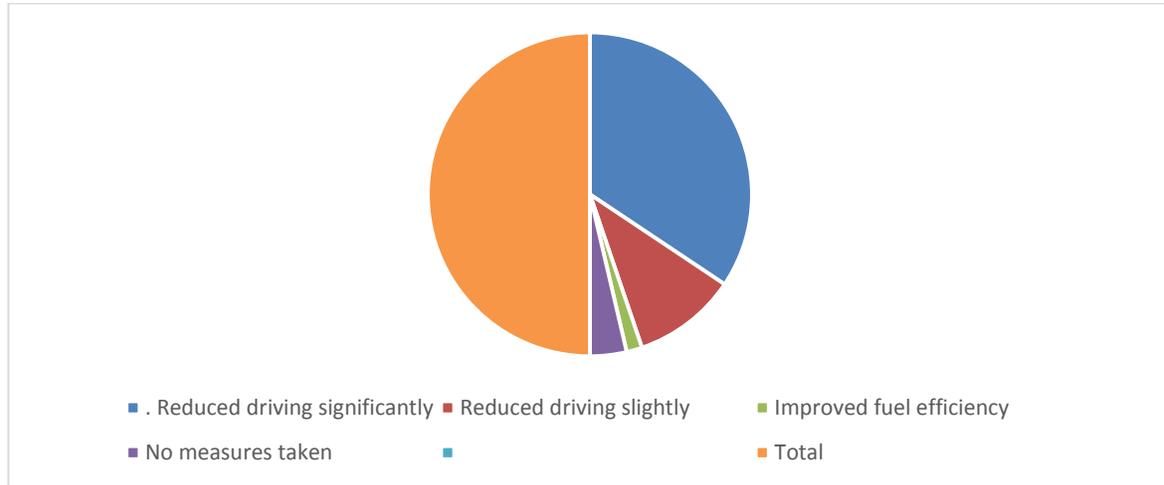


Figure 11: Mitigate the Impact of Fuel Subsidy Removal on Vehicle's Depreciation
 Source: Author’s Field Survey, 2024

The data suggests that the majority of vehicle owners have responded to the fuel subsidy removal by significantly reducing their driving. This is likely a direct response to the increased fuel costs and is an effective strategy for mitigating the financial impact on vehicle ownership. The increased reliance on reduced driving could lead to changes in transportation habits, such as increased use of public transportation or carpooling, reduced demand for fuel could impact the overall vehicle market, potentially leading to changes in vehicle production and pricing. This could have positive environmental implications, such as decreased greenhouse gas emissions and improved air quality. By conducting further research, it may be possible to provide more specific insights into the long-term consequences of fuel subsidy removal and the measures taken to mitigate its impact. This study is in line with the study of Kenneth (1980), examines factors influencing vehicle ownership, usage, and the overall transportation system and analyzed mitigation strategies for fuel subsidy reforms. The studies discuss policies aimed at cushioning the impact of higher fuel prices on vulnerable populations, such as targeted subsidies, investments in public transportation and support for fuel-efficient vehicles.

Alleviate the Impact of Fuel Subsidy Removal on Vehicular Asset Depreciation

Figure 12, the data shows that the respondents believe that increased public transportation options (53%) would be the most effective way to alleviate the impact of fuel subsidy removal on vehicular asset depreciation, followed by government subsidies for fuel costs (36%). Tax breaks for vehicle owners (2%) and other measures (5%) were seen as less effective.

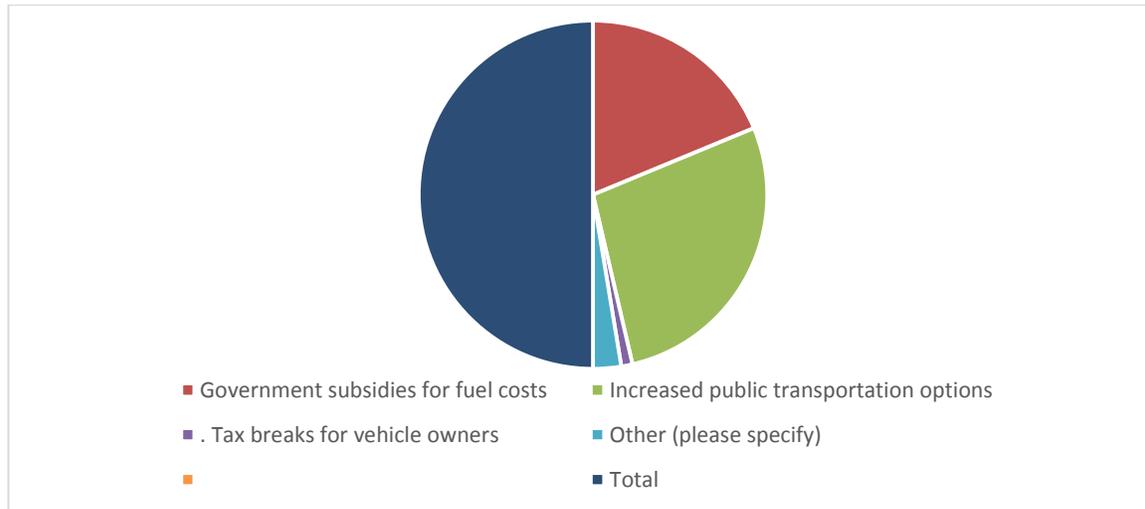


Figure 12: Alleviate the Impact of Fuel Subsidy Removal on Vehicular Asset Depreciation
Source: Author's Field Survey, 2024

Overall finding of the data analysis suggest that, the respondents believe that making it easier and more attractive to use public transportation is the key to reducing the negative impact of fuel subsidy removal on car ownership. This could include measures such as expanding public transportation networks, improving service frequency and reliability, and reducing fares. This study is in line with Daron *et al.* (2000), this research analyzed the broader economic consequences of fuel subsidy removal, such as inflation, unemployment, and changes in consumer spending patterns, can indirectly shed light on the potential impact on vehicle depreciation. Acemoglu's work often emphasizes the importance of sound economic policies and institutions for long-term growth. Removing fuel subsidies can be seen as a step towards a more efficient allocation of resources, which could stimulate economic growth and investment. Acemoglu's research on technological change highlights the role of innovation in driving economic growth. Removing fuel subsidies could incentivize innovation in fuel-efficient technologies and alternative energy sources, potentially leading to the development of more durable and efficient vehicles.

Conclusion and Recommendations

The removal of fuel subsidies in Minna Metropolis, Niger state, Nigeria, has had a significant impact on vehicular asset depreciation. The increased fuel costs have led to higher operational expenses for vehicle owners, resulting in accelerated wear and tear on their vehicles. This, in turn, has contributed to a decrease in the resale value of these vehicles. While, the removal of fuel subsidies has been justified as a necessary measure to address economic challenges and promote energy efficiency, its impact on vehicle owners has been substantial. The findings of this study highlight the need for targeted policies to mitigate the negative consequences of fuel subsidy removal on the automotive sector. Based on the findings of this study, the following recommendations are offered:

1. The government should consider providing targeted financial assistance to vehicle owners, especially those in lower-income brackets, to help offset the increased fuel costs. This could include fuel subsidies, tax breaks, or direct payments.



2. Investing in and improving public transportation infrastructure can help reduce reliance on personal vehicles, thereby mitigating the impact of fuel subsidy removal on vehicular asset depreciation.
3. Promoting the development of alternative fuel infrastructure, such as charging stations for electric vehicles and refuelling stations for natural gas vehicles can provide vehicle owners with more affordable and sustainable options.
4. Encouraging and supporting vehicle maintenance programs can help prolong the lifespan of vehicles and reduce the rate of depreciation. This could include providing access to affordable maintenance services or offering incentives for regular vehicle inspections.
5. The government should regularly evaluate the impact of its policies on vehicular asset depreciation and adjust them as needed to ensure that they are effective and equitable.

By implementing these recommendations, the government can help mitigate the negative consequences of fuel subsidy removal on vehicular asset depreciation and promote a more sustainable and equitable transportation sector in Minna Metropolis.

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