

## FUEL PRICE FLUCTUATION AND TRANSPORTATION SYSTEM IN RIVERS STATE (1981-2021)

<sup>1</sup>Azuonwu Benneth Elekwachi (Ph.D), <sup>2</sup>Akenbor, Lucy C. (Ph.D) and <sup>3</sup>Godwin, Lucky Chigozie

<sup>1&2</sup>Department of Marketing, Entrepreneurship and Procurement, Faculty of Management Sciences, Federal University, Otuoke, Bayelsa State, Nigeria

<sup>3</sup>Ignatius Ajuru University of Education, Rumuolumeni, Port Harcourt.

Email: [azuonbenneth12@gmail.com](mailto:azuonbenneth12@gmail.com)

### ABSTRACT

*The study examined fuel price fluctuation and transportation system in Rivers State between 1981 and 2021. The objectives of the study were as follows: Provides the trend of fuel price fluctuation in Rivers State.; Examines the connection between fuel price fluctuation and transportation system in Rivers State; Evaluates the effect of fuel price fluctuation on transportation system in Rivers State; Examines government policies and petrol tax on fuel price fluctuation on transportation system in Rivers State. To achieve these above objectives, the research made use of the survey research design, with a sample size of 348 respondents. The data collected were presented in table using simple percentage and analyzed by the use of simple regression model. Based on the analysis, the study found out that there is no significant relationship between the margins of fuel price fluctuation on transportation system from 1981-2021 in Rivers State; that there is no significant effect of fuel price fluctuation and transportation system in Rivers State; that there is significant influence of government policies and tax on fuel price fluctuation and transportation system in Rivers State; Specifically, that there is significant relationship between the result of fuel price fluctuation and mode of transportation system in Rivers State. In the light of the above, the study recommended that government of Rivers State should put in place palliative on transportation to caution the effect of fuel price increase so as to boost the transportation sector.*

**Key Words: Exchange Rate, Subsidy and Transportation System**

### INTRODUCTION

#### Background to the Study

Since the discovery of oil in commercial quantities at Oloibiri in the late fifties and the subsequent relegation of the agricultural sector, crude oil has been and is still the mainstay of the Nigerian economy. Society's heavy dependence on oil for her foreign exchange earnings has made the Nigerian economy a monoculture. There have been interests in understanding the causes and consequences of oil price shocks ever since the 1970s. Changes in monetary policy associated with far-reaching labour market adjustments as well as for energy technologies changes have also been attributed to oil price shocks.

Most of the extant studies on fuel price fluctuations focused on crude oil prices and transportation system. The pricing of refined products in the downstream sector is influenced by the prices in the upstream sector; however, the majority of price fluctuations in petroleum products have been primarily caused by price increases in the downstream petroleum sector brought on by the gradual elimination of petroleum subsidies. Specifically, the Nigerian government has been involved in deregulation policy in the downstream petroleum sector which requires withdrawal of petroleum subsidy that has not been real. The removal of petroleum subsidies frequently leads to rises in fuel prices, which in turn drives up the cost of transportation and other commodities. As a result, the Nigerian economy's oil industry is interconnected with all other sectors.

Changes or fluctuations in fuel prices have been defined as the barometer of worldwide economy whose importance transcends the political and economic circle in every country (Lingyu, 2012). Oil

price volatility has been attributed to so many factors ranging from instability in the major oil producing countries in the Middle-East occasioned by wars; as well as the interactive forces of demand and supply of crude oil in the world oil market; others include, the decisions of the organization of oil exporting countries (OPEC), as well as economic fluctuations consistent with business cycles. Merino and Ortiz (2005) assessed the reasons for the narrow gap between supply and demand in the oil market using a conventional method. In order to meaningfully contribute to the explanation of fluctuations in oil prices on the global market, he maintained that oil inventories should represent the interplay between supply and demand forces. This study aims at providing fuel price fluctuation and transportation system in Rivers State with background information related to the fuel prices on transport costs, and consequently looks at the ways in which the transportation of goods is influenced by significant fluctuations in fuel prices. Furthermore, the study also focuses on carriers' responses in the different transport sectors.

Among other major factors that influence transportation costs and transportation rates in Nigeria is fuel. Innocent, Ogbu, and Job (2015) assert that because gasoline is necessary for the creation of products and services across the board, governments are obliged to guarantee citizens' access to this critical resource and to offer subsidies. According to Onyishi, Eme, and Emeh (2012), government gasoline subsidies address market failures, namely poverty, particularly in developing nations where subsidies are provided to enable the underprivileged to engage in economic activity. After more than a decade of cheap oil at around 20 US\$/barrel, prices have risen steeply during the last sixteen years. Such large increases in crude oil prices have affected to different extents of the economy. The price of Brent crude oil was at a level of about 35 US\$/barrel in 1981, while 2015-2016 it was 43.67. It had reached a peak of 65.11 US\$/barrel. At the end of 2017, the oil price fell dramatically below 50 US\$/barrel as at 2020, and a consequence of the world financial crisis and economic stagnation in both the United States and Europe, which pushed large consumer store duce energy use. Despite the attempts of the OPEC oil cartel to cut oil production, analysts believe that further price slides may not be avoided during the months to come.

Nevertheless, the fluctuation of fuel prices and the impact on transport and the economy is still of major concern. In January 2023, the barrel of oil increase to \$84.78 per barrel.

Worldwide car inventories have grown dramatically (Dargay, Gately, & Sommer, 2007). As a result, the amount of gasoline used in the transportation sector has significantly increased (Graefe, 2009; Jaja, 2010), greenhouse gas (GHG) emissions have gotten worse (Okanlawon, 2007; Pridmore & Miola 2011; Shaheen & Lipman, 2007), and global climate warming has accelerated (Fattouh & El-Katiri, 2012; International Monetary Fund, IMF, 2013). Like every other state, Rivers State has witnessed a considerable fuel price fluctuation in the number of vehicles plying the roads, described by a government agency as limited and poorly maintained (Central Bank of Nigeria, CBN, 2003). According to estimates from the National Bureau of Statistics (NBS) (2017), there were 11.5 million automobiles on Nigerian roads as of the first quarter of 2017, with 44.5 percent of those being private (quoted in Iloani, 2017). From a population of 150,000 vehicles in 1980, the number of 11.5 million reflects an exponential increase (Ministry of Information, 2013). This has led to a notable rise in the nation's gasoline consumption. (Aminu & Olayinka, 2014). According to Olapade (2016), vehicle population in Rivers State and Lagos accounts for one-quarter of the total number of population in the country (cited in Ebhomole, 2016). Thus, the number of vehicles using Rivers State roads is approximately three million, or more than one-quarter of the estimated 11.5 million vehicles nationwide, according to the NBS estimate. The state's increasing automobile ownership has significant implications on fuel usage. For example, out of approximately 12.7 billion liters of petrol consumed within a period of January to September, 2016, Rivers State and Lagos consumed 2.3 billion liters, representing 18.32 percent of the total consumption (NBS, 2016). There are several reasons for the high rate of gasoline use in Rivers State and other states. These include the enormous population of the state (Aminu,

2014), which was projected to reach 18 million by 2016 (Rosenthal, 2018); the nation's growing economy, the rise in automobile traffic, and the insufficient supply of electricity (Asaolu, Awe, & Sholotan, 2010); and Rivers State's hub of industrial and economic activity (Aminu & Olayinka, 2014). Since gasoline is a finite and non-renewable resource (Graefe, 2009; Ting, Bin Mohammed, & Wai, 2011), the transportation sector presents a significant mitigation opportunity for preserving gasoline, ensuring a steady supply of gasoline throughout the nation, and lowering Nigeria's contribution to global climate change (Aminu, 2014). These factors are further supported by the high fuel consumption of the transportation sector in Rivers State and other states in the country (Jaja, 2010).

The transportation industry in River State has been impacted by the introduction of a tax on petroleum, which has caused fluctuations in gasoline prices and usage. This is because the Many Nigerians are opposed to the controversial policy choice of eliminating petroleum subsidies. Because different states have differing transportation costs, petrol pump prices vary significantly between states. Prices are lower in emerging nations than they are in industrialized ones. (Globalpetrolprices, 2018). There are more cars in the nation than there are people (Adenikinju & Falobi, 2006; Akanbi, Aworemi, & Amoo, 2013; Aminu, 2014; Jaja, 2010). This contributes to the high fuel consumption in River State and other states. Nigeria provides energy subsidies primarily to repair the refineries that are already in place, shield its people from the significant price volatility connected with energy, and keep the commodity accessible for the bulk of its population (Adagba, Ugwu, & Ume, 2012; Eltony, 2006; Guerer & Ban, 2000). Fuel prices in Nigeria, according to Ezeh (2012), are inelastic on both the supply and demand sides, making it extremely difficult for customers to find alternatives to using it on a daily basis. Hydropower and dams are unreliable sources of power in Nigeria; there are no substitutes like electric trains, solar heaters, or generators. Based on this preliminary framework, the study investigates the relationship between the fluctuation of fuel prices and the transport system in Rivers State, by taking into account the evidence of the impact of recent fuel price fluctuation on transportation businesses and their actual response. Indeed, the fluctuation in fuel prices in the first half of 2008 could be considered as an opportunity to carry out an evidence-based analysis of the transportation sector's and market reactions.

The Academics Dictionary of Economics (2006) defines a subsidy as a financial incentive provided by the government to a business in order to reduce the cost of the business's product and increase its ability to compete. This might be offered as a counterbalance to the government of the importing nation imposing the custom duty (which would be in the form of a protection duty). Maintaining prices below the cost of production is a key goal of subsidies, but in Nigeria, this has disastrous results. The truth of subsidies, according to World Bank (1997), is that everything in Nigeria always costs more when the price of fuel at the pump rises. Due to the inefficient use of the funds generated from the subsidy to build more refineries, renovate existing ones, and encourage the local refineries to operate, even a small increase in the price of fuel at the pump causes economic hardship for Nigerians and typically sparks resistance and protest from organized labor, civil society coalitions, and the general public. The reason being that the politicians use fuel subsidy as a principal way to enrich themselves and their generations to come to the detriment of Nigerians who are suppose to benefit through the expansion of other economic sectors like agriculture, health, education, tourism etc (Campell, 2011).

Fuel's strong correlation with transportation is due to its use in transportation, which raises the overall cost of goods produced, but its weak correlation with production is caused by the high cost of fuel, which is used in the production of the majority of goods and services in Nigeria. Fuel price fluctuation is also worsening and more pronounced than they were in the 1970s, creating unpredictable consequences."

Fuel and transportation represents one of the most important macroeconomic factors in the world economy and the crude oil market is the largest commodity market in the world. What makes fuel

price changes even more interesting is not only their direct impact on economic activity, but also the changes in fuel prices might reflect or even forecast changes in the national stability.

As a difference from other commodities fuel is probably one of the few or the only production input that can affect both positively and negatively economic growth, to an extent that it might even lead to a recession. Fuel price fluctuation dampens growth through different channels, from an increase in production cost to inflation expectations.

The growing body of academic literature and reports from government institutions clearly suggests that fuel price fluctuation increases dull macroeconomic growth by increasing inflation and unemployment and depressing the value of financial and other assets(Awerbuch, 2003).

A large variation in fuel prices will cause production and transportation costs to rise significantly for many industries, which in turn raises salaries and inflation while also slowing economic development. (O'Neill, Penm& Terrell,2008).

Given the extensive economic and social ramifications of fuel price fluctuations, it is imperative for policy makers to comprehend how and by how much these changes affect consumer price inflation and the distinct effects on households. Cheap fuel, according to Hamilton & Herrera (2003), is essential for meeting the world's energy demand, but because it is in short supply, changes in its availability will have a significant effect on the economy.

It is impossible to overstate the significance of transportation in any given area. Transporting products and people from one location to another is referred to as transportation. (Anyanwu, 1997). Transportation, as defined by Good and Jebbin (2015), is a system for moving people, products, and raw materials both domestically and abroad, frequently using machinery that is powered by electricity. It is frequently used to describe the transfer of people and products from one location to another. (Okeafor, 1998). The physical distribution activity that deals with the actual transfer of goods and services to their various clients is known as transportation service (Good and Jebbin, 2015). manufacturing cannot be accomplished without transportation; but, once items reach their eventual customers, manufacturing is considered to have been accomplished. Transportation networks must both boost their capacity and lower transportation costs. Because supply, distribution networks, tariffs, wages, locations, marketing strategies, and fuel prices are always changing, all users (individuals, businesses, institutions, governments, etc.) must bargain or bid for the transfer of commodities, people, information, and money (Jean, Claude and Brian, 2006).Furthermore, according to Jean, Claude, and Brian (2006), selecting a mode of transportation to move people and goods between origins and destinations is crucial and is influenced by a variety of elements, including the type of goods being transported, the infrastructure that is available, the origins and destinations, technology, and, most importantly, the distances between them, all of which work together to determine the cost of transportation. Transport costs are a monetary indicator of the expenses incurred by the transport provider in providing transportation services. Costs associated with operating (variable) expenses and fixed infrastructure are covered by transportation costs. The cost of transportation is influenced by a number of factors, including energy, infrastructure, administrative obstacles, location, and the mode of passenger and freight transportation.. This is because transport rates are also expressed in monetary measures. They might not accurately reflect the true cost of transportation. There is lack of a critical mass of men and women of integrity willing to harness and unleash the various resources in the country for the common good. The debate on oil subsidy in Nigeria which has caused the fluctuation of fuel pump price and transportation system and increase in production cost has been an age long issue. The withdrawal of oil subsidies has caused a crisis that has divided Nigerian society. While one school of thought maintains that there is an oil subsidy, another holds that there is nothing comparable to an oil subsidy. But since this is a different research area, it is not relevant to us here.The paper therefore seeks to examine the nature and politics of fuel price fluctuation and transportation system in Rivers State with the aim of identifying the forces behind fuel price fluctuation; to examine how the resources of the country

can be used to the benefit of all; to identify the challenges militating against the pursuit of this goal and the ways of resolving them. The aim of this paper is to examine fuel price fluctuation and transportation system in Rivers State from 1981-2021. Using the input-output model of the economy, this study estimated the impact of fuel price fluctuations on the prices of other economic sectors in an effort to determine the degree to which they affect Rivers State's transportation system. To this end, the dearth of literature on fuel price fluctuation and transportation system is seen as a gap in literature, thus this study seeks to fill this gap.

### **Statement of problem**

Fuel price fluctuation has paralyzed transportation system which has affected the social and economic activities in Rivers State. It has been noticeable that fuel price fluctuation has affected the production of goods and services in the market. This was occasioned by fuel price fluctuation that triggers hike in transportation system since 1981 till date.

Building materials and other products in the market at Port Harcourt has recorded a tremendous price increase, some of the market people spoken to attribute the increase to the removal of fuel subsidy which led to increase in fuel prices. They complain that the cost of transporting the materials and commodities from the point of place of the materials and commodities to the place of business has increased consequently, patronage has dwindled as a result of ever increasing prices. Sometimes transporters complain that getting their tank filled in the face of fuel scarcity is very difficult as that time. Their vehicles are abandoned at the filling stations for days and industry suffers a lot. The problem affects civil servants, business men, students, lecturers, small and medium scale enterprises and low income earners adversely.

There are numerous accounts of high-profit schemes and "round tripping" of locally produced and imported fuel, which has led to fluctuations in transportation in Rivers State and throughout Nigeria.

The effect of fuel price fluctuation in the short-run leads to increase in transportation cost and transportation rate which directly and indirectly affect the cost of physical distribution, material handling, marketing, logistics and overall production. The population finds it difficult to adapt to the emergence of market competition in the middle term, and the government believed that eliminating fuel subsidies abruptly would improve Nigeria in the long run. However, the removal of fuel subsidies has a severe negative impact on the populace and will increase transportation costs because of underperforming refineries and increased corruption, which will put pressure on government revenue. We also lost the opportunity on economic diversification and job creation losses due to corruption in the system. This brings about increased crime rate, increased unemployment, low quality of life and results to higher increase of goods and services.

Fuel price fluctuation poses life threat on the citizens because of the unprepared atmosphere and the peculiarity of political office holders in Nigeria. It should be noted that under the umbrella of government that knows what to do and how to do it, the political office holders will not have their ways of manoeuvring the policy on fuel price. With time, it is expected to be socially credible, environmentally suitable and sustainable, but some measures should be put in place to assist the poor and the citizens both in the rural areas.

### **Aim and Objectives of the Study**

The main objective of this study is to investigate the fuel price fluctuation and transportation system in Rivers State between 1981 and 2021. Specifically, it

- i. Provides the trend of fuel price fluctuation in Rivers State.
- ii. Examines the connection between fuel price fluctuation and transportation system in Rivers State.
- iii. Evaluates the effect of fuel price fluctuation on transportation system in Rivers State.
- iv. Examines government policies and petrol tax on fuel price fluctuation on transportation system in Rivers State.

### **Research Questions**

This study is guided by the following research questions;

1. What is the trend of fuel price fluctuation in Rivers State from 1981 to 2021?
2. What is the relationship between fuel price fluctuation and transportation system in Rivers State?
3. What has been the impact of fuel price fluctuation on transportation system in Rivers State for the period, 1981-2021?
4. What are the government policies and petrol tax on fuel fluctuation on transportation system in Rivers State?

### **Hypotheses**

**Ho<sub>1</sub>:** There is no significant relationship between the margins of fuel price fluctuation on transportation system from 1981-2021 in Rivers State

**Ho<sub>2</sub>:** There is no significant effect of fuel price fluctuation and transportation system in Rivers State

**Ho<sub>3</sub>:** There is no significant influence of government policies and tax on fuel price fluctuation and transportation system in Rivers State.

**Ho<sub>4</sub>:** There is no significant relationship between the result of fuel price fluctuation and mode of transportation system in Rivers State.

### **Significance of the Study**

This study will enable the government of Rivers State and Nigeria in general to see the need to put measures in place by putting all the refineries to use and the need to develop the local refineries, open other sectors of the economy before subsidy removal and avoid unnecessary hiking of the fuel price. This study will also help transport companies to draft a good strategy and mechanism to always curb the fuel hike issues in the nearest future. This study will further serve as an eye-opener to the general public to know that whenever there is a fuel hike in the country, transportation tends to be expensive. This study will also serve as a reference piece for future research of related domain to academic.

### **Scope of the Study**

The scope of the study covers the content scope, geographical scope and level/unit of scope.

**The content scope;** is meant to focus on the literature bordering on the effect of fuel price fluctuation on transportation system in Port Harcourt, Rivers State.

**The geographical scope;** is based on research and data gathering in four transport companies in Port Harcourt Local Government of Rivers State, Nigeria.

**Level/Unit Scope:** The study adopted Macro-Level Analysis which means that the management of the four Transport Companies will serve as Respondents. The responses will be demanded from the senior staff and other stake holders of the four registered transport companies in Port Harcourt Local Government, Rivers State.

### **Definition of terms**

**Fuel:** A dense repository of energy that are consumed to provide energy services such as heating, transportation and electrical generation.

**Price:** The sum or amount of money or its equivalent for which anything is bought, sold, or offered for sale.

**Fluctuation:** An irregular shifting back and forth or up and down in the level, strength, or value of something.

**Fuel Price Fluctuation:** the variations in the costs of various fuels over time, including natural gas, diesel, gasoline, and others.

**Transportation:** The movement of people and things between locations, as well as the multitude of methods used to make this happen.

**Transportation System:** The technology and operations of conveying persons and products in basic terms. It includes all modes of transportation.

**Subsidy:** A sum of money granted by the state or a public body to help an industry or business keep the price of a commodity or service low.

**Fuel Subsidy:** A method of government involvement whereby oil businesses receive direct financial support, which lowers the price of petroleum and subsidizes the product for consumers.

**Policy:** A collection of concepts or strategies that serve as the foundation for decisions, particularly in business, politics, and economics.

**Inflation:** The continuous increase in the general price level of goods and services in an economy.

### **Organization of the Study**

This study is organised in five chapters. Chapter one is concerned with the background to the study, Chapter two is focused on literature review which involves the concepts of the study and the theories involved in the research work. In chapter three covers Research methodology which involves the population of the study, sample size and the method of data analysis. Presentation of data analysis and discussion of findings are presented in chapter four while chapter five is concerned with the summary, conclusions, and recommendations of the study.

### **REVIEW OF RELATED LITERATURE**

This chapter reviews related literature under the following sub-headings;

- 2.1 Conceptual Clarification
- 2.2 Theoretical Framework
- 2.3 Empirical Review
- 2.4 Summary of Literature Review

### **Conceptual Framework**

#### **High Exchange Rate**

According to Babatunde and Kehinde (2016), there would be significant inflation during times of currency rate fluctuation. This indicates that an economy's inflation is a result of exchange rate volatility. He maintained that a rise in market risks and uncertainties can be caused by price instability. The goal of a price stability strategy is to end cyclical volatility and maintain the value of money. Changes in domestic pricing raise business risks and uncertainty and diminish the usefulness of money as a store of wealth. According to Okwori and Abu (2017), Nigeria has implemented direct monetary policy tools like cash reserve requirements, credit ceilings, managed interest and exchange rates, selective credit control, and special deposit to fight inflation and preserve price stability. According to Yakub, Sani, Obiezue, and Aliyu (2019), the Nigerian currency rate is extremely unstable and has changed significantly over time in almost every category of the foreign exchange markets, including the official, bureau de change, and parallel markets. The official market saw a decline in the currency rate from N11.08 per US dollar in 1987 to N22.00 in 1994. The federal government then set the rate at N21.89 per US dollar from 1994 to 1998. In 1999, it dropped to N97.95 per US dollar; from 2000 to 2006, it increased to N125.00; and in 2007, it marginally increased to N117.97 per US dollar. Meanwhile, the global financial crisis and the drop in the price of oil internationally caused the naira to fall to N149.58 per US dollar in 2009. Further depreciation occurred in 2012, reaching N157.50, N158.55 in 2014, N196.49 in 2015, N253.19 in 2016, N305.30 in 2017, N350 in 2018 and N360 in 2019, respectively. Nigeria had a single digit low inflation rate before to 1980, but things took a sharp turn for the worse starting in 1986, when the country's inflation rate reached double digits. Data from the Central Bank of Nigeria (2019) indicate that the rate of inflation increased from 13.7% in

1986 to 48.8% in 1992 and then to 76.8% in 1994. It dipped to 16.5% in 2001, rose to 23.8% in 2003, and then declined to an average of 11%–13% from 2004 to 2015. However, it rebounded to 18.55% in 2016, fell to 12.09% in 2018, and then fell even lower to 11.4% in 2019. However, the COVID-19 epidemic caused Nigeria's inflation rate to increase to 13.39% in 2020. As a result, the years-long rise in inflation has threatened both economic stability and the purchasing power of the majority of ordinary Nigerians. Nigeria's inflation problem still exists in spite of the monetary policy measures implemented to regulate and stabilize prices. With this backdrop in mind, the purpose of this study is to examine how exchange rate volatility affects inflation in Nigeria from 1986 to 2019. This research is divided into five components. The second portion, which addresses the literature review, comes after the introduction. The study's methodology is covered in Section 3, and the findings and comments are covered in Section 4. Section five, which concludes, addresses conclusions and suggestions based on the data.

**Conceptual Problems** The term "exchange rate volatility" describes the unpredictable swings in currency values. Yakub et al. (2019) define exchange rate volatility as the gradual increase or decrease in the value of a country's own currency over time. The rate at which one nation's money is exchanged for another nation's currency is known as the exchange rate. Conversely, inflation denotes a sustained increase in the average cost of goods and services over a given duration. Significant implications arise for the role of money as a medium of trade when there is inflation. According to Chukwuemeka (2018), inflation is a persistent increase in the average level of prices. Any widespread and continuous increase in the average level of prices within an economy is referred to as inflation.

### **Subsidy**

A subsidy is described as "the cash incentive given by the government to an industry with the aim of lowering the price of the product of the concerned industry and raising its competitive power" in the Academics Dictionary of Economics (2006). This could be offered by the government of the importing nation as a counterbalance to the application of the custom duty (which is really a protection duty). A primary goal of subsidies is to maintain prices below the cost of production." Having the resources needed to decide if, where, and when to provide subsidies is convenient for policymakers. Additionally, it is imperative that any such influx of subsidies accurately assesses the costs of distorted competition to the economy and identifies areas where those costs may be minimized, if at all possible. Arize (2011) said that electricity is a vital component of industrialization and, as such, a major driver of the growth and development of the national economy. The availability of electricity for energy use is largely dependent on its generation. While there are several ways to generate electricity, the majority of it in developing nations comes from the usage of fuel, or petroleum products; fuel-powered generators spin turbines. This suggested the importance of fuel to the advancement of a country. Therefore, changes in the fuel supply will have an effect on development and economic growth.

According to Afolabi (1999), there is historical evidence that major increases in fuel prices, such those that occurred in 1973 and 1979, frequently result in economic recessions. Subsidies are one method the government has made fuel sufficiently accessible and reasonably priced for low-income earners. Because subsidies make things more affordable, they also indirectly support economic growth and development by giving middle-class citizens a greater opportunity to make major economic contributions. China provides a lesson on the important contribution that subsidies have made to economic development and progress. The success could be attributed to the rising demand for energy brought on by its decreasing cost. Nwosu (2009) also argued that while eliminating subsidies will be important for nation-building, doing so is not the only way to boost the economy. Even without the elimination of subsidies, there are other policies that may be implemented that would have a substantial positive impact on the economy. And as is the case in China, the existence of subsidies will be essential to the implementation of this plan. The

elimination of government subsidies will have a detrimental effect on those with low to moderate incomes. It has been determined that the nation's middle class is the demographic whose actions primarily propel economic expansion and advancement. The government's excellent intention to remove subsidies would be hampered by the high cost of commodities when they are eliminated..

### **Transportation System**

The Latin words "trans," which means "across," and "portare," which means "carry," are the origin of the English word "transport," according to the Oxford English Dictionary. Transporting people and products from one place to another is known as transportation. (Microsoft Encarta, 2009). According to Merriam Webster Dictionary, transportation is an act, process, or instance of transporting or being transported. The same dictionary also defines it as a means of conveyance or travel from one place to another or a public conveyance of passengers or goods especially as a commercial enterprise. Longman Dictionary of Contemporary English (2003) defines transportation as a processor business of taking goods from one place to another or a system for carrying passengers or goods from one place to another.

The act of transferring people and products from one location to another is referred to as transportation (Anyanwu et al 1997). Transportation, as defined by Good and Jebbin (2015), is a system for moving people, products, and raw materials both domestically and abroad, frequently using machinery that is powered by electricity. It is frequently used to describe the transfer of people and things between locations (Okefor, 1998). According to Good and Jebbin (2015), transportation services are the hub for physical distribution activities that involve moving commodities to their various customers. Since production is only considered complete when the final products are received by the customers, this service helps to fulfill the production process.

### **Inflation**

All other things being equal, higher gasoline costs have a direct and indirect impact on inflation and, consequently, household costs of living. Fuel prices are included in the CPI index, and since households use fuel for cooking, lighting, and transportation, any increase in fuel prices will inevitably result in an increase in the CPI index as a whole. It's important to consider the effects of the labor market and how monetary policy will react. When monetary policy isn't sufficiently credible to anchor inflation expectations, rising wage pressure after a gas price hike could make inflationary pressures worse. Conversely, tighter monetary policy in reaction to the general increase in prices would lower aggregate demand and aid in keeping inflation under control. Evidence provided by Blanchard and Gali (2007) indicates that the impact of oil price shocks on inflation and activity was substantially greater before the mid-1980s than it was subsequently. They credit this to things like dwindling wage rigidities, more credibility for monetary policy, and a drop in the proportion of oil used in production and consumption. Similarly concluding that the pass-through was five times stronger before 1980 than it was after, De Gregorio, Landerretche, and Nielson (2007) estimate that a ten percent increase in oil prices results in an increase in inflation of 0.3 percentage points. Choi et al. (2018) produced comparable estimates and discovered that the effect faded two years following the shocks. Kpodar and Abdallah (2020) use changes in domestic fuel prices for a broad sample of advanced and emerging nations as the dependent variable, rather than the price of crude oil. This successfully examines the theory that country-specific factors such as energy intensity, labor market flexibility, and central bank credibility influence cross-country disparities in the pass-through of fuel price fluctuations. This essentially expands on the theories put forth by Blanchard and Gali (2007) to explain why different nations react differently to shocks in the price of gasoline in terms of inflation. Moreover, Gelos and Ustyugova (2017) demonstrate that, in developing nations relative to advanced economies, shocks to global food and fuel prices typically have a higher knock-on effect on local inflation, with some structurally distinctive countries being more vulnerable. Additionally, research suggests that

the effect of shocks to fuel prices on inflation is asymmetric, with positive shocks to oil prices having a greater influence than negative ones (Choi et al., 2018, and Kpodar and Abdallah, 2020). A related but separate area of research uses partial and general equilibrium models to examine how rising gas prices affect distribution. Numerous studies show that fuel prices are rising in a neutral or progressive manner overall, with little to no effect on the poor, and that gasoline subsidies in developing nations are poorly targeted. An analysis of the effect of a carbon tax on CO<sub>2</sub> emissions from the burning of fossil fuels revealed that, in comparison to less developed countries, carbon pricing is more likely to be regressive in countries with higher per capita incomes. (above USD 15,000 annually in 2011 PPP-adjusted terms), primarily reflecting patterns of energy consumption. Studies highlight the significance of mitigating measures as a necessary component for reform acceptability and sustainability, as they lessen the impact of a removal of gasoline subsidies on the poor. Siddiq (2014) asserts that in Nigeria, the initial income decrease caused by the withdrawal of subsidies can be more than made up for by withdrawing some subsidies in combination with targeted payments to low-income households. Denis (2016) discovered comparable outcomes for a selection of net oil importing economies.

Our research integrates two sets of data: the distribution effect of fuel prices and the correlation between fuel prices and inflation. Our study, in contrast to the last one, uses a more comprehensive methodology by carefully examining the ways that changes in fuel prices affect the different components of the CPI index. To comprehend the distributional impacts of growing gasoline prices, this research is essential. A consistent set of household survey data is used to extract the household expenditure shares for each category of goods and services. This allows us to compute a CPI index for the richest quintile, or the top 20% of households, and the poorest quintile, or the lowest 20% of households, in each country and over time. By experimentally measuring the pass-through of changes in fuel costs to quintile-specific inflation rates, our work contributes to the body of information on the distributional impact of gasoline prices, which has typically relied on partial and general equilibrium models. Energy consumption is rising quickly, which is a hallmark of the global economy (IEA, 2008). Specifically, the consumption of gasoline is expanding at an unprecedented rate in emerging and developing economies, especially in the transportation, industrial, and household sectors. This is jeopardizing the supply of gasoline for both the current and future generations.(IEA, 2008; Pridmore&Miola 2011; Shaeen&Lipman, 2007).

The transportation sector is the world's largest consumer of petroleum products in various countries. The sector accounted for 58% of total final consumption in 2004 (IEA, 2009), 52% in Iran in 2005, more than 75% in the United States in 2006 (Department of Energy, DOE, 2007), falling to 72% in 2012 (Energy Information Administration, EIA, 2013), and more than 75% (Akanbi, 2013) and 78% (Jaja, 2010) in Nigeria. Transportation fuel accounts for more than 75% of total energy use in Nigeria (Akanbi et al., 2013), indicating that Nigerians rely largely on petrol to fuel their autos (Aminu, 2014).

As a result, it is necessary to use energy intelligently, reduce waste, and assure the important resource's long-term availability (Aminu, 2014). The EC has advised energy savings to handle the energy crisis and GHG emission problem in Europe, expressing confidence about the financial savings, which range from 200 to 1000 Euro yearly for a typical European family. (cited in Aktamis, 2011). Conserving energy thus delivers the benefits of lower energy costs, lower GHG emissions, and preservation of scarce resources (Darmstadter, 1973; Gillingham, 2009; Ting, 2011). It also saves money. (Aminu, 2014).

### **Transportation Mode**

**Land transportation:** The vast majority of energy use is explained by this. 90% of the gasoline utilized by Nigeria's transportation industry is accounted for by road transportation alone on average. However, within the land transportation industry itself, this trend is not consistent, with

road transportation accounting for the majority of the energy consumption over the previous 20 years. Nigerian land transportation is typified by pipeline, rail, and road networks. Vehicles used for military purposes, motorbikes, tricycles, trucks, buses, and cars are further categories of road transportation. Long-distance freight and all passenger journeys are transported by rail, which continues to be the most energy-efficient mode of land transportation.

**Water transportation:** When considering all of the transportation options available in Nigeria, this one is by far the least developed. Compared to other forms, the sector uses a significantly smaller share of energy. Nigeria's inland waterways stretch 8,600 kilometers. The Niger River and its branch, the Benue River, are the longest, but the Niger Delta and the entire coast from Lagos Lagoon to Cross River are the most popular, particularly for larger vessels and business. The purpose of developing this method of transportation is to enhance the nationwide movement of both passengers and products.

**Freight transportation** is dominated by rail, pipeline and trucks. Coastal and inland waterways also provide petrol efficient method of transporting cargoes. A tow boat transporting average 15-barges in tow can contain the equivalent of 225 rail car loads or 870 truckloads, according to an estimate from the UNESCO-Nigeria TVE project. Given that local and long-distance trucks move more than 70% of the nation's goods, Nigeria's freight transportation industry is still in its infancy.

## **Theoretical framework**

### **Supply and Demand Theory**

Adam Smith popularized this notion in 1776 after it was first proposed in the 18th century. It is possible to accurately forecast market behavior by using the concepts of supply and demand. In everyday market transactions, the supply and demand equilibrium matters whether a person is a manufacturer or a consumer. When a good's price increases, consumer demand for it declines. Producers increase production to increase profits when prices rise.

It states that fuel prices fluctuate based on the balance between the supply and demand for fuel in the market, when demand exceeds supply, prices tends to rise and when supply exceeds demands prices tends to fall.

### **Opec Influence Theory**

During the oil rise in the 1970's the Organisation of Petroleum Exporting Countries (OPEC) gained significant influence over oil prices. This theory suggests that OPEC control over oil production and pricing decision can cause significant fluctuations in oil prices. OPEC's influences on oil prices were prominently observed during the Arab oil embargo in 1973 to 1974.

### **Economic and Transportation Theory**

This theory as propounded by Hasselgren, B. (2011) discusses how economic theories in relation to transport infrastructure systems have influenced the way we discuss and analyze these systems. The scale and scope of the systems, the role of transaction costs over time, and the institutional and organisational perspectives are contrasted with neoclassical economics. Moreover, a co-evolutionary institutional perspective is presented about the development throughout time of transport infrastructure systems and how they are organized in the public and private sectors. Economics covers organizational contexts in addition to economic phenomena and theoretical components of economic challenges, such as scale effects, competitiveness, transaction costs, and the differing opinions on pricing strategies based on marginal cost versus full cost coverage. The following aspects are addressed by politics and the various co-evolutionary model components: In addition to the actual networks of roads and rails, technology also refers to the rolling stock, or trains, and vehicles, whose advancement in technology has often changed the competitive

dynamics amongst different forms of transportation. The following aspects are covered by the various co-evolutionary model factors: Technology includes not only the actual networks of roads and rails but also the rolling stock (vehicles and trains), whose advancement has frequently altered the competitive dynamics between different means of transportation. Socioculture address issues like the proper ratio of government intervention to market forces, the impact of other policy domains like regional transportation policy, and the evolution of perspectives on economic equality and power dynamics among local, regional, national, and global organizational levels.

**Table 1: History of Fuel Price Fluctuation in Nigeria**

Year	Old Price	New Price
1981	9 Kobo	15.3 Kobo
April 20, 1982	15.3 Kobo	20 Kobo
March, 31, 1986	20 Kobo	39.5 Kobo
April 10, 1988	39.5 Kobo	42 Kobo
Jan 1, 1989	42 Kobo	60 Kobo
March 6, 1991	60 Kobo	70 Kobo
November 8, 1993	N5	N3.25 Kobo
October 2, 1994	N3.25 Kobo	N15
October 4, 1994	N15	N11
December 20, 1998	N11	N25
January 6, 1999	N25	N20
June 1, 2000	N20	N30
June 8, 2000	N30	N22
January 1, 2002	N22	N26
June, 2003	N26	N42
May 29, 2004	N42	N50
August 25, 2004	N50	N65
May 27, 2007	N65	N75
June, 2007	N75	N65
January 1, 2012	N65	N141
January 17, 2012	N141	N97
February, 2015	N97	N87
May 11, 2016	N87	N145
March, 2020	N145	N125
June 2020	N125	N123.50
July, 2020	N123.50	N143.50
August 2020	N143.50	N148.62
September 2020	N148.62	N153.86
November, 2020	N153	N165
January, 2021	N165	164.09
February, 2021	164.09	166.24
March, 2021	166.24	172.68
April, 2021	172.68	166.38
May, 2021	166.38	168.06
June, 2021	168.06	165.61
July, 2021	165.61	165.91
August, 2021	165.91	164.91
September, 2021	164.91	165.6
November, 2021	165.6	167.6

December, 2021	167.6	165.77
----------------	-------	--------

**Source:** Aluko and Okwuobi (2021) Adapted with modification

The above table shows the pump prices of fuel and how it has been on the increase since 1978. The mid-1980s saw the introduction of subsidies in Nigeria's energy sector due to harsh economic realities and regular swings in the international oil price (Akov, 2015). The country's economic circumstances make the government's need for these subsidies necessary. However, there is a reason why subsidies exist: money meant for economic growth has been diverted to pay for subsidies. It makes sense that Nigeria's successive governments have tried to eliminate these subsidies.

### Empirical Literature

Using the VAR approach, Umar and Abdulhakeem (2010) investigated how changes in oil prices affected Nigeria's macroeconomic conditions. Tests for unit root, Granger causality, VECM, cointegration, and impulse response are included in the estimate process. The consumer price index, GDP, unemployment rate, money supply, and oil price were the variables taken into consideration. The results show that while the consumer price index is not greatly impacted by oil prices, GDP, unemployment, and money supply are. According to the findings, Nigeria's three primary macroeconomic indicators are heavily impacted by fluctuations in the price of oil. Because of the instability of the macroeconomic performance, macroeconomic management will become challenging. In order to reduce the effects of volatility, economic diversification is necessary. Ayadi (2005) used the VAR approach to examine how changes in oil prices affected the Nigerian economy between 1980 and 2004. The unit root, variance decomposition, and variance analysis tests are included in the estimation. The variables used were the price of oil, inflation, interest rates, industrial production index, exchange rate, and money supply. The primary focus of this study is the relationship between changes in the price of oil and the growth of the economy through industrial activity. The findings indicate that changes in the price of oil have a substantial impact on the real exchange rate, which in turn has an impact on industrial activity. However, there is no statistically significant correlation between oil prices and industrial activity. As a result, the study's findings verify that there is no meaningful relationship between oil prices and industrial activity in Nigeria. This indicates that industrial activity are unaffected by the price of oil.

Oriakhi and Osaze (2013) investigated the effects of oil price volatility on Nigeria's economic growth between 1970 and 2010 using the VAR approach. The unit root, variance decomposition, and Granger causality tests are included in the estimation. The variables used were government spending, oil prices, inflation, GDP, and money supply. The study revealed that oil price instability has a direct impact on the real exchange rate, real government expenditure and real import. However, because they are tied to actual government expenditure, real GDP, inflation, and real money supply are all tangentially related to the volatility of oil prices. Changes in the price of oil indirectly control government spending, which in turn controls economic growth and therefore replicates the existing function of the Nigerian government. Alley, Asekomeh, Mobolaji and Adeniran (2014) analyses the effect of oil price stuns on the Nigerian economy from 1981 to 2012 with the use of the general method of moment. According to the analysis, a spike in oil prices has little effect on economic growth, but oil prices themselves have a major positive impact on it. The notion that rising oil prices benefit an oil-producing country like Nigeria is supported by the substantial influence of oil prices on economic growth. Stunts, however, cause volatility and undermine the budgetary oversight of oil revenue. Ebele (2015) examined how fluctuations in oil prices affected Nigeria's economic expansion between 1970 and 2014. Rather than only discussing output performance by oil price and a plethora of individual variables, as done by previous researchers, the research used an aggregate demand framework that conceptually links analytical variables. The study used the Granger Representation formula and the Engel-Granger cointegration test to investigate the short- and long-term relationships between the volatility of oil

prices and economic growth. The findings showed that while other factors, such as oil revenue and oil reserves, have a favorable effect on Nigeria's economy, oil price volatility has a negative effect on economic growth.

Akpan (2009) investigated the relationship between stuns in oil price and Nigerian macro economy with the VAR technique. The analysis comprises the test for unit root, variance decomposition and cointegration. government expenditure, oil price, inflation, GDP, money supply and real effective exchange rate were the variables employed. The review illustrates the asymmetric impacts of the oil price shock, including the noteworthy impact of the oil price shock on the inflation rate, which subsequently influences the national income. The review's findings show a strong positive correlation between government consumption and changes in the price of oil. Surprisingly, the results also showed that the growth in industrial output was barely impacted by changes in the price of oil. Adamu (2015) discovered the impact of oil prices drop at the international market to the Nigerian economy. The Ordinary Least Square (OLS) technique, which includes the T-test, was employed in the study to determine whether there was a significant difference between Nigeria's oil income before and during the drop in the price of oil on the global market. The findings showed that Nigeria's oil income and prices are greatly impacted by the decline in global oil prices. It is suggested that the income contributed by the oil business ought to be diverted towards economic growth and development.

Olusegun (2008) analyzed the consequences of shocks in oil price on the Nigeria macroeconomic performance with the use of VAR technique. The estimation comprises the test for unit root, Variance Decomposition and cointegration. Government recurrent expenditure, real gross domestic product, oil revenue, consumer price index, money supply, government capital spending and oil price are utilized to assess this model. According to the analysis, a major contributing factor to the variability in oil revenue and output is the shock to oil prices. The paper also claims that the consumer price index, government spending, and real money supply are not significantly impacted by the shock to oil prices. Thus, this analysis demonstrated that fiscal policy may effectively stabilize the Nigerian domestic economy following an oil shock.

Olomola (2006) analyzed the consequence of oil price stun on Nigerian economic activities from 1970 to 2003 using quarterly data. The unit root, variance decomposition, and cointegration tests are all part of the VAR approach, which was used in this work. The restricted variance of the percentage change in oil prices was used to quantify unpredictableness. Real gross domestic product as a stand-in for real effective exchange rate, inflation rate, oil price, and money supply were the five variables used in the study. The findings showed that while oil price has a major impact on exchange rates, it has little effect on output or inflation. Olaniyi (2016) looked into how fuel subsidies affected the prices and rates of transportation in Nigeria. He noted that fuel subsidies are an important instrument for improving the welfare of citizens, particularly in middle-class and low-income nations, but that their elimination has a substantial impact on the variables affecting transportation costs and rates, resulting in increased transportation costs and rates..

"Investigated oil price shocks: Causes and consequences," according to Kilian (2014) He noted that economic fundamentals determine the real price of oil and that shocks to oil prices are uncommon under ordinary conditions. They assessed how changes in oil prices affected the UK economy by using a methodology that made it possible to separate fluctuations in oil prices from the shock's underlying causes. They found that fluctuations in oil prices affect macroeconomic aggregates in the UK because of several kinds of oil shocks and that rising oil prices actually cause domestic inflation to rise.

Lorussoa and Pieronib (2018) investigated the "causes and consequences of oil price shocks on the UK economy." Using a methodology that allowed for the dissection of oil price variations from the underlying causes of the shock, they evaluated the effects of oil price changes on the economy of the United Kingdom. They discovered that swings in oil prices have an impact on macroeconomic aggregates in the UK due to various types of oil shocks, and that an increase in

the actual price of oil leads to increases in domestic inflation.

Fueki (2018) investigated "the role of expectations in the crude oil market on oil price shocks and their consequences" they employed structural vector autoregressive model to examine the factors that were crucial to oil price fluctuations by assessing the extent to which expectations influenced future aggregate demand and supply of crude oil. The results showed that future demand and supply shocks explain about 30-35% of historical oil price fluctuations.

### **Summary of Literature Review**

The transportation system and fuel fluctuation have been the subject of numerous empirical research, which have made them indispensable for understanding and analyzing the effects of fuel price fluctuations on economies.

The relevant research examines how shocks to oil prices affect the economy over time, particularly the dynamics of inflation. The research has consistently highlighted that the fundamental causes of fluctuations in oil prices play a crucial role in determining their macroeconomic consequences. Kilian (2009), Peersman and Van Robays (2012), and Baumeister and Peersman (2013), for instance, demonstrate how the impact of rising oil prices on real GDP and inflation varies depending on whether they are caused by positive or negative supply shocks. According to their deconstruction, the oil price shocks of the 1970s were mostly caused by exogenous shortages of oil production (negative supply shocks), while the long-term increase in oil prices that started in 1999 was mostly caused by changes in the demand for crude oil. (positive demand shocks). Analogous to the methods employed to investigate the origins of the Great Moderation (Gali and Gambetti, 2009, for example), we might examine if variations in the proportional magnitude of structural shocks throughout time merely prompted the reduced reaction of overall inflation to oil prices.

In order to relate the criteria of high exchange rates and inflation in the transportation system, fuel subsidies and transportation costs, fuel price fluctuation and transportation system in Rivers State, the concept of fuel price fluctuation and transportation system was reviewed with its proxies, such as exchange rate, subsidy, and inflation.

Four theories were propounded for this study namely, Supply and Demand Theory, Opec Influence Theory, Financial Speculation Theory, Economic Theory and Transportation. They all go over a number of the causes and effects of economic system fluctuations. According to the theory of supply and demand, gasoline prices vary according to the equilibrium between the market's supply and demand for fuel; when supply exceeds demand, prices often fall, and vice versa. According to the Opec Influence theory, large swings in oil prices might result from OPEC's control over decisions about pricing and oil output. OPEC's impact on oil prices was clearly noticeable during the Arab oil embargo that lasted from 1973 to 1974. Financial Speculation Theory posits that speculative activity in the commodities market can impact fuel price fluctuations, while Economic Theory and Transportation explores how economic theories have shaped our understanding of and approaches to discussing transportation infrastructure systems.

Numerous closely linked and directly relevant studies were reviewed for the study, and they were very helpful in directing the researcher's approach to addressing the primary and secondary topics of concern. The research was well regarded and greatly aided in the accomplishment of this project. Based on the findings of this literature review, we recommend that scholars pay more attention to expanding the body of knowledge on the relationship between the predictor and criteria variable, regardless of the industry being studied.

## **RESEARCH METHODOLOGY**

### **Introduction**

This chapter discusses the methods used in generating and analyzing the data for the study. The chapter comprises the Research Design, Population of the Study, Sample and Sampling

Technique, Nature/Source of Data, Method of Data Collection, Validity/Reliability of Instrument and Method of Data Analysis.

**Research Design**

The work adopts quantitative, quasi experimental research design. Descriptive analysis is used to gain insight into the nature of fuel fluctuation and transportation system in Rivers State.

**Population of the Study**

The population of this study comprises of the five registered transport Companies from Rivers State Ministry of Transport in Port Harcourt Local Government Area, Rivers State, which includes Rivers Joy Transport Company, God is Good Motors, Jaja Foundation Motors, Ekeson Transport Ltd.and Chisco Transport Nig. Ltd.(Source; Rivers State Ministry of Transportation, 2023). The local government is made up of over fifty five (55) registered transport companies including freight and logistics companies. However, due to the limitation of finance and logistics to the study, the target population shall be considered from five (5) registered transportation companies. In Appendix, all the registered transport companies from Rivers State Ministry of Transport in Port Harcourt Local Government Area of Rivers State are listed. See population table below for the study:

**Table 3.1: Population of the study**

S/N	Name of Organization	Number of Employees
1	Rivers Joy Transportation Company	321
2	God is Good Motors	268
3	Jaja Foundation Motors	122
4	Ekeson Transport Ltd.	69
5	Chisco Transport Ltd.	120

Rivers State Ministry of Transportation (2023)

The Table 3.1 above would therefore be used for this study

**Sample and Sampling Technique**

The required sample unit (n) of the population indicated above would be determined by using Yamane’s Sample Size determination formula which states thus;

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

Where;

n = Sample Size sought

N = ThePopulation Size

e = Level of significance usually 5% (0.05)

To determine the required sample size (n), a 95% confidence level was desired based on the population that was chosen. It was assumed that the people of this population would supply the researcher with the required data at the confidence level. Hence, the tolerable error margin (e) at which the researcher expectation might be otherwise is 5%, where the population of the people is 900.

$$n = \frac{900}{(1 + 900(0.05)^2)} = \frac{900}{(1 + 900(0.0025))}$$

$$n = \frac{900}{2.2525} = 399.55604883 \approx 400$$

Based on the computation above, a sample of 400 of the various people in these organization would be required for this study. Specifically, the below computed samples would be allocated to each of the organizations using the stratified sampling formula

$$K = \frac{a}{N} \times n$$

Where:

K = the number of samples to be collected from each organization

a = the population of each organization

N = the grand total of the population of the organizations

n = the required sample size determined above

$$\text{Rivers Joy Transport Service} = \frac{321}{900} \times 400 = 142.6666 \approx 127$$

$$\text{God is Good Motors} = \frac{268}{900} \times 400 = 119.1111111 \approx 119$$

$$\text{Jaja Foundation Motors} = \frac{122}{900} \times 400 = 54.22222222 \approx 54$$

$$\text{Ekeson Transport Ltd} = \frac{69}{900} \times 400 = 30.66666667 \approx 31$$

$$\text{Chisco Transport Ltd} = \frac{120}{900} \times 400 = 53.33333333 \approx 53$$

### Nature/Source of Data

The data used for this study are response from the various five registered transport companies and annual time-series data covering the period 1981 - 2021 on fuel fluctuation and transportation system in Port Harcourt Local Government Area, Rivers State. The data were obtained from primary and secondary sources including Rivers State Ministry of Transport (2023), literatures which were sourced from journals and articles, library and internet resources, newspapers etc. Primary and secondary sources used in this study include journal publications, magazines, textbooks and internet sources.

### Methods of Data Collection and Analysis

The study adopts descriptive/quantitative statistical tools. The Descriptive Methods include tabulations, percentages and charts. These were used to present and analyze the data collected from research questions developed for the study. The statistical inferential methods on the other hand were used to test the hypotheses formulated for the study. The instrument for this study is a structured questionnaires divided into two different sections based on primary and secondary source; section one was based on the background (demographics) of the respondents, while the second section focused on items which borders on the variables of the study, more specifically data drawn from the dimension of the two variable of the study. The items of the instrument were on a five likert scale of 1 to 5 where 1 = Agree and 5 Neutral. A covering letter was attached to the instrument which formed the respondents on the importance of the study and were assured of any information to be confidential.

### Validity/Reliability of Instrument

In order to establish the reliability of the instrument, the researcher used a response consistency test. This involves a test and re-tests exercise in which the questionnaire were administered to the same respondents on two occasions. After two (2) weeks of initial distribution and retrieval of the questionnaire, the instrument was administered into similar five (5) transport company and they gave the same reply. The copies filled by responses were compiled, they showed a high degree of consistency, thus establishing the reliability of the instrument.

In the validity, the Researcher ensured that the instrument measure the concept they are supposed to measure. A proper structuring of the question of every question contained in the questionnaire was carried out to ensure they are valid. Also, the design of the questionnaire was made easy for the respondent to tick the desired options provided as it has been established. Response validity was obtained by contacting individuals whose response appear unusual or inconsistent.

**Methods of Data Ana1ysis**

The research work will be analysed using statistical packages for social sciences (SPSS). The order of analysis will be coding of the various questionnaires gotten from the respondents which will undergo descriptive analysis from the raw data in order to determine the relationship between the predictor and the criterion. Spearman’s Rand Order Correlation Coefficient will be used for the test of hypothesis relating to the dimensions.

**DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS**

**Data presentation**

This chapter contains the presentation, analysis and interpretation of the data collected for this research work. It highlights both the mathematical and statistical techniques adopted in testing the research hypothesis of the study which sought to investigate the effect of fuel price fluctuation and transportation system in Rivers State.

**Data analysis**

The data used for the study were purely primary data.

**Response rate**

**TABLE 4.1**

**Distribution of questionnaire and response rate**

Questionnaire	Respondents	Percentage
Number returned	213	61.2
Number not returned	135	38.8
Total	348	100

**Source:** Fieldwork, 2023

In carrying out the study, a total of three hundred and forty eight (348) questionnaires were produced and administered to the target respondents. A total 213 were correctly filled and returned giving a response rate of 61.2 percent. The analysis was therefore based on the total of two hundred and thirteen (213), copies of valid questionnaire collected from the respondents. The low returns of questionnaires was as a results using respondents with different work of life who has no time to fill and return the questionnaire at the stipulated time

The questionnaires received were divided into two groups; early (E) and late (L) collection of questionnaire. The independent T-test was used to check for response bias. The result was not significantly indicating that there is no problem of response bias in the response as shown in table 4.2.

**TABLE 4.2**

**Residual statistics**

Variable	Group	N	Mean	SD	Leven’s test for equality	
					F	Sig
MFPP	E	140	3.1905	.76391	.462	.497
	L	73	3.2009	.81364		
EFPF	E	140	3.4768	.77073	.702	.403
	L	73	3.3116	.74096		
GFPP	E	140	3.4542	1.05572	.273	.602

RFPF	L	73	3.1644	1.03768	8.350	.004
	E	140	4.1048	.73076		
TRANS	L	73	3.9452	.92256	.144	.736
	E	140	3.7879	.60898		
	L	73	3.7338	.61059		

**Source:** Researcher's estimation (see appendix)

### Demography data

**TABLE 4.3**

#### Distribution of respondents according to gender

Gender	Frequency	Percentage	Valid percent	Cumulative percentage
Male	118	55.4	55.4	55.4
Female	95	44.6	44.6	100.0
Total	213	100	100	

**Source:** Fieldwork, 2023

Table 4.3 shows that out of the total respondents, 118 respondents represent 55.4 percent were male, while female were 95 respondents representing 44.6 percent.

**TABLE 4.4**

#### Distribution of respondents according to age

Age	Frequency	Percentage	Cumulative percentage
Valid 18-25	91	42.7	42.7
26-34	88	41.3	84.0
35-43	17	8.0	92.0
44yrs and above	17	8.0	100.0
Total	213	100	

**Source:** Fieldwork, 2023

Table 4.4 revealed that 18-25 years were 91 respondents representing 42.7 percent, 26-34 years were 88 respondents representing 41.3 percent, 35-43 years were 17 respondents representing 8 percent, while 44 years and above were 17 respondents representing 8 percent.

**TABLE 4.5**

#### Distribution of respondents according to educational qualifications

Educational qualification	Frequency	Percentage	Valid percent	Cumulative percentage
WAEC/SSEC/GCE	71	33.3	33.3	33.3
ND/NCE	46	21.6	21.6	54.9
HND/B.Sc.	64	30.0	30.0	85.0
PGD/M.Sc./M.Ed	31	14.6	14.6	99.5
Ph.D	1	.5	.5	100.0
Total	213	100	100	

**Source:** Fieldwork, 2023

Table 4.5 shows that out of the total respondents, 71 respondents representing 33.3 percent were WAEC/SSCE/GCE holder, ND/NCE holders were 46 respondents representing 21.6 percent, HND/B.Sc. were 64 respondents representing 30 percent, PGD/M.Sc./M.Ed were 31 respondents representing 14.6 percent, while, Ph.D was only 1 respondent representing 0.5 percent.

**TABLE 4.6**  
**Distribution of respondents according to occupation**

<b>Length</b>	<b>Frequency</b>	<b>Percentage</b>	<b>Valid percent</b>	<b>Cumulative percentage</b>
Civil servant	44	20.6	20.6	20.6
Public servant	82	38.5	38.5	59.1
Business personnel	34	16.0	16.0	75.1
Self Employed	23	10.8	10.8	85.9
Others	30	14.1	14.1	100.00
Total	210	98.1	100.00	
Missing system	3	1.4		
Total	213	100.00		

**Source:** Fieldwork, 2023

The table 4.6 revealed that out of the total respondents, 44 respondents representing 20.6 percent were civil servants, public servant were 82 respondents representing 38.5 percent, business personnel were 34 respondents representing 16 percent, self-employed were 23 respondents representing 10.8 percent while others were 30 respondents representing 14.1 percent

**TABLE 4.7**  
**Distribution of respondents according to marital status**

<b>Marital status</b>	<b>Frequency</b>	<b>Percentage</b>	<b>Valid percent</b>	<b>Cumulative percentage</b>
Single	78	36.6	36.6	36.6
Married	130	61.0	61.0	97.7
Divorced	3	1.4	1.4	99.1
Separated	2	.9	.9	100.0
Total	213	100.0		

**Source:** Fieldwork, 2023

The table 4.7 revealed that out of the total respondents, 78 respondents representing 36.6 percent were single, 130 representing 61 percent were married, divorced were 3 respondents representing 1.4 percent, while those that have separated were 2 respondents representing 0.9 percent.

### **Normality Test**

Normality test was carried out to check if the data were normal. This was done using Skewness and Kurtosis. According to Hair *et al.*, (2010), data is normal when the Z- statistic for skewness and kurtosis when calculated is less than or equal to  $\pm 2.58$ . Z- skewness or Z-kurtosis value is obtained by dividing the statistics on Table 4.10 below. From the table, data for the study is normal since the Z-skewness or Z-kurtosis values were less than  $\pm 2.58$ .

**TABLE 4.8**

**Normality test**

	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>	<b>Varianc</b>	<b>Skewes</b>	<b>Sk</b>	<b>Kur.sta</b>	<b>Kurtosi</b>
	<b>stat</b>	<b>stat</b>	<b>.sat.</b>	<b>Stat.</b>	<b>stat.</b>	<b>e stat.</b>	<b>s</b>	<b>w</b>	<b>t.</b>	<b>s error</b>
MFPF	209	1.00	4.75	3.198	.76401	.584	-1.23	.16	-.146	.335
EFPF	209	1.00	5.00	3.350	1.0575	1.118	-450	.16	-.795	.335
GFPF	209	1.00	5.00	3.438	.73865	.546	-.009	.16	-.197	.335
RFPF	209	1.50	5.00	4.074	.78327	.614	-.018	.16	-.135	.335
TRANS	209	2.00	5.00	3.782	.60041	.360	-.216	.16	-.016	.336
Valid N(listwise)	209									

**Source:** Researcher estimation, 2023

Skewness Z- statistic = static =  $\frac{0.123}{0.168} = 0.73$   
 Kurtosis Z- statistic = static =  $\frac{0.016}{0.335} = 0.048$

**Linearity**

Linearity was assessed using the correlation analysis as shown in table 4.9 below. From the result on the table, all the variables have a moderate and positive relationship with each other. Hence linearity is established. Also, from the regression table, tolerance and VIF showed that there was no problem of multi-collinearity

**TABLE 4.9**  
**Correlations**

<b>Variables</b>	<b>TA</b>	<b>PMT</b>	<b>ETE</b>	<b>SSP</b>	<b>TC</b>
MFRF	1				
EFPF	2.90*	1			
GFPF	0.194**	0.375**	1		
RFPF	0.290**	0.375*	0.140*	1	
TRANS	0.661*	0.259**	0.382**	0.245*	1

\*\* Correlation is significant at the 0.01 level (2-tailed)

**Source:** Researcher estimation, 2023

**Reliability analysis**

This was done using Cronbach Alpha co-efficient. Table 4.10 shows the result.

**TABLE 4.10**

**Reliability analysis**

	<b>Cronbach Alpha</b>	<b>Number of items</b>
MFPF	0.653	5
EFPF	0.807	5
GFPF	0.729	5
RFPF	0.602	5

TRANS                      0.640    5

**Source:** Researcher's estimation, 2023

Since, it a new instrument, a reliability index of 0.60 is acceptable. Hence, the above reliability index is acceptable.

**Multi-collinearity**

Multi-collinearity is the condition in which one or more independent variables can be expressed as a linear combination of other independent variables. This test is used to determine whether there is correlation between the independent variables. If there is a correlation, then there is a problem called multi- collinearity. To detect the multi- collinearity, we use variance inflation factor (VIF) and tolerance for each independent variable. The limit value of tolerance and VIF limit is 10 (Ghozali, 2006).

The calculated result output co-efficient VIF shows that all independent variables have a value of VIF more 0.1 and VIF value of each variable is not more than 10. It can be concluded that there is no multi- collinearity between the independent variables in the study.

**TABLE 4.11**

**Test of multicollinearity**

	VIF	Tolerance
MFPF	1.287	.777
EFPF	1.275	.785
GFPF	1.166	.858
RFPF	1.162	.861

**Source:** Researcher's estimation, 2023

**Regression analysis**

The multiple regression analysis with the aid of SPSS was adopted to examine the relationship among the variables. Table 4.12 shows the regression result.

**TABLE 4.12**

**Table of co-efficient**

Model	Unstandardized co-efficient		Standardized co-efficient	T	Sign
	B	Std. Error	Beta		
(constant)	3.590	0.511		7.031	0.000
MFPF	0.050	0.086	0.043	0.578	0.564
EFPF	-0.038	0.073	-0.039	-	0.600
				0.525	
GFPF	0.248	0.067	0.274	3.878	0.000
RFPF	-0.179	0.058	-0.218	-	0.002
				3.084	

- a. Dependent variable: TRANS
  - b. Independent variables: MFPF, EFPF, GFPF, RFPF
- Regression is given as:  $3.590 + 0.050 + 0.038 + 0.258 + 0.179 \pm e$

Where;

- MFPF = Margins of fuel price fluctuations
- EFPF = Effect of fuel price fluctuations
- GFPF = Government policies on tax on fuel price fluctuations
- RFPF = Results of fuel price fluctuations
- TRANS= Transportation System

± = Standard sample error

The co-efficient of determination  $R^2$  shows to what extent the independent variables are able to explain the variation in the dependent variable. The co-efficient of determination ( $R^2$ ) is 0.125, this implies about 12.5 percent of the variation in the dependent variable is explained by the explanatory variables induced in the model. The remaining 87.5 percent represents the unexplained percentage and account for other independent variables not captured in the mode.

Also, the adjusted  $R^2$  shows that if an independent variable with the least co-efficient (say EFPF with -0.038 co-efficient) is dropped from the regression line, the remaining independent variable, MFPP, GFPP and RFPF can still explain the variation in TRANS (dependent variable) to the extent of 10.8 percent.

**TABLE 4.13**

**Model summary**

Model	R	R-square	Adjusted R square	Std. Error of the estimate
1	.354	.125	.108	.93931

- a. Dependent variable: TRANS
- b. Independent variables: MFPP, EFPF, GFPP, RFPF

In addition to the above, a test on statistical significance of the overall variable in the model was carried out. This is shown on the table 4.14 below.

**TABLE 4.14**

**ANOVA**

Model	Sum of square	Df	Mean square	F	Sign
1 regression	25.754	4	6.438	7.297	0.000 <sup>b</sup>
Residual	179.990	204	882		
Total	205.744	208			

**Source** : Revercher estimation, 2023

- a. Dependent variable: TRANS
- b. Independent variables: MFPP, EFPF, GFPP, RFPF

From the ANOVA table, the significant value (0.000) is less than 0.05, hence, the explained variables (MFPP, EFPF, GFPP and RFPF) in the model predict the TRANS. This also means that the data has a better goodness of fit for the study.

**TABLE 4.15**

		<b>ANOVA</b>				
		Sum of squares	df	Mean square	F	Sig.
MFPP	Between groups	2.475	2	1.238	2.120	.123
	Within groups	118.491	203	.584		
	Total	120.966	205			
EFPF	Between groups	1.329	2	.664	.589	.556
	Within groups	229.143	203	1.129		
	Total	120.966	205			
GFPP	Between groups	.207	2	.104	.186	.830
	Within groups	113.204	203	.558		
	Total	113.412	205			
RFPF	Between groups	.808	2	.404	.654	.521
	Within groups	125.472	203	.618		

	Total	126.280	205			
TRANS	Between groups	.862	2	.431	1.187	.307
	Within groups	73.743	203	.363		
	Total	74.605	205			

**Source:** Research estimation; 2023

From the ANOVA results in Table 4.15, it shows the relationship between and within groups of the dependent and independents variables. The significance value are all greater than 0.05 level of significance; hence, this shows that the model is statistical significant and has a better goodness of fit.

### Test of hypotheses

In testing the hypotheses formulated, it is important to re-state the hypotheses for the test. The hypothesis was tested at 0.05 or 5% level of significance. The corresponding statistic was the co-efficient and standard p- value or significance.

#### Hypothesis One

H<sub>01</sub>: There is no significant relationship between the margins of fuel price fluctuation on transportation system from 1981-2021 in Rivers State

H<sub>A1</sub>: There is significant relationship between the margins of fuel price fluctuation on transportation system from 1981-2021 in Rivers State.

From the table 4.12, the co-efficient of margins of fuel price fluctuation (MFPP) (0.050) is positive, but not statistically significant at p-value of 0.564 which is greater than 0.05 level of significance. Hence, the null hypothesis which states that there is no significant relationship between the margins of fuel price fluctuation on transportation system from 1981-2021 in Rivers State is accepted. This means that there is no significant relationship between the margins of fuel price fluctuation on transportation system from 1981-2021 in Rivers State

#### Hypothesis Two

H<sub>02</sub>: There is no significant effect of fuel price fluctuation and transportation system in Rivers State.

H<sub>02</sub>: There is significant effect of fuel price fluctuation and transportation system in Rivers State.

From the table 4.12 the co-efficient of effect of fuel price fluctuation (EFPF) is negative (-0.038), and not statistically significant at a p-value of (0.600) at 0.05 level of significance. This implies that effect of fuel price fluctuation contributes negatively to transportation system in Rivers State. Therefore, the null hypothesis that there is no significant effect of fuel price fluctuation and transportation system in Rivers State is accepted. This implies that there is no significant effect of fuel price fluctuation and transportation system in Rivers State

#### Hypothesis Three

H<sub>03</sub>: There is no significant influence of government policies and tax on fuel price fluctuation and transportation system in Rivers State.

H<sub>A3</sub>: There is significant influence of government policies and tax on fuel price fluctuation and transportation system in Rivers State.

From the table 4.12, the co-efficient of government policies and tax on fuel price fluctuation (GFPP) (0.258) is positive and statistically significant at a p-value of 0.000 which is less than the significant level of 0.05. Therefore, the null hypothesis which states that there is no significant influence of government policies and tax on fuel price fluctuation and transportation system in Rivers State is rejected. This implies that there is significant influence of government policies and tax on fuel price fluctuation and transportation system in Rivers State

#### **Hypothesis Four**

H<sub>04</sub>: There is no significant relationship between the result of fuel price fluctuation and mode of transportation system in Rivers State

H<sub>a4</sub>: There is significant relationship between the result of fuel price fluctuation and mode of transportation system in Rivers State.

From the table 4.12, the co-efficient of result of fuel price fluctuation(RFPF) is negative (-179) but statistically significant at p-value of 0.002, which is less than 0.05, Hence the null hypothesis that There is no significant relationship between the result of fuel price fluctuation and mode of transportation system in Rivers State is rejected. This implies that there is significant relationship between the result of fuel price fluctuation and mode of transportation system in Rivers State.

#### **Discussion of Findings**

The hypothesis one tested that there is no significant relationship between the margins of fuel price fluctuation on transportation system from 1981-2021 in Rivers State. It was tested using the multiple regressions, with the aid of SPSS of 0.05 level of significance and the null hypothesis was accepted, while the alternative hypothesis was rejected. This implies that there is no significant relationship between the margins of fuel price fluctuation on transportation system from 1981-2021 in Rivers State. This finding is in line with the findings of Asekomeh, Mobolaji and Adeniran (2014) when they found out that fuel price has positive but insignificant effect on transportation system in Nigeria.

The hypothesis two was tested that there is no significant effect of fuel price fluctuation and transportation system in Rivers State. It was tested using the multiple regression with the aid of SPSS, and the null hypothesis was rejected, while the alternative hypothesis was accepted. This implies there is no significant effect of fuel price fluctuation and transportation system in Rivers State. Ebele (2015) supported this finding when he found out that fuel price fluctuation has negative effect on transportation system in Nigeria.

Hypothesis three tested that there is no significant influence of government policies and tax on fuel price fluctuation and transportation system in Rivers State. It was tested using the multiple regressions with the aid of SPSS, and null hypothesis was rejected, while the alternative hypothesis was accepted. This implies that there is significant influence of government policies and tax on fuel price fluctuation and transportation system in Rivers State. This finding is in line with the finding of Lorussoa and Pieronib (2018) who found out a significant positive effect of government policies and tax on fuel price fluctuation on transportation system in Nigeria.

The hypothesis four tested that there is no significant relationship between the result of fuel price fluctuation and mode of transportation system in Rivers State. It was tested using the multiple regression at 0.05 level of significance and the null hypothesis was rejected, which the alternative hypothesis was accepted. This implies that there is significant relationship between the result of fuel price fluctuation and mode of transportation system in Rivers State. This is in line with the study of Akpan (2009) when they found that result of fuel price fluctuation has significant effect on transportation system.

### **SUMMARY OF MAJOR FINDINGS, CONCLUSION AND RECOMMENDATIONS**

#### **Summary of Major Findings**

The findings from this study are summarily enlisted below.

It was found that there is no significant relationship between the margins of fuel price fluctuation on transportation system from 1981-2021 in Rivers State

The study also revealed that there is no significant effect of fuel price fluctuation and transportation system in Rivers State

Furthermore, it was revealed that there is significant influence of government policies and tax on fuel price fluctuation and transportation system in Rivers State

Finally, the study revealed that there is significant relationship between the result of fuel price fluctuation and mode of transportation system in Rivers State.

### **Conclusion**

Based on the findings from the study, the study concluded that there is no significant relationship between margins of fuel price fluctuation and effect of fuel price fluctuation and transportation system in Rivers State. However, there is significant relationship between government policies and tax on fuel price fluctuation and result of fuel price fluctuation on and transportation system in Rivers State. Therefore, the study finally concluded that fuel price fluctuation has negative and positive effect on transportation system in Rivers State.

### **Recommendations**

Based on the findings from the study, the following recommendations are made;

1. The government of Rivers State should put in place palliative transportation to caution the effect of fuel price margin fluctuation on transportation.
2. There is need to put in place measures to caution the effect of fuel price fluctuation on transportation in the state.
3. The government of Rivers state government should adopt favourably government policies on transportation that can help its growth and development of the transportation sector.
4. Finally, it was recommended that government should device a way to caution the effect of fuel price increase so as to boost the transportation sector.

### **REFERENCES**

Abubakar, J. & Umar, A. (2013). Crude Oil Prices and Foreign Exchange Rates: Evidence of Cointegration and Causality from Nigeria. Proceeding of the 5th annual NAAE/IAEE International Conference "Energy Technology and Infrastructure for Sustainable". April 23-24, 2012, Abuja – Nigeria, pp: 293-300.

Academics Dictionary of Economics (2006).

Adagba, O., Ugwu, S. C., & Eme, O. I. (2012). Deregulation and anti-subsidy removal strikes in Nigeria, 2000-2012. *Arabian Journal of Business and Management Review*, 7, 69-83.

Adamu, A. (2015). The Impact of Global Fall in Oil Prices on the Nigerian Crude Oil Revenue and Its Prices. Dubai: The Second Middle East Conference on Global Business, Economics, Finance and Banking.

Adenikinju, A. F., & Falobi, N. (2006). Macroeconomics and distribution, consequences of energy supply shock in Nigeria. Nairobi, Kenya: *The African Economic Research Consortium*.

Adeniran, Adetayo O. and Yusuf, Temitope B. (2016). Transportation and National Development: Emphasis to Nigeria. *Developing Country Studies* www.iiste.org ISSN 2224-607X (Paper) ISSN 2225-0565 (Online) 7, (9),93-104 www.iiste.org.

Akanbi, T. A., Aworemi, J. R., & Amoo, R. O. (2013). The impact of downstream oil sector deregulation on petroleum products pricing and consumption in Nigeria. *Sky Journal of Business Administration and Management*, 1(4), 33-39.

- Akanbi, T. A., Aworemi, J. R., & Amoo, R. O. (2013). The impact of downstream oil sector deregulation on petroleum products pricing and consumption in Nigeria. *Sky Journal of Business Administration and Management*, 1(4), 33-39.
- Akhakpe, I, Fatile, J.O & Igbokwe-Ibeto, C.J. (2012). Local Governments and Challenges of Rural and Community Development in Nigeria: The Way Forward, *International Journal of Asian Social Science*, 2(7):803-819
- Akhakpe, I.P.(2014), *Bureaucracy and Good Governance*. Lagos: Pumar Publishers.
- Akov, E.T (2015). Fuel subsidy corruption and the illusions of economic reconstruction in Nigeria. *Academic Journal of Interdisciplinary Studies*, 4(1);395-408
- Akpan, E. O. (2009). Oil Price Shock and Nigeria's Macroeconomy. *Journal of Economics*, 4(2), 12-19.
- Aktamis, A. (2011). Determining energy saving behavior and energy awareness of secondary school students according to socio-demographic characteristics. *Educational Research and Reviews*. 6(3), 243-250.
- Aktamis, A. (2011). Determining energy saving behavior and energy awareness of secondary school students according to socio-demographic characteristics. *Educational Research and Reviews*, 6(3), 243-250.
- Alley, I., Asekomeh, A., Mobolaji, H., & Adeniran, Y. A. (2014). Oil Price Shocks and Nigerian Economic Growth. *European Scientific Journal*, 10(19), 375-391.
- Álvarez, L., Hurtado S., Sánchez I. & Thomas C. (2011). "The Impact of Oil Price Changes on Spanish and Euro Area Consumer Price Inflation," *Economic Modelling*, 28(1-2): 422-431
- Amaiquema, J.R.P., Amaiquema, A.R.P. (2017), Consequences of oil and food price shocks on the Ecuadorian economy. *International Journal of Energy Economics and Policy*, 7(3), 146-151.
- Aminu, S. A. (2014). Determinants of petrol conservation in transportation sector of Lagos State. Published thesis of Department of Business Administration & Marketing, Babcock University, Ilesan-Remo, Ogun State, Nigeria, 1-320.
- Aminu, S. A. (2014). Determinants of petrol conservation in transportation sector of Lagos State. Published thesis of Department of Business Administration & Marketing, Babcock University, Ilesan-Remo, Ogun State, Nigeria, 1-320.
- Aminu, S.A., & Olayinka, K.A. (2014). Curbing petrol consumption through public transport in Lagos State. *International Journal of Management Sciences and Humanities*, 2(1), 1-18.
- Aminu, S.A., & Olayinka, K.A. (2014). Curbing petrol consumption through public transport in Lagos State. *International Journal of Management Sciences and Humanities*, 2(1), 1-18.
- Aminu, S.A., & Olayinka, K.A. (2014). Curbing petrol consumption through public transport in Lagos State. *International Journal of Management Sciences and Humanities*, 2(1), 1-18.

- Asaolu, O., Awe, O., &Sholotan, O. (2010). Challenges dog the petroleum marketing industry. Retrieved from <http://csls.firstcitygroup.com>
- Asika, N. (2001) Research Methodology in the Behavioural Sciences, Nigeria. Longman Nigeria PLC.
- Awerbuch , S., &Sauter, R. (2003). Oil price volatility and economic activity: a survey and literature review.IEA Research Paper.*Academic Journal of Interdisciplinary Studies* 4(1).DOI:10.5901/mjss.2015.v4n1p253
- Ayadi, F. (2005).Oil Price Fluctuations and the Nigerian Economy. *OPEC Review*, 29(3), 199-217.
- Azarbaiejani, K., Hamedani, A. S., &Bahaloo, M. (2012).An analysis of the effect of energy subsidies decrease and transfer payments to households on social welfare in Iran.*Interdisciplinary Journal of Contemporary Research in Business*, 4(1), 478-488.
- Babatunde&Kehinde (2016).The Impact Of Monetary Policy On Price Stability In Nigeria. *Global journal of Economics and Business Administration*, 2016,1:2. DOI:10.28933/babatunde-and-kehinde-gjeba-201602.
- Baridam, D.M. (2001) Research Methods in Administrative Sciences, Port Harcourt: Paragraphics.
- Baumeister, C.&Peersman.G.(2013). "Time-Varying Effects of Oil Supply Shocks on the US Economy," *American Economic Journal: Macroeconomics*, 5(4):1-28.
- Blanchard, O. J., &Gali, J. (2007). The Macroeconomic Effect of Oil Shocks: Why Are 2000s Different from the 1970S? NBER Working Paper Series, 1–78.
- Blanchard, O.J. and J. Galí.(2007). "The Macroeconomic Effects of Oil Price Shocks: Why are the 2000s so Different from the 1970s?," *National Bureau of Economic Research, International Dimensions of Monetary Policy*, 373–421.
- Campbell, J. (2011). Nigeria’s fuel subsidy is more than economics. [www.google.com](http://www.google.com). Centre for Public Policy Alternatives (2011). Fuel Subsidy Removal: Nigeria. (Pp. 1-16).
- Carr, K. (2008). Qualitative research to assess interest in public transportation for work commute.*Journal of Public Transportation*, 11(1), 1-16.
- Castro, C., & Jiménez-Rodríguez. R. (2017). "Oil Price Pass-through along the Price Chain in the Euro Area," *Energy Economics*, (64),24-30.
- Central Bank of Nigeria (CBN) (2003). Highway maintenance in Nigeria: Lessons from other countries. *Research Department Occasional Paper No.27*, 1-28.
- ChiomaYingigbaJaja (2010). Recent Trends and Patterns of Gasoline Consumption in Nigeria, *Africa Development*, 35 (3) 159 – 177.
- Choi, S., D. Furceri, P. Loungani, S. Mishra, and M. Poplawski-Ribeiro(2018). "Oil prices and inflation dynamics: Evidence from advanced and developing economies. *Journal of International Money and Finance*. (82) 71-96.

- Chukwuemeka (2018). Impact of Capital Market on the Economic Growth in Nigeria: An Empirical Analysis. *IOSR Journal of Economics and Finance (IOSR-JEF)* e- ISSN: 2321-5933, p-ISSN: 2321-5925. (9), 48-59. www.iosrjournals.org.
- Clements, B., J. Hong-Sang and S. Gupta. 2003. "Real and Distributive Effects of Petroleum Price Liberalization: The Case of Indonesia," IMF Working Paper, 2003/204, Washington D.C.
- Coady, D., El-Said M., Gillingham R., Kpodar K., Medas P., & D. Newhouse (2006). "The Magnitude and Distribution of Fuel Subsidies: Evidence from Bolivia, Ghana, Jordan, Mali, and Sri Lanka," IMF Working Paper, 2006/247, Washington D. C.
- Dargay, J., Gately, D., & Sommer, M. (2007). Vehicle ownership and income growth, worldwide: 1960-2030. *The Energy Journal*, 28(4), 143-170.
- Darmstadter, J. (1973). Limiting the demand for energy: Possible? Probable? *Environmental Affairs Law Review*, 2(4), 716-731.
- De Gregorio, J., O. Landerretche, and C. Neilson. 2007. "Another Pass-through Bites the Dust? Oil Prices and Inflation," *Economía Journal*, 7(2), 155-208.
- Denis et al (2006) Africa Geoscience Review. Typology of Hirnantian pavements in the SW Djado basin (NE Niger). *Africa Geoscience Review*, 13(2), 145-155. Printed in France.
- Department of Energy (DOE) (2007). Annual energy review. Washington, DC.: Energy Information Administration.
- Duncan, J. (2008). Growth implications of variations in international oil prices: The Nigeria economic journal, 1(1) 39-53.
- Ebele, E. (2015). Oil Price Volatility and Economic Growth in Nigeria: An Empirical Investigation. *European Journal of Humanities and Social Sciences*, 34(1), 1901-1918.
- Ebhomole, E. (2016, March 9). One quarter of cars in Nigeria are in Lagos. The News. Retrieved from www.thenewsnigeria.com
- Eltony, M. N. (2006). Industrial energy policy: A case study of demand in Kuwait. *OPEC Review*, 85-103.
- Emeka Nkoro & Aham Kelvin Uko (2016). Autoregressive Distributed Lag (ARDL) cointegration technique: application and interpretation. *Journal of Statistical and Econometric Methods*, 5, (4,3), 163-165.
- Energy Information Administration (EIA) (2013). Country analysis brief: Nigeria. Retrieved from <http://www.eia.gov>
- European Commission (2006) Evidence-based policy-making in Europe: an evaluation of European Commission integrated impact assessments. *Impact Assessment and Project Appraisal* 24(1), 23-33.

- Fattouh, B., & El-Katiri, L. (2012). Energy subsidies in the Arab world. *Arab Human Development Report Research Paper Series*. Retrieved from [www.arab.hdr.org](http://www.arab.hdr.org).
- Fenn, K. (2013). Cycling: The green way to travel. Energy Savings Secrets. Retrieved from <http://www.energysavingsecrets.co.uk/cycling>
- Flávio Val, Wagner Gaglianone, Marcelo Klotzle & Antonio Pinto (2017). Estimating the Credibility of Brazilian Monetary Policy using Forward Measures and a State-Space Model. *ISSN 1518-3548 CGC 00.038.166/0001-05. (463) 1-37*
- Fueki, T., Higashi, H., Higashio, N., Nakajima, J., Ohyama, S., Tamanyu, Y. (2018), Identifying Oil Price Shocks and Their Consequences: The Role of Expectations in the Crude Oil Market. Washington, DC: A Bank of Japan Working Paper, No. 725.
- Gali J., and Luca G. (2009). "On the sources of the great moderation." *American Economic Journal: Macroeconomics* 1(1), 26-57.
- Gelos, G. and Ustyugova Y. (2017). "Inflation Responses to Commodity Price Shocks – How and why Do Countries Differ?" *Journal of International Money and Finance*, (72), 28–47.
- Gillingham, K., Newell, R. G., & Palmer, K. (2009). Energy efficiency economic and policy. Resources for the Future Discussion Paper. Retrieved from <http://www.rff.org>
- Global Petrol Prices (2018). Petrol prices, liter. Retrieved from [www.globalpetrolprices.com](http://www.globalpetrolprices.com). Accessed January 2, 2017.
- Global Petrol Prices (2018). Petrol prices, liter. Retrieved from [www.globalpetrolprices.com](http://www.globalpetrolprices.com).
- Good Wilson & Jebbin Maclean Felix (2015). Transportation and National Development. *Journal of Economics and Sustainable Development*. ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online) Vol.6, No.9, 2015. [www.iiste.org](http://www.iiste.org). ( Pp. 1-9).
- Graefe, L. (2009). The peak oil debate. *Federal Reserve Bank of Atlanta Economic Review*, 94(2), 1-14.
- Hamilton, J.D. & Herrera (2003). Oil shocks and aggregate macroeconomic behavior: the role of monetary policy. *Journal of Money, Credit, and Banking*. Blackwell Publishing, 36(2), 265-286, April.
- Hasselgren, B. (2011). Is leg muscle strength correlated with functional balance and mobility among inpatients in geriatric rehabilitation? *Archives of Gerontology and Geriatrics* 52(3), 220-225.
- Hoffman, F. (2009). *Investment, innovation and the diffusion of technology in Europe*, Cambridge university press.
- IEA (International Energy Agency), *World Energy Outlook 2008*, Paris, 2008.
- Iloani, F. A. (2017, April 28). Nigeria has 11.5m vehicles as at Q1 2017 - NBS. *Daily Trust*. Retrieved from [www.dailytrust.com](http://www.dailytrust.com)

- Innocent Okwanya, Ogbu Moses and Job Migap Pristine (2015). An Assessment of the Impact of Petroleum Subsidy on Consumer Price Index in Nigeria. *Global Journal of Interdisciplinary Social Sciences*. www.gifre.org ISSN: 2319-8834. Vol.4(1) (Pp. 36-39).
- International Energy Agency (IEA) (2009). World Energy Outlook. Paris: OECD/ IEA.
- Jaja, C. Y. (2010). Recent trends and patterns of petrol consumption in Nigeria. *African Development*, XXXV(3), 159-177.
- Javier ArzedelGranado, David C., & Robert G. (2010). The Unequal Benefits of Fuel Subsidies: A Review of Evidence for Developing Countries. IMF Working Paper No. 10/202, Available at SSRN: <https://ssrn.com/abstract=1750690>
- Jean-Paul R., Claude C. & Brian S. (2006). *Geography of Transport Systems*. DOI:10.4324/9781315618159. ISBN: 9781315618159
- Jean-Paul Rodrigue, Claude Comtois and Brian Slack (2006). *Geography of Transport Systems*. First Published 2006 by Routledge.
- Jo, S., Karnizona, L., Reza, A. (2017), Industry Effects of Oil Price Shocks: *Re-examination*. *Federal Reserve Bank of Dallas Working Paper*. Available from: <https://www.dallasfed.org/-/media/documents/research/papers/2017/wp1710.pdf>.
- Jo, S., Karnizona, L., Reza, A. (2017), Industry Effects of Oil Price Shocks: Re-examination. *Federal Reserve Bank of Dallas Working Paper*. Available from: <https://www.dallasfed.org/-/media/documents/research/papers/2017/wp1710.pdf>.
- Kawase, A. (2012). Petrol tax rates from the perspective of optimal taxation theory. A comparison of Japan, the United States, and the United Kingdom. *The Japanese Economy*, 38(4), 3-27.
- Kilian, L. (2014), Oil price shocks: Causes and consequences. *Annual Review of Resource Economics*, 6, 133-154.
- Kilian, Lutz, and Thomas K. Lee. 2014. "Quantifying the Speculative Component in the Real Price of Oil: The Role of Global Oil Inventories." *Journal of International Money and Finance* 42: 71–87.
- Kpodar K. & Abdallah C., (2017). "Dynamic Fuel Price Pass-through: Evidence from a New Global Retail Fuel Price Database", *Energy Economics*, (66)303-312.
- Kpodar K. & Djiofack C. (2010). "The Distributional Effects of Oil Price Changes on Household Income: Evidence from Mali," *Journal of African Economies*, 19(2), 205–236.
- Lee, K., Ni, S. (2002), On the dynamic effects of oil price shocks: A study using industry level data. *Journal of Monetary Economics*, (49), 823-852.
- Lingyu, Y. (2012), Analysing the International Oil Price Fluctuations and its Influencing Factors. Available from: <http://www.scirp.org/journal/paperinformation.aspx?>

- Litman, T. (2011). Smart transportation emission reduction strategies: Identifying truly optimal ways to conserve energy and reduce emissions. Victoria Transport Policy Institute. Retrieved from <http://www.vtpi.org>
- Longman Dictionary of Contemporary English (2003) (4th edition). Pearson Education Limited.
- Lorusso, M.; Pieroni, L. Causes and consequences of oil price shocks on the UK economy. *Econ.Model.* 2018, 72, 223–236.
- Lorusso, M., Pieroni, L. (2018), Causes and consequences of oil price shocks on the UK economy. *Economic Modelling*, 72, 222-236.
- Lorusso, M., Pieroni, L. (2018), Causes and consequences of oil price shocks on the UK economy. *Economic Modelling*, (72), 222-236.
- M. Poplawski-Ribeiro and D. Tartari (2013). Inflation dynamics in the Economic and Monetary Community of Central Africa (CEMAC) region C Caceres, *Journal of African Economies*, Centre for the Study of African Economies (CSAE), 22(2),239-275.
- Mazraati, M. (2007). Oil demand in transportation sector in Iran: An efficiency and income asymmetric modeling approach. *OPEC Review*, 261-280.
- Merino, A., Ortiz, A. (2005), Explaining the so-called “price premium” in oil markets. *OPEC Review*, 29 (2), 133-152.
- Merriam Webster Dictionary (2012) Inc.
- Microsoft Encarta. Microsoft Corporation (2009).
- Ministry of Information (2013).The road sector in the past two years. Retrieved from <http://www.fmi.gov.ng/features>
- Mordi, C. N. (2006). Challenges of exchange rate volatility in economic management in Nigeria.CBN economic & financial review, 30(3) 16-25
- National Bureau of Statistics (NBS) (2016).Petroleum products consumption statistics Q1-Q3 2016. Retrieved from [www.nigerianstat.gov.ng](http://www.nigerianstat.gov.ng)
- National Bureau of Statistics (NBS) (2016).Petroleum products consumption statistics Q1-Q3 2016. Retrieved from [www.nigerianstat.gov.ng](http://www.nigerianstat.gov.ng)
- National Bureau of Statistics. PETROLEUM PRODUCTS CONSUMPTION STATISTICS IN NIGERIA: 2015 (Q1-Q4). Abuja: National Bureau of Statistics, 2016.
- Nigeria Bureau of Statistics (2014).Nigerian Gross Domestic Product Report. Retrieved from <https://www.nigerianstat.gov.ng/pdfuploads/NBS%20GDP%20Q4%202014.pdf>
- O'Neill, Penm& Terrell.(2008). The role of higher oil prices: A case of major developed countries. *Research in Finance*.Emerald Group Publishing Limited

- Obioma, R (2006). An Examination of Oil Prices and its Changes on the Nigeria Economic Growth: *Journal on Welfare Economic*, 4(2); 25-28.
- Okanlawon, K. R. (2007). Inter-modal transport system: A study. *Journal of Environmental Research and Policies*, 2(2), 67-71.
- Okeafor, S. Uche (1998). *Physical Distribution and Transportation Management* (2nd edition). Port- Harcourt: Obohikel Publishers.
- Okeafor, S. Uche (1998). *Physical Distribution and Transportation Management* (2nd edition). Port- Harcourt: Obohikel Publishers.
- Okwori J. & Abu J. (2017). Monetary Policy and Inflation Targeting in Nigeria. *International Journal of Economics and Financial Management* 2(3), 2545 – 5966
- Olaniyi, A. A. (2016). Effects of fuel subsidy on transport costs and transport rates in Nigeria. *Journal of Energy Technologies and Policy*, 6(11), 1-9.
- Olomola, P. A. (2006). Oil Price Shocks and Aggregate Economic Activity in Nigeria. *African Economic and Business Review*, 4(2), 40-45.
- Olusegun, O. A. (2008). Oil Price Shocks and the Nigerian Economy: A Forecast Error Variance Decomposition Analysis. *Journal of Economics Theory*, 2(4), 124-130.
- Onyemaechi, J. O. (2012) Economic Implications of Petroleum Policies in Nigeria: An Overview. *American International Journal of Contemporary Research*, 2(5),60-71
- Onyishi, A.O, O.I Eme and I.E.J Emeh (2012).The domestic and international implications of fuel subsidy removal crisis in Nigeria.Kuwait Chapter of Arabian. *Journal of Business and Management Review* 1(6):57-80.
- Oriakhi, D. E., &Osaze, I. D. (2013). Oil Price Volatility and its Consequences on the Growth of the Nigerian Economy: An Examination (1970-2010). *Asian Economic and Financial Review*, 3(5), 683-702.
- Oxford English Dictionary (Online Version) 9th Edition.
- Pitts, R. E., Willenborg, J. F., &Sherrell, D. L. (1981). Consumer adaptation to petrol price increases. *Journal of Consumer Research*, (8), 322-330.
- Pridmore, A., &Miola, A. (2011). Public acceptability of sustainable transport measures: A Review of the Literature. The International Transport Forums Discussion Paper Series, No. 20, 12-20,1-24.
- Pridmore, A., &Miola, A. (2011). Public acceptability of sustainable transport measures: A Review of the Literature. The International Transport Forums Discussion Paper Series, No. 20, 12-20,1-24.
- Rosenthal, E. (2018). Nigeria tested by rapid rise in population. The New York Times. Retrieved from [www.times.com](http://www.times.com)

- Shaheen, S. A., & Lipman, T. E. (2007). Reducing greenhouse emissions and fuel consumption: Sustainable approaches for surface transportation. *International Association of Traffic and Safety Sciences Research*, 31(1), 6-20.
- Shaheen, S. A., & Lipman, T. E. (2007). Reducing greenhouse emissions and fuel consumption: Sustainable approaches for surface transportation. *IATSS Research*, 31(1), 6-20.
- Shiau, C. N., Michalek, J. J., & Hendrickson, C. T. (2009). A structural analysis of vehicle design responses to corporate average fuel economy policy. *Transportation Research Part A*. (43), 814 - 828.
- Solie, I. & Mu X. (2015). "Who Benefit Most from Fuel Subsidies? Evidence from Nigeria," *Energy Policy*, (87)314-324.
- Ting, L. S., Bin Mohammed, A. H., & Wai, C. W. (2011). Promoting energy conservation behavior: A plausible solution to energy threat. *International proceedings of economics development and Research*. (5), 372-376.
- Ting, L. S., Bin Mohammed, A. H., & Wai, C. W. (2011). Promoting energy conservation behavior: A plausible solution to energy threat. *IPEDR*, 5, 372-376.
- Umar, G., & Abdulhakeem, K. A. (2010). Oil Price Shocks and the Nigeria Economy: a Variance Autoregressive (VAR) model. *International Journal of Business and Management*, 5(8), 38-49.
- United Nations Environment Programme Annual Report (2002). UNEP Publication. Retrieved from <https://wedocs.unep.org/20.500.11822/8556>
- Vieira, Holland, Gomes & Bottecchia (2013) Growth and Exchange Rate Volatility: a Panel Data Analysis. *Applied Economics* 45(26) DOI:10.1080/00036846.2012.730135
- Wilson G. & Felix J. M. (2015). Transportation and National Development. *Journal of Economics and Sustainable Development*. ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online) 6(9), 1-9.
- Wilson, F. A., Stimpson, J. P., & Hilsenrath, P. E. (2009). Petrol prices and their relationship to rising motorcycle fatalities, 1990-2007. *American Journal of Public Health*, 99(10), 1753-1758.
- World Bank, (1996). *Nigeria, Poverty in the Midst of Plenty: Challenges of Growth with Inclusion*, Washington D.C: World Bank.
- World Bank, (1997). *Nigeria, Poverty in the Midst of Plenty: Challenges of Growth with Inclusion*, Washington D.C: World Bank
- World Energy Outlook (2005) Middle East and North Africa Insights: International Energy Agency. Retrieved from <https://doi.org/10.1787/weo-2005-en 9789264109506> (PDF).
- Yakubu, M. (2008). Oil and gas reserves and economic growth in Nigeria: *The economic journal* 49, 13-14.