



IMPACT OF DYNAMIC IN PETROLEUM PRODUCT PUMP PRICE ON PRODUCTIVITY IN NIGERIA

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KEYWORDS

National Bureau of statistics, Standard of living, Dual purpose kerosene, Premium motor spirit, Automotive gas oil

ABSTRACT

The study examines the impact of petroleum product pump price fluctuation and productivity in Nigeria covering the period of 2013 to 2024. Data used were sourced from National Bureau of Statistics (NBS) and CBN annual report. Data collected include petrol Motor spirit (PMS) price, Automotive Gas Oil (AGO) price, and Dual-Purpose Kerosene prices (DPK). The data collected were analysis with multiple regression technique and the result shows that Dual Purpose Kerosene (DPK) has negative relationship with productivity, Also, the result indicate that Automotive Gas Oil (AGO) show a negative and significant relationship with productivity. Finally, Premium motor spirit (PMS) shows a positive but weak relationship with productivity. The study concludes that petrol products pump prices fluctuation has significant negative affect on productivity, and it is recommended that government should subsidies diesel price and encourage investments in the establishment of more refineries, which will result to reduction in the price of kerosene and petrol prices, ultimately leading to increase productivity and improve standard of living of household in Nigeria.

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1. Introduction

The discovery of petrol in Nigeria has brought about a significant change in the economy of Nigeria, thus making it the county to be up to 90% dependent on it for its revenue. The dynamics/changes in petrol pump price have been a major issue as it affects the productive level of various

sector not excluding households as it also affects the standard of living of households in Nigeria. Nigeria stands as one of the most important economies in Africa, with heavily dependence on the oil and gas sector. This sector determines or produces a large portion of government income and also plays a crucial role in the growth and productivity of the country as it tends to

contribute the major percentage of the country's GDP (Olawunmi and orialo,2020). Nigeria had, experienced persistent increases in the prices of petroleum products over the years. After trending downwards for 18 years between 1981-1998, price of petroleum products for domestic consumption surprisingly doubled between 1998-2003, and have continued to increase since 1999, a notable year being in 2012, when fuel price was increased to N87 due to the partial removal of fuel subsidy, and more so, in 2016 the subsidy for petrol was completely removed which led to the increment of the product to 145 naira per litre and currently now at 900 naira per litre as a result of complete removal of subsidy(ocheni,2014). These movements in petroleum prices have had a multiplier effect on other sectors such as transportation, and also on the prices of goods and services, all against the backdrop of minimum wage fixed at N 18,000 which is now being 72,000 as a proposed wage in 2024 due to the high cost of living resulting from the high cost of petrol products (Okafor and Aniche, 2015). Nigeria is one of the petrol producing nations experiencing high imbalance in the cost of petroleum products even when there is global regulation in price and of course with government regulation.

Statement of Problem

According to Ocheni (2014) petroleum products are more reliable for production in Nigeria, because power fluctuations in national grid may lead to unexpected huge loss in production chain. He added that the excessive power failure from national grid have made production, manufacturing industries, and households to depend more on petroleum products for production of goods and services and these have made its price movement a strong determinant for industrial, manufacturing and national output as well as determinant for national living standard. The movement of

petroleum pump price is creating economic anxiety and panic among households in Nigeria.

However, previous studies in Nigeria such as Clementina, et al. (2019), Babalola, and Salau, 2020 and Nwabueze, (2021) have examined impact of petroleum pump price on consumer behaviour and agricultural productivity but their study did not examine it impact on productivity in Nigeria at large. Therefore, this study examines impact of petroleum pump price fluctuation on productivity in Nigeria.

Research Objectives

The general objective of the study is to examine impact of petroleum product pump price on productivity in Nigeria. To achieve the impact, other specific objectives are:

- i. To examine the impact of dynamics in petrol pump price on the productivity of Nigeria
- ii. Access the impact of dynamics in automotive gas oil (Diesel) on the productivity of Nigeria
- iii. To survey the impact of Dual purpose kerosine on the productivity of Nigeria

Research Hypothesis

The following hypothesis are stated for the study

Ho₁: There is no significant relationship between petrol and productivity.

Ho₂: There is no significant relationship between Automotive gas oil (Diesel) and Productivity

Ho₃: There is no relationship between Dual purpose kerosene and productivity.

Scope of the Study

This study examines the impact of petrol pump price fluctuation on productivity in

Nigeria. This study covered between 2013-2024. This variable of this study includes petrol motor spirit, automotive gas oil, and dual-purpose kerosene as independent while the productivity is dependent.

2. Literature Review

Concept of Petrol Pump Price

Petroleum is a naturally occurring liquid found beneath the Earth's surface. It is formed over millions of years from the remains of ancient marine organisms such as plankton that settled on the ocean floor, (Ighosewe et al., 2021). With time, these organic materials were buried under layers of sediment and subjected to heat and pressure which transformed them into hydrocarbons. Oil was first discovered in the commercial quantity in Nigeria in the year 1956 at Oloibiri in Niger Delta. Petroleum now serves as one major source of revenue to the Nigerian economy. Nigeria is seen as one of the largest oil producing countries in the world (the 8th largest oil producing country), producing billions of barrels of petroleum yearly, helping them to generate trillions of dollars yearly from the export, and sales of petroleum products within and outside Nigeria.

The refining process separates petroleum into different components based on boiling points, leading to various products that serve different usefulness in transportation, heating, and manufacturing (Odupitan, 2017). The four major products include Premium motor spirit (PMS), Dual purpose kerosene (DPK), Automotive Gas oil (AGO) and liquefied petroleum gas (LPG). All these products are essential for transportation. While others petroleum products which include heating oil, Lubricants are used in machinery to reduce friction and wear; while petrochemicals include products like ethylene, propylene, and benzene which serve as building blocks for plastics, fertilizers, pharmaceuticals and other synthetic

materials (Odupitan, 2017; Ighosewe et al., 2021).

However, the prices of these products have significant impact on the efficiency and effectiveness of industries, firms, households, and individuals, and in various ways affect and determine their level productivity. Petrol pump price has lately been majorised on by many researchers such as Adetayo (2018) and Adelegan (2020) due to its impact on the Nigeria economy, house-hold, not excluding its impact on the productivity level of firms and all sectors available in the economy. For the past 30 years plus Nigeria has been witnessing fluctuation in the price of petrol product, which has been as a result of so many factors of which one of it is as a result of government policies. Petroleum pump prices have been dynamic in nature, making it varies significantly from one price to another, sometimes as a result of the policies or the impact of the global market price. According to Olorunfemi (2010), petroleum pump prices have been increased by several Nigerian governments since Nigeria's independence to date. For over 60 years (1966 – 2025) there has been a significant hike in the price of petroleum products.

The Nigerian government has faced multiple opposition and compliant as a result of the hike in the price of petroleum which has been a great issue as it increases significantly whenever a new administration come in power. Taking into consideration the data of petrol pump price from the year 2012, when President Goodluck Ebele Jonathan's was in power there was a hike in the retail price of petrol product (focusing solely on Premium Motor Spirit (P.M.S)) from ₦65 - ₦97 per liter and from then there has been an uproar in the price of PMS. In 2013 it moved to ₦120 per liter and in 2014/2015 a reduction in the price was experienced from ₦120 to ₦87, and in the year 2016 under the administration of president

Mohammed Buhari, there an increase of about 50% leading the [price to ₦145 per liter and under the administration the price got to ₦180 - ₦220 per liter before the massive hike in the year 2023 where the price moved from ₦200 to about ₦600 per liter under the administration of president of President Bola Ahmed Tinubu and to about ₦1200 per liter. The hike was due to the abolishment of the longstanding petrol subsidy in Nigeria by President Bola Ahmed Tinubu after taking office in May 29 2023, which caused the average retail price paid by consumers for premium motor spirit (PMS) in June 2023 which rose to ₦545.83, indicating an increase of 210% related to the value recorded in June 2022 (₦175.89).

Furthermore, comparing the average price valued with the previous month of May 2023, where the average retail price increases by 129% from ₦238. Refined petroleum products were imported due to the fact that virtually all the refineries in Nigeria are not functional (except Dangote Refinery which was just newly founded in the year 2024), which led to a reduction in the value of local currency (Naria). The hike in the price of petrol products has led to a negative impact as all sector, firms, and industries are affected by it, making them less productive and leading to an increase in the price of input and output of production products also causing household and the economy at large to suffer from inflation and unemployment.

Concept of Productivity

Productivity has become a household word as almost everyone talks about it. Yet, the term 'productivity' means different things to different persons and has been defined by different people in different ways. As a phenomenon, it ranges from efficiency to effectiveness, to rates of turnover and absenteeism, to output measures, to measure of client or consumer satisfaction, to intangibles such as disruption in workflow and to further intangibles such

as morale, loyalty and job satisfaction Oyeranti (2003). Productivity generally refers to the efficiency with which goods and services are produced. It is seen as the ratio of outputs (goods and services) to inputs (labour, capital, materials and many more). Eatwell and Newman (1991) defined productivity as a ratio of some measure of output to some index of input use. Put differently, productivity is nothing more than the arithmetic ratio between the amount produced and the amount of any resources used in the course of production.

The least controversial definition of productivity is that it is a quantitative relationship between output and input (Iyaniwura & Osoba, 1983, Antle & Capalbo, 1988). Productivity measures the effectiveness of production, expressed as the ratio of input to output. Productivity may not be far from the nascent realization of the primary and centrality of humans in economic development and growth process of a nation (Anyawu, 2003). Productivity can be defined as output per unit of input in a production process. The issue of productivity is a subject that serve as a concern to virtually all sectors in the economy such as government bodies, private firms, and other institutions not minding the disagreements over its conceptualization by different groups and individuals.

Since productivity is a measure of the efficiency of production. The formular to determine productivity of any sector include

Productivity = total output/total input or effectiveness/efficiency.

In the concept of productivity, industries, firms and enterprise produced goods and services with the primary motive of making profit as returns for the sales of the good produced and services rendered. Anyawu(2003) explained that these products are produced with the use of scarce resources (inputs) which include:

labour, capital, and materials. Expounding on the inputs, he describes labour as human resources, materials as raw materials, and capital which can also be called “financial assets”.

Business Managers, on the other hand, see productivity not only as a measure of efficiency, but also connotes effectiveness and performance of individual organizations. For them, productivity would incorporate quality of output, workmanship, adherence to standards, absence of complaints, customer satisfaction. The administrator is more concerned with organizational effectiveness, while the industrial engineer focusses more on those factors which are more operational and quantifiable, work and quantifiable, work measurement and performance standards.

Theoretical Review

This study on the Impact of Petrol Pump Price Dynamics on Productivity in Nigeria is based on a synthesis of three fundamental economic theories: the Neo-Classical Growth Theory by Robert Solow (1956) and the Mainstream Theory by Paul Samuelson and William Nordhaus (20th century) and Cost Push Inflation Theory.

Neo-Classical Growth Theory (Solow, 1956)

The Neo-Classical Growth Theory, formulated by Robert Solow, explains economic growth through the interaction of capital and labour. This model is built on the Cobb-Douglas Production Function, which mathematically represents the relationship between capital input, labor input, and output. A key assumption of the theory is that technological progress occurs externally and serves as the primary driver of long-term economic growth.

In the context of petrol price fluctuations, variations in fuel costs directly affect

production expenses, labor productivity, and capital investment. An increase in petrol prices raises transportation and operational costs, limiting the capital available for investment and, in turn, slowing economic productivity.

Mainstream Theory

The Mainstream Theory, as advanced by Samuelson and Nordhaus, extends Solow's model by recognizing energy as a critical intermediate factor in production. While labor and capital remain the fundamental inputs, energy, particularly petrol plays a vital role in enhancing productivity.

As a primary energy source in Nigeria, petrol significantly impacts industrial output, transportation, and agricultural efficiency. Higher fuel prices increase production costs, contribute to inflation, and hinder economic performance. In contrast, stable or lower petrol prices support industrial growth, promote job creation, and enhance overall productivity.

Cost-Push Inflation Theory

This theory asserts that rising production input costs, such as fuel, drive up the prices of goods and services. In Nigeria, where many industries depend on petrol for operations and transportation, an increase in fuel prices raises production expenses, leading to higher consumer prices and potentially reducing demand. This ripple effect can hinder economic productivity by increasing inflationary pressures and limiting industrial growth.

The integration of the Neo-Classical Growth Theory and the Mainstream Theory establishes a robust theoretical framework for analyzing the impact of petrol price fluctuations on productivity in Nigeria. These theories emphasize how shifts in energy costs affect capital investment, labor efficiency, and overall economic output. By utilizing the Cobb-Douglas Production Function, this study

seeks to quantitatively evaluate the relationship between petrol price variations and Nigeria's economic productivity.

Empirical review

Olawumi and Oriola (2020) examined the relationship between energy consumption and industrial output growth in Nigeria from 1981 - 2018. Secondary data were extracted from CBN Annual Report and Statement of Account 2018. Data extracted were analyzed using multiple regression analysis. The result indicated a positive relationship between petroleum products consumption and industrial output growth. The study reviewed focused on industrial outputs, while this current study focuses on productivity in relationship to the dynamics of petrol pump price.

Odularu (2008) examined the impact of crude oil on Nigeria's economic performance from 1970 -2005. Secondary data were extracted from the National Bureau of Statistics, CBN statistical bulletin. Data extracted were analyzed using Ordinary Least Squares (OLS) and Multiple Regression. The result showed that crude oil export and petroleum related activities had a significant and positive impact on Nigeria's GDP growth, underscoring the country dependence on petroleum resources. The study reviewed focused on Nigeria's Economic performance, while this current study focuses on productivity in relationship to the dynamics of petrol pump price.

Orlu (2017) examined the impact of domestic petrol pricing on economic growth from 1970 – 2013. Time series data were extracted from National Bureau of Statistics and CBN publications. The study employed the use of Error Correction Model (ECM) to analyze data extracted. The findings reveal that increase in petrol prices significant negative effect on economic growth, reflecting the cost burden on transportation and informal sector growth. The study reviewed focuses

on economic growth, while this current study focuses on productivity in relationship to the dynamics of petrol pump price.

Maku and Adetowubo-King (2018) investigated the impact of petroleum product price on human welfare in Nigeria from 1990 – 2015. Secondary data were extracted from World Development Indicators (WDI, 2015) and Central Bank of Nigeria Statistical Bulletin (CBN, 2015). Data were analyzed using Auto-regressive Distributed Lag. The result show that premium motor spirit price and dual-purpose kerosene exert a long-run negative and significant impact on human welfare in Nigeria. The study reviewed focused on investigating how petrol product prices affect household, while this current study focuses on productivity in relationship to the dynamics of petrol pump price.

Gatawa and Zakari (2017) examine the impact of petrol products prices changes on household welfare in Zaria metropolis, Kaduna State. Primary survey data were collected from households through questionnaires for the study. Data collected were analyzed using Descriptive Statistics and Inferential Statistic. The result show that petrol product prices have significant positive impact on household welfare, indicating that increase in petroleum products prices can lead to decrease in demand of the products and purchasing power of the masses. The study reviewed focuses on the dynamic of petrol products prices on household welfare, while this current study focuses on productivity in relationship to the dynamics of petrol pump price.

Clementina et al. (2019) examined the relationship between petroleum products prices and consumer products prices between 1996 and 2018 in Nigeria. Secondary data were extracted from the National Bureau of Statistic (NBS) and CBN Statistical Bulletin. Data extracted

were analyze using multiple regression. The result show that petrol products prices have significant and positive relationship with the prices of consumer products in Nigeria. The study review focus on consumer products, while this current study focuses on productivity in relationship to the dynamics of petrol pump price.

Okwuchukwu, et. al. (2021) examined the determinants of Labour productivity in Nigeria over the period 1990 to 2020. Secondary data were extracted from World Development Indicators (WDI), and the International Labour Organization Statistics (ILOSTAT). Data extracted were analyzed using Auto-Regressive Distributed Lag (ARDL). The result shows that productivity is positively affected by per capital income and negatively affected by human capital index but insignificant. The study review focused on labour productivity while this current study focuses on productivity in relationship to the dynamics of petrol pump price.

Gbenga and Omo-ojugo (2022) examined the impact of petrol pump regulation on inflation rate in Nigeria between 1980 – 2021. Secondary data are extracted from the Central Bank of Nigeria (CBN) Annual Report and National Bureau of statistics. Data extracted were analyzed using Error Correction Mode, Descriptive Statistic, and Johansen Cointegration Test. The result shows that PMS and AGO have a positive but insignificant relationship with inflation rate in Nigeria. The study review focuses on the effect of petroleum products prices adjustments on the inflation rate in Nigeria while this current study focuses on the impact of dynamics of petrol pump prices on the productivity of Nigeria.

Yaro, Abubakar and Sabe (2024) examined the dynamics impact of petrol prices on industrial sectors growth. Secondary data were extracted from the National Bureau of Statistic (NBS) and World Development Indicators. The result

shows that the co-efficient of petrol pump prices displayed a negative and significant effect on industrial sector growth both on short-term and long-term growth. This current study reviews the dynamic impact of petrol prices on industrial sector growth while this current study focuses on the impact of the dynamics of petroleum pump price on the productivity of Nigeria.

Abdullahi and Banki Sani (2021), examine the price and income elasticities of domestic petrol. Secondary data were extracted from Central Bank of Nigeria Statistical Bulletin (2018) and National Bureau of Statistic. The data were analyzed using vector error correction method. The result show that both price and income elasticities are statistically significant. The study reviews the relationship between price and income elasticities of domestic petrol, while this current study examines the impact of dynamics of petrol pump price in productivity of Nigeria.

Ezuem and Ejeka (2024) examined the impact of petroleum product price adjustment and Nigeria economic performance between 1984 – 2023. Secondary data were extracted from the National Bureau of Statistic. The data extracted were analyzed using multiple regression. The result shows strong relationship exist between PMS, AGO and GDP, while semi-strong relationship exists between DPK and GDP.

Ogboru, et al. (2016) examined the impact of changes in crude oil prices on economic growth in Nigeria from 1986 and 2015. Secondary data were extracted from World Bank Development Indicators, National Bureau Statistic, Central Bank Nigeria Statistical Bulletin. The data extracted were analyzed using vector error correction model (VECM). The result show that positive and unidirectional relationship exist between petrol prices and GDP growth rate. The study reviews the relationship between crude oil prices

and economic growth in Nigeria while this current study focuses on the impact of dynamics of petrol pump prices in the productivity of Nigeria.

3. Methodology

Research Design

The research design adopted for this study is ex-post facto research design. Ex-post facto design was used because the phenomenon is a past event that has

already taken place. This is because data use in this study is in existence and is documented in bulletin of Nigeria Bureau of Statistic and CBN Bulletin

Sources and Method of Data Collection

The study used secondary data. The study extracted the data from bulletin of Nigeria Bureau of Statistic (NBS) and bulletin of Central Bank of Nigeria (CBN). The data is source for a period of thirty year ranging from 2013 to 2024. This period was covered due to availability of data of petrol product pump price ad productivity index.

Table 1: Variable Measurement

Variable	Acronym	measurement	source
Productivity	PRD	totaloutput/total input	Antle and Capalbo (1988)
Petrol product price	PPPM	Prices of petrol over 10 years period	Nigerian bureau of statistics (NBS)
Kerosine product price	KPPM	Prices of petrol over 10 years period	Nigerian bureau of statistics (NBS)
Diesel product price	DPPM	Prices of petrol over 10 years period	Nigerian bureau of statistics (NBS)

Note: Authors compilation 2025

Model Specification

The model used in this study is multiple regression model. The model was adapted from the model of Clementina et. al...(2019)

$$PRD = \beta + PPPM + KPPM + DPPM + e$$

Where:

PRD = Productivity

PPPM = Petrol Pump Price Movement

KPPM = Kerosine Pump Price Movement

DPPM = Diesel Pump Price Movement

Method of Data Analysis

Data collected were subject to various statistical analyses such as descriptive statistic, correlation matrix, and multiple regression

Regression Techniques

After the descriptive statistic of the data and correlation matrix is carried out to determine summary of statistics and association between two variables, multiple regression was carried out with help of STATA was to determine the impact of petroleum product price fluctuation and productivity in Nigeria.

Result and Discussion

Descriptive Statistics

Descriptive statistics shows the mean, minimum, maximum and standard deviation.

From the table, Premium motor spirit (PMS) has average mean of 274.2038 and minimum value of 87, maximum value of 1189.12 while the standard deviation is

Table 2: Descriptive

Variable	year	PMS	DPK	AGO	PRDY
Obs	12	12	12	12	12
Mean	2018.5	274.2038	503.2008	428.0208	7.979167
Minimum	2013	87	145	155	5.76
Maximum	2024	1189.12	1555.11	1441.28	10.63
Standard Deviation	3.605551	327.6395	477.6126	425.1534	1.365706

Data on the table1 above are descriptive statistics for four variables -Dual purpose kerosene (DPK), Premium motor spirit (PMS), Automotive gas oil (AGO) based on 12years observations for each variable (both dependent and independent variables). The statistic includes the mean, minimum, maximum values, which provide perception on the central tendency, dispersion, and range of the data.

327.6395.

From the table, Dual purpose kerosene (DPK) has average mean of 503.2008 and a minimum value of 145, maximum value of 1555.11 while the standard deviation is 477.6126.

From the table, Automotive gas oil (ago) has an average mean of 428.0208, and a minimum value of 155, maximum value of 1441.28 while the standard deviation is 425.1534.

Table 3: Correlation matrix

	PRDY	PMS	DPK	AGO
PRDY	1.0000			
PMS	-0.1233	1.0000		
DPK	-0.3167	0.9351	1.0000	
AGO	-0.1812	0.9223	0.9775	1.0000

The table above shows the result of the Pearson correlation matrix for Premium motor spirit (PMS), Dual purpose kerosene (DPK), Automotive gas oil (AGO).

The correlation between PRDY and DPK ($r = -0.3167$) is negative, indicating that as kerosene prices increase, national productivity tends to decline. This suggests that a constant increase in the price of DPK, will lead to a continuous fall in the productivity level of the Nigeria

(i.e., as DPK continue to increase, productivity continues to decrease)

The correlation between PRDY and AGO ($r = -0.1812$) is also negative. This implies that increases in diesel prices are associated with a mild decline in productivity. In this sense, Diesel is commonly use in powering industrial machinery, transportation, and generators, etc. the negative sign reflects potential cost pressure on the productive sector of the

economy, also leading to a potential decrease in productivity of the economy at large.

The correlation of PRDY and PMS, also show a negative correlation ($r = -0.1233$). Petrol is widely used not just by industries, also in private transport, public transport, and house hold. Effect on overall productivity is negative.

Importantly, the correlation between PMS and DPK ($r = 0.9351$), PMS and AGO ($r = 0.9223$), DPK and AGO ($r = 0.9775$) are all very strong and positive. These high correlations among the independent variables suggest a significant degree of

Table 4: Regression Analysis

Source	SS	Df	MS	Number of obs	=	12
Model	13.3436229	3	4.44787429	F(3, 8)	=	4.96
Residual	7.1730688	8	.8966336	Prob > F	=	0.0312
				R-squared	=	0.6504
				Adj R-squared	=	0.5193
Total	20.5166917	11	1.86515379	Root MSE	=	.94691

PRDY	Coefficien t	Std. err.	t	P> t	[95% conf. interval]
PMS	.0050069	.0024732	2.02	0.078	-.0006964 .0107101
DPK	-.0115725	.0031111	-3.72	0.006	-.0187467 -.0043983
AGO	-.0085676	.003205	2.67	0.028	.0011769 .0159583
_cons	8.762433	.4240205	20.67	0.000	7.78464 9.740225

The results of the multiple regression analysis examining the impact of petroleum product pump prices specifically Premium Motor Spirit (PMS), Dual Purpose Kerosene (DPK), and Automotive Gas Oil (AGO) on Nigeria's productivity (PRDY) are reported and interpreted below. The regression model is statistically significant with an **F-statistic of 4.96** and a **p-value of 0.0312**, indicating that the explanatory variables jointly have a meaningful effect on productivity at the 5% significance level.

multicollinearity, where movements in one fuel price are closely tied to movements in the others. The correlation analysis reveals that petroleum product prices are negatively associated with productivity in Nigeria.

The correlation analysis shows the negative impact of petroleum product price fluctuation on the productivity of Nigeria, signifying that as the prices of these products rise, there will be high decline in the overall productivity level of the economy.

The **R-squared value of 0.6504** implies that approximately **65.04% of the variation in productivity** is explained by the combined influence of PMS, DPK, and AGO. The **adjusted R-squared of 0.5193** confirms the model's robustness after correcting for the number of predictors and the sample size ($n = 12$). These results support the adequacy of the model for inferential analysis and policy implications.

Coefficient-Level Interpretation for DPK (kerosene), the coefficient is **0.0116**, with a **t-statistic of -3.72** and a **p-value of 0.006**, making it highly significant at the 1% level. The 95% confidence interval ranges from -0.0187 to -0.0044. This indicates a strong

negative relationship between kerosene prices and productivity. In practical terms, a ₦1 increase in the pump price of kerosene is associated with a **0.0116 unit decrease** in productivity, all else being equal. This outcome reflects the essential role of kerosene in powering household energy and small-scale informal businesses in Nigeria. As kerosene prices rise, operational costs for these sectors increase, leading to a decline in their productive output and consequently impacting national productivity levels.

The coefficient for **AGO (diesel)** is **0.0086**, with a **t-statistic of 2.67** and a **p-value of 0.028**, which is significant at the 5% level. The 95% confidence interval lies between 0.0012 and -0.0160. This result implies a **negative and statistically**

The **intercept (constant term)** is **8.7624**, with a **t-statistic of 20.67** and a **p-value less than 0.001**, signifying strong statistical significance. This indicates that when all independent variables are held at zero, the baseline productivity level is estimated to be 8.76 units. Although the constant term lacks direct economic interpretation, it provides a technical foundation for model prediction.

Collectively, the regression outcomes reveal a **differentiated impact** of petroleum product pricing on national productivity. **Kerosene prices exert a negative effect**, underscoring the vulnerability of household-level and informal sector productivity to rising energy costs. Conversely, **diesel prices have a negative association**, reflecting the linkage between diesel consumption and industrial-scale output. The effect of **petrol prices is positive but less pronounced**, suggesting limited or mixed influence across economic sectors. These findings offer crucial policy insights. Regulatory focus should be placed on **stabilizing kerosene prices and diesel prices** to protect low-income populations,

significant effect of diesel prices on productivity. While it means that as AGO (diesel) price increase reduce productivity in Nigeria.

For **PMS (petrol)**, the coefficient is **0.0050**, with a **t-statistic of 2.02** and a **p-value of 0.078**, indicating marginal statistical significance at the 10% level. The confidence interval ranges from -0.0007 to 0.0107. This result suggests a **positive but weak association** between petrol prices and productivity. Petrol's role in powering transport and small generators especially for urban dwellers and microenterprises may explain this positive linkage. However, due to the borderline significance, the impact should be interpreted cautiously and may warrant further investigation with broader data.

informal producers and manufacturers at large. Simultaneously,

Discussion of Findings

The results from the multiple regression analysis serve as the foundation for this discussion. The analysis assessed the influence of Premium Motor Spirit (PMS), Dual Purpose Kerosene (DPK), and Automotive Gas Oil (AGO) on Nigeria's national productivity (PRDY).

Productivity and Kerosene (DPK)

The regression results show that kerosene price has a statistically significant negative relationship with productivity. This implies that an increase in the pump price of kerosene leads to a decline in Nigeria's productivity level. This finding suggests that higher kerosene prices, which predominantly affect households and small-scale informal sector operations, hinder economic efficiency and reduce the productive engagement of low-income populations. This result is consistent with the findings of Maku and Adetowubo-King (2018), who found that petroleum product price increases, particularly

kerosene, reduce human welfare in Nigeria. Similarly, Gatawa and Zakari (2017) also reported that petroleum price shocks negatively affect household welfare and small-scale productivity in Nigeria. Thus, the current study confirms earlier conclusions that kerosene affordability is crucial for sustaining inclusive productivity growth.

Productivity and Diesel (AGO)

The analysis indicates that diesel price exhibits a statistically significant positive relationship with productivity. This suggests that an increase in diesel price is associated with decreased productivity. This contradicts the findings of Olawumi, & Oriola (2020) who reported that energy consumption, particularly petroleum products, is positively associated with industrial output growth in Nigeria. Diesel is widely used in powering industrial generators and transporting goods and services across Nigeria, especially in the absence of reliable electricity.

Productivity and Petrol (PMS)

Petrol price demonstrates a positive but marginally significant relationship with productivity. Although the result is not statistically significant at the 5% level, it still suggests that higher petrol prices may be loosely associated with increased productivity. This could be attributed to the role of petrol in enabling urban transportation, powering small-scale generators, and supporting micro-enterprises. This result is in line with the findings of Orlu (2017), who reported that fluctuation in petrol prices have a moderate impact on small business outputs and services-based economic activities. Petrol price movements influence GDP growth in Nigeria, although the long-run effect is often negative. However, the result stands in contrast with Akinleye and Ekpo (2013), who found that increase in petrol prices negatively affects economic growth in Nigeria, primarily due to the

rising cost burden imposed on transportation and informal sectors operations. The discrepancy in findings may be attributed to sectorial variations and regional differences in petrol usage intensity.

5. Conclusion and Recommendation

Based on the findings, the study concludes that dynamic in dual purpose kerosine and AGO(diesel) price have significant negative influence on productivity in Nigeria. While petrol price has insignificant positive effect on productivity in Nigeria., The results further imply that continuous increase in dual purpose kerosine and diesel price will result in low productivity among informal sector, household and manufacturer which may result to poor standard of living on household that depend on kerosene and manufacturers may lay off workers due to continuous rise in diesel and its negative impact on productivity.

The study recommends that government should subsidize diesel price for manufacturers in Nigeria which will lead to increase in productivity and employment rate and reduction in the price of manufacturing product. Additionally, government should encourage investments in the establishment of more refineries, which will result in petrol and kerosene price reductions, ultimately leading to increased productivity of household and standard of living in Nigeria.

Reference

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