

FUEL SUBSIDY REMOVAL AND SME'S PERFORMANCE IN EDO STATE, NIGERIA

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ABSTRACT

This study investigates the relationship between fuel subsidy removal and the performance of Small and Medium Enterprises (SMEs) in Edo State, Nigeria, with specific objectives centered on assessing how increased fuel production costs impact operational efficiency, how supply chain costs influence profitability, and how financing costs affect SME growth rates. Adopting a survey research design, the study focused on 929 registered SMEs, selecting a sample of 164 through stratified random sampling to ensure representation across different sectors. Data collected were analyzed using multiple regression analysis, finding from the study revealed that; rising production costs due to fuel subsidy removal diminished operational efficiency by increasing overhead expenses, inflated supply chain costs reduced profit margins due to higher transportation and logistics expenses, and increased financing costs, driven by higher fuel-dependent operational loans, stifled business expansion and growth. The study concludes that the removal of fuel subsidies has exacerbated financial pressures on SMEs, constraining their productivity and sustainability. To alleviate these challenges, the study recommends proactive government interventions, including targeted financial aid such as low-interest loans or grants, the promotion of subsidized renewable energy alternatives to reduce dependency on fuel, and the implementation of price stabilization policies to cushion SMEs from volatile fuel prices. These measures would help sustain SME operations, foster profitability, and stimulate economic growth in Benin-City and Edo State at large.

KEYWORDS: Fuel, Subsidy, Removal, Increase Production Cost, Supply Chain Costs, Financing Cost, SMEs Operational Efficiency, Profitability, Growth Rate.

INTRODUCTION

Fuel subsidy removal in Nigeria has long been a controversial economic policy due to its deep socio-economic implications. For decades, the government maintained subsidies to keep petrol prices low and shield citizens from volatile global oil prices, especially benefiting low-income households. However, the policy became fiscally unsustainable as the cost ballooned into trillions of naira annually, diverting resources from essential sectors like health, education, and infrastructure. Additionally, corruption, inefficiency, and smuggling plagued the subsidy system, enriching a few at the expense of the public. Economists and reform advocates have thus supported its removal, arguing that, if properly managed, it could free up resources for development, attract private investment, and promote long-term economic stability.

The removal of fuel subsidies places immense pressure on Small and Medium Enterprises (SMEs) by drastically increasing their cost of production, disrupting supply chain stability, and escalating financing costs, all of which undermine their overall performance. The immediate surge in fuel prices raises transportation and energy expenses, directly inflating the cost of raw materials and manufacturing processes. For SMEs operating with limited financial buffers, this spike in operational costs forces difficult compromises such as reducing workforce hours, cutting production volumes, or sacrificing product quality just to stay afloat. Additionally, the ripple effect of higher fuel costs disrupts supply chains, as logistics providers pass on increased freight charges to SMEs, further straining their already tight budgets; many SMEs, unable to fully transfer these additional costs to price-sensitive consumers, see their profit margins shrink, jeopardizing their financial sustainability (Titus et al., 2024).

Small and Medium Scale Enterprises (SMEs) in Nigeria play a crucial role in economic growth, employment generation, and poverty alleviation, contributing about 48% of the national GDP and accounting for over 80% of jobs in the country. However, despite their significance, SMEs in Nigeria face numerous challenges, including limited access to finance, poor infrastructure, inconsistent government policies, and high operational costs, which hinder their productivity and sustainability. While some sectors, such as trade, agriculture, and services, have shown resilience and adaptability, many SMEs struggle with low competitiveness, inadequate managerial skills, and difficulties in adopting modern technologies. The performance of these enterprises varies across regions, with urban-based SMEs generally faring better due to improved access to markets and financial services, whereas rural SMEs often grapple with greater constraints. Government interventions and private-sector initiatives have provided some support, but systemic bottlenecks continue to limit the full potential of Nigeria's SME sector in driving inclusive economic development (Rufai et al., 2023).

Beyond production and supply chain challenges, fuel subsidy removal exacerbates macroeconomic instability, leading to higher inflation and increased borrowing costs. As central banks raise interest rates to curb inflation, SMEs—which often rely on loans for working capital and expansion—face steeper financing costs, reducing their access to credit, this credit constraint stifles growth opportunities, preventing SMEs from investing in technology, hiring skilled labor, or scaling operations. The cumulative effect of these financial strains weakens SMEs' competitiveness, pushing many toward insolvency. Given that SMEs are critical to employment generation and economic diversification, their struggles under subsidy removal policies pose broader risks to economic stability

and inclusive growth, particularly in developing economies where alternative energy and financial solutions remain inadequate (Gamette & Oteng, 2024).

The major objective of the study is to examine the Fuel Subsidy Removal and SME's Performance in Edo State. While the specific objectives are to:

- i. examine the effect of increase production cost on the operational efficiency of SME's in Edo State.
- ii. determine the effect of supply chain costs on the profitability of SME's in Edo State.
- iii. evaluate the effect of financing cost on the growth rate of SMEs in Edo State.

The following questions were raised to address the above objectives:

- i. What is the effect of increase production costs on the operational efficiency of SMEs in Edo State?
- ii. To what extent does an increase in supply chain costs affect the profitability of SMEs in Edo State?
- iii. To what extent does increase financing costs influence the growth rate of SMEs in Edo State?

The research aimed to test the following hypotheses:

- H0₁: Increase production costs do not have effect on the operational efficiency of SMEs in Edo State
 H0₂: Increase supply chain costs do not have effect on the profitability of SMEs in Edo State.
 H0₃: Hike financing costs of fuel do not have effect on the growth rate of SMEs in Edo State.

LITERATURE REVIEW

CONCEPTUAL FRAMEWORK

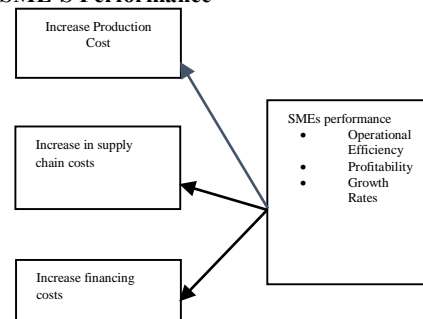
Concept of Fuel Subsidy

Fuel subsidy refers to a government's financial intervention aimed at reducing the cost of fuel for consumers by offsetting part of the market price through mechanisms such as direct payments to fuel suppliers, tax waivers, or regulated price caps that maintain retail prices below market value. The policy seeks to enhance energy affordability, bolster economic productivity by lowering transportation and production costs, and insulate populations from the shocks of fluctuating global oil prices; while beneficial in the short term, these subsidies impose significant fiscal burdens on national budgets, often consuming funds that could be allocated to healthcare, education, or infrastructure. Additionally, they distort market dynamics by discouraging efficiency improvements in the energy sector, fostering over-consumption, and undermining investments in renewable energy alternatives. Over time, the economic inefficiencies and fiscal pressures associated with fuel subsidies frequently prompt reforms, though their removal requires careful implementation to mitigate adverse impacts on vulnerable groups and inflation (Iyoha & Oriakhi, 2020).

Fuel subsidies are used by governments as a means to maintain social stability and political support by ensuring citizens have access to affordable petroleum products essential for transportation, industry, and household energy needs. In resource-rich countries like Nigeria, such subsidies act as part of an unwritten social contract, allowing citizens to benefit from national resource wealth. However, while they provide short-term relief, subsidies place heavy strain on public finances, discourage energy efficiency, and tend to favor wealthier individuals who consume more fuel. Efforts to reform or remove subsidies often spark public unrest, as seen in Nigeria (2012) and Ecuador (2019), where sharp price increases led to mass protests and policy reversals. This tension forces governments to navigate between fiscal sustainability and social acceptance, highlighting the need for gradual

subsidy removal paired with well-targeted welfare measures to protect vulnerable groups and promote long-term economic resilience.

Conceptual Model of Fuel Subsidy Removal and SME'S Performance



Source: (Ikechukwu et al., 2025)

Increase Production Cost and the Operational Efficiency of SMEs in Nigeria

The sharp rise in fuel supply chain costs has severely undermined the profitability and sustainability of Nigerian SMEs, as fuel remains essential for transportation, production, and power generation. Factors such as global crude oil price volatility, inefficient local distribution, and naira depreciation have significantly inflated petroleum costs, forcing SMEs to either absorb losses or raise prices at the risk of losing customers. This cost surge has triggered a vicious economic cycle: transporters increase fees, SMEs pass costs to consumers, and inflation reduces purchasing power, further weakening market demand. Sectors like agriculture and manufacturing have been especially hard hit, facing higher input and logistics expenses that disrupt entire value chains; the uncertainty of fuel prices has also stifled investment and expansion plans among SMEs. Without strategic interventions such as improved local refining, better logistics infrastructure, and targeted fuel support programs, these escalating costs threaten to suffocate Nigeria's small business sector and erode its contribution to national economic growth.

Increase Supply Chain Costs and the Profitability of SMEs in Nigeria

The persistent rise in supply chain fuel costs has created a severe economic strain on Nigerian SMEs, diminishing their operational efficiency, profitability, and overall competitiveness, as a vital production input, fuel influences nearly every aspect of business operations from sourcing raw materials to powering machinery and transporting goods to markets. With escalating fuel prices, SMEs face increased logistics and energy costs that ripple across their entire value chain, eroding profit margins and restricting cash flow; many small businesses, lacking financial resilience and economies of scale, are unable to absorb these shocks or pass on costs without losing customers to cheaper alternatives. The instability in fuel supply and price volatility further compounds operational uncertainty, leading to delays, reduced productivity, and in extreme cases, business closures. This situation undermines the capacity of SMEs to expand, invest in innovation, or create jobs, thereby weakening their contribution to national economic growth. Addressing this challenge requires robust policy measures, including investments in efficient transport infrastructure, support for renewable energy adoption, and targeted financial

assistance to cushion SMEs against fuel-induced cost pressures.

Increase Financing Cost and the Growth Rate of SMEs

The high financing cost of fuel poses a major obstacle to the growth and sustainability of SMEs in Nigeria, largely because unreliable electricity supply forces most businesses to depend on costly fuel-powered generators; with high interest rates on loans and credit facilities used to purchase fuel, operational expenses escalate sharply, tightening already limited cash flows and reducing funds available for business expansion, innovation, or workforce growth; the volatility of fuel prices adds further uncertainty, making financial planning difficult and often forcing SMEs to either absorb losses or raise prices both of which undermine competitiveness, this situation discourages entrepreneurship, constrains productivity, and contributes to unemployment as many SMEs downsize or close; lack of affordable financing options and limited access to renewable energy solutions further deepens this dependency, trapping businesses in a cycle of high costs and low returns. Therefore, policy interventions such as concessional loans, subsidies for alternative energy adoption, and sustained investment in power infrastructure are crucial to reducing fuel financing burdens and fostering a stable, growth-oriented environment for Nigerian SMEs.

Factors Influencing Entrepreneurial Performance of Bakeries

The performance of bakeries is influenced by a variety of factors that determine their efficiency, profitability, and sustainability. Elements such as access to finance, technical and managerial skills, innovation, market competition, and government policies play critical roles in shaping outcomes (Udoh et al., 2017).

Access to Finance: One of the most critical factors influencing entrepreneurial performance is access to finance. Entrepreneurs require adequate funds to establish, operate, and expand their businesses. Limited access to capital can restrict the purchase of equipment, raw materials, and other essential resources, thereby reducing production capacity and competitiveness. Conversely, entrepreneurs with sufficient financial resources are better positioned to invest in innovation, marketing, and technology, which enhance performance and long-term sustainability (Ikechukwu et al., 2025).

Skill Acquisition and Competence: The level of skill and competence possessed by an entrepreneur greatly determines business performance. Technical skills ensure quality production, managerial skills improve efficiency and decision-making, while marketing and financial skills enhance customer engagement and resource management. Entrepreneurs with diverse and up-to-date skills are more innovative and adaptable to changes in the business environment, which translates to improved profitability, customer satisfaction, and growth (Adeniyi & Mukoro, 2025).

Market Environment and Competition: The external market environment also influences entrepreneurial performance. Factors such as consumer demand, market trends, competition, and customer preferences shape how businesses operate. Entrepreneurs who understand market dynamics and respond swiftly through product innovation, quality improvement, and effective marketing strategies are more likely to outperform competitors. On the other hand, businesses that fail to adapt to market changes risk losing relevance and profitability (Usmana et al. (2025).

Government Policies and Infrastructure: Supportive government policies and good infrastructure play a vital role in enhancing entrepreneurial performance. Policies

that provide access to credit, tax incentives, and training programs create a favorable environment for businesses to thrive. Similarly, reliable infrastructure such as stable electricity, good transportation systems, and digital connectivity enables entrepreneurs to reduce costs, increase efficiency, and reach wider markets. In contrast, poor infrastructure and unfavorable policies hinder productivity and discourage business expansion (Odeyemi et al., 2024).

Innovation and Technology Adoption: Innovation and the adoption of modern technology significantly boost entrepreneurial performance by enabling efficiency, creativity, and competitiveness. Entrepreneurs who embrace digital tools, modern production methods, and online marketing platforms are able to expand their customer base, improve service delivery, and reduce operational costs. Innovation also allows businesses to differentiate their products, meet evolving customer needs, and sustain long-term growth in dynamic markets. Without innovation and technology adoption, entrepreneurial performance often stagnates, leaving businesses vulnerable to competition (Salami et al., 2023).

Measurement of SMEs Performance

Financial Performance Metrics: Financial performance metrics are essential for evaluating the viability and growth potential of SMEs. Profitability ratios, such as net profit margin and return on investment (ROI), indicate how efficiently a business turns sales into profit, while liquidity ratios like the current and quick ratios measure the firm's capacity to meet short-term obligations. Solvency ratios, including the debt-to-equity ratio, assess long-term financial stability and leverage risks. Strong financial indicators not only build investor and lender confidence but also support reinvestment in business expansion, technology, and employee development. Consistent financial analysis enables SMEs to manage cash flow effectively, identify inefficiencies, and ensure long-term sustainability in a competitive environment (Agbim, 2020).

Operational Efficiency and Productivity: Operational efficiency measures how effectively an SME uses its resources to produce output, while productivity metrics like revenue per employee and inventory turnover reveal workforce and supply chain performance. High inventory turnover reflects strong sales and efficient stock management, whereas low turnover signals inefficiency or weak demand. Metrics such as production lead time, order fulfillment speed, and customer satisfaction scores also indicate process effectiveness. SMEs that adopt lean management, automation, or ERP systems often achieve greater productivity by minimizing waste and improving scalability. Regularly tracking these indicators helps businesses streamline operations, enhance service quality, and strengthen competitiveness (Ihenyen & Ekpoamumemi, (2024).

Market Performance and Growth: Market performance and growth assess how well an SME competes and expands in its industry. Key indicators include sales growth rate, market share, customer acquisition cost, brand awareness, and customer retention rate. These metrics reveal demand trends, marketing efficiency, and brand loyalty. SMEs that analyze data to refine pricing, target niche markets, and optimize marketing achieve stronger market positions. Reinvesting profits into innovation, expansion, or product diversification enhances sustainability and resilience against market fluctuations (Nwokocha & Madu, 2020).

Innovation and Adaptability: Innovation and Adaptability enable SMEs to stay competitive in changing markets through R&D investment, new product development, and technology adoption. Adaptable firms quickly adjust to market shifts and emerging trends, enhancing efficiency and resilience. Tools like the Global Innovation Index help measure progress, while SMEs that foster creativity and embrace digital transformation often turn challenges into growth opportunities. (Effiom&Edet, 2020).

Sustainability and Social Impact: Sustainability and social impact have become essential drivers of SME competitiveness and longevity, as stakeholders increasingly value ethical and environmentally responsible operations. By integrating Environmental, Social, and Governance (ESG) principles, SMEs can minimize ecological footprints through cleaner energy use, waste reduction, and sustainable sourcing. Socially, investing in employee welfare, inclusivity, and community development strengthens corporate reputation and loyalty. Good governance marked by transparency, accountability, and anti-corruption measures enhances investor confidence and compliance with global standards. Ultimately, SMEs that align profitability with sustainability not only gain financial and reputational advantages but also contribute meaningfully to broader environmental and social well-being (JamiluBaita & DattijoAdhama, 2020).

Theoretical Framework

The Theory of Cost-Push Inflation serves as a key theoretical framework for analyzing the impact of fuel subsidy removal on SMEs because it explains how rising production costs—triggered by higher fuel prices lead to increased prices of goods and services, thereby reducing profitability and competitiveness for small businesses. When subsidies are removed, fuel prices surge, directly increasing transportation, energy, and raw material costs for SMEs, which often lack the financial buffer to absorb these shocks this cost escalation forces SMEs to either raise prices (risking lower demand) or cut production (reducing output and employment), both of which stifle performance.

Empirical Review

Adeniran & Sidiq (2023) investigate the impact of Fuel Subsidy Removal on Small and Medium Enterprises (SMEs) in Lagos Metropolis commercial hubLagos State, Nigeria. The research adopted a survey research design. The target population was 5,000 registered SMEs in the Lagos Metropolitan area, from which a sample size of 370 was derived using the Taro Yamane sampling formula, with a simple random sampling technique employed for selection. Primary data was collected through a structured questionnaire. The method of data analysis was both descriptive and inferential statistics, specifically employing Ordinary Least Squares (OLS) regression. The Statistical Package for Social Sciences (SPSS version 25) was used for analysis. The major finding was a significant negative relationship between fuel subsidy removal and key SME performance indicators like profitability and operational capacity, as increased fuel and transportation costs severely eroded profit margins. The study concluded that the policy shock destabilized SMEs in Lagos, making them less competitive. Consequently, the authors recommended that the government implement targeted palliative measures, such as streamlined loan schemes and

investments in public transportation, to cushion the adverse effects on the SME sector.

Adeoye and Mohammed (2023) examined the effect of fuel subsidy removal on the performance of micro-enterprises in the transport and hospitality sectors (hotels and restaurants) in Kano State. The researchers employed a cross-sectional survey design. The population of the study comprised 850 owners of micro-enterprises registered with the Kano State Chamber of Commerce. A sample of 265 was drawn using the Taro Yamane formula and a stratified random sampling technique to ensure representation from both sectors. Data was collected via questionnaires and analyzed using multiple regression analysis to determine the specific impact on revenue and employment levels. The Statistical Package for the Social Sciences (SPSS version 26) was used for the analysis. The study's major finding revealed that the subsidy removal led to a drastic reduction in customer patronage and a significant increase in operational costs, forcing many enterprises to downsize their workforce. The authors concluded that the policy exacerbated the economic vulnerability of micro-enterprises in Kano. They recommended that federal and state governments should facilitate the provision of compressed natural gas (CNG) vehicles and generators at subsidized rates to reduce the reliance on premium motor spirit (PMS) and thus enhance the resilience of these critical sectors.

Akinwumi and Ojo (2022) investigated the impact of fuel subsidy removal on small-scale enterprises in Lagos State, Nigeria. Focusing specifically on small-scale manufacturers and retailers, the research adopted a survey research design. The target population was 1,500 registered SMEs in the Ikeja and Surulere local government areas. A sample size of 300 SMEs was selected using a simple random sampling technique. Primary data was collected through structured questionnaires. The method of data analysis was both descriptive and inferential statistics, employing Ordinary Least Squares (OLS) regression. The analysis was conducted using the Statistical Package for the Social Sciences (SPSS version 25). The major finding was a strong negative and significant relationship between fuel subsidy removal and key performance indicators of the SMEs, including profitability and operational capacity, due to a sharp increase in production and transportation costs. The study concluded that the removal of the subsidy severely crippled the operational efficiency and survival of the surveyed SMEs. Consequently, it recommended that the government should implement targeted palliative measures, such as providing access to cheap credit and improving public infrastructure, to cushion the adverse effects on small-scale businesses before considering subsidy removal.

LiteratureGap

Despite growing research on fuel subsidy reforms, few studies specifically examine the heterogeneous impacts on SMEs across different sectors and regions in Nigeria. For instance, Okonkwo et al. (2015) broadly analyzed macroeconomic effects but overlooked sector-specific vulnerabilities, such as how manufacturing SMEs compare to agribusinesses in adapting to energy cost shocks. Additionally, Nwachukwu and Odigie (2019) explored general SME resilience but did not empirically measure the role of digitalization or renewable energy adoption as mitigation strategies post-subsidy removal. This leaves a critical gap in understanding which SME subsectors are

most at risk and what adaptive measures (e.g., technology, alternative energy) yield the best survival rates. Furthermore, while Okafor (2020) and Eze and Ani (2021) highlighted the inflationary consequences of subsidy removal, their studies failed to disaggregate data by SME size (micro vs. small vs. medium) or geographic location (urban vs. rural). For example, SMEs in Benin City a hub for agro-processing and trade may face unique logistical challenges compared to Lagos-based tech startups, yet such nuances remain underexplored. Adegbite et al. (2022) called for policy interventions but provided no framework for evaluating the effectiveness of government palliatives (e.g., grants, tax relief) on SME recovery. This gap underscores the need for granular, context-specific research to guide targeted support programs for SMEs in Nigeria's post-subsidy economy.

METHODOLOGY

The study adopted a survey research design to examine the relationship between fuel subsidy removal and the performance of SMEs in Benin City, Edo State. This quantitative approach involved administering structured questionnaires to a purposively selected sample of SME owners across various sectors to collect data on key performance indicators such as operational costs, profit margins, sales volume, and business sustainability before and after the fuel subsidy removal. The population of the study is taken from a comprehensive list of all registered Small and Medium Enterprises companies in Benin-City, Edo State to be 929 since there has been no survey conducted since 2010 to ascertain the total number of registered SMEs, this study relied on the results of the List of Companies in Benin-City Metropolis, Edo State 2010. This study's sample was calculated using an approach proposed by Taro Yamane (1967) and cited by Israel (2013).

Sample size formula:

$$n = \frac{N}{1 + Ne^2}$$

Where: n = sample size

N= population size

e= sample error level of significance

l = constant

$$n = \frac{929}{1 + 929(0.05)^2}$$

$$n = \frac{929}{1 + 4.645}$$

$$n = 164$$

The sample size for this study base on the above computation is 164

RESULT AND DISCUSSION

Testing of Hypotheses

Testing of Hypotheses

H0₁: Increase production costs do not have effect on the operational efficiency of SMEs in Edo State

H0₂: Increase supply chain costs do not have effect on the profitability of SMEs in Edo State.

H0₃: Hike financing costs do not have effect on the growth rate of SMEs in Edo State.

Table 1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.970 ^a	.941	.939	.26666

a. Predictors: (Constant), Hike Production Cost, Supply Chain Cost, Hike Financing Cost

Table 1 shows the results of a regression analysis exploring how increased production costs, higher supply chain expenses, and rising financing costs influence the outcome variable. The high R value (0.970) reveals a very strong connection between these factors and the outcome, meaning changes in these costs are closely linked to changes in performance. Similarly, the R Square value (0.941) indicates that about 94.1% of the variations in the outcome can be explained by the model, showing that it captures most of the influencing factors quite well. The Adjusted R Square (0.939) confirms the model's reliability, even after accounting for its complexity, while the low Standard Error (0.26666) suggests that the predictions are fairly accurate. In essence, the analysis shows that the three predictors together have a powerful and consistent effect on the dependent variable.

Table 2: Analysis of Variance (ANOVA^a)

Model	Sum of Squares	df	Mean Square	F	Sig.
1					
Regression	180.118	3	60.039	844.324	.000 ^b
Residual	11.378	160	.071		
Total	191.496	163			

a. Dependent Variable: SMEs Performance (Operational Efficiency, Profitability, Growth Rate)

b. Predictors: (Constant), Hike Production Cost, Supply Chain Cost, Hike Financing Cost

The ANOVA results in Table 2 show that the regression model is highly effective in predicting the performance of SMEs, measured through operational efficiency, profitability, and growth rate. The Regression Sum of Squares (180.118) shows how much of the variation in SME performance is explained by the model, while the smaller Residual Sum of Squares (11.378) represents the portion that remains unexplained. The very high F-statistic value (844.324) and the highly significant p-value (.000) indicate that the model's predictors hike in production cost, supply chain cost, and financing cost together have a strong and meaningful impact on how well SMEs perform. In simple terms, the results confirm that rising business costs significantly shape the overall performance of small and medium enterprises.

Table 3: Coefficients^a

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.		
	B	Std. Error	Beta			
	(Constant)	.462	.061		-7.615	.000
1	Increase Production Cost of Fuel	.489	.039	.453	12.660	.000
	Increase Supply Chain Cost	.398	.044	.371	9.117	.000
	Hike Financing Cost of Fuel	.220	.039	.209	5.716	.000

a. Dependent Variable: SMEs Performance (Operational Efficiency, Profitability, Growth Rate)

The regression results in Table 3 demonstrate that all three fuel-related cost variables significantly predict SME performance ($p < 0.001$), with the increase in production cost of fuel ($\beta = 0.453$, $t = 12.660$) having the strongest standardized effect, followed by supply chain costs ($\beta = 0.371$, $t = 9.117$) and financing costs ($\beta = 0.209$, $t = 5.716$).

The negative constant ($B = -0.462$) suggests that SME performance would be below baseline in the absence of these cost pressures. The highly significant coefficients (all $p = 0.000$) indicate that rising fuel costs across production, supply chain, and financing dimensions each independently and substantially reduce SME operational efficiency, profitability, and growth rate, with production costs emerging as the most impactful factor. The findings underscore how fuel cost escalations in Nigeria's business environment systematically constrain SME performance across multiple operational dimensions.

Discussion of Findings

This section deals with the explanations of the results obtained from the analysis of the research questions tested in the previous section and discussion of responses from the administered questionnaires to the respondents. Multiple regression analysis was used in analyzing the three hypotheses and required decisions made. In summary, our findings are as follows:

The regression results for Hypothesis One reveal that rising fuel production costs significantly undermine the operational efficiency of SMEs in Nigeria, as shown by the strong positive and statistically significant coefficient ($\beta = 0.453$, $p < 0.001$). Higher production costs reduce profit margins, constrain investments in technology and resources, and compel SMEs to either increase prices or absorb losses, both of which weaken efficiency. This finding aligns with Justina (2024), who noted that persistent cost increases force SMEs to downsize, cut working hours, or use lower-quality inputs, ultimately reducing productivity and customer satisfaction. Additionally, fluctuating costs disrupt supply chains, causing delays and strained supplier relationships. Without access to affordable financing or policy support, SMEs are unable to adopt cost-saving measures or automation, leading to sustained inefficiencies that threaten their long-term survival and competitiveness.

The regression analysis for Hypothesis two reveals that rising fuel supply chain costs significantly reduce the profitability of Nigerian SMEs, as shown by the positive coefficient ($\beta = 0.371$, $p < 0.001$). Higher supply chain expenses increase operational costs and squeeze profit margins, leaving SMEs already operating on thin margins less able to compete or expand. Lacking the bargaining power of larger firms, SMEs face higher costs for transportation, materials, and storage, while disruptions such as delays or shortages further strain finances. As noted by Taiwo et al. (2024), these pressures force SMEs to cut spending on innovation or workforce development, pass costs to consumers at the risk of losing customers, or compromise on quality. Over time, sustained cost hikes can erode profitability, weaken cash flow, and threaten business survival.

The regression analysis for Hypothesis three shows that rising fuel financing costs significantly hinder the growth of Nigerian SMEs, as indicated by the positive and statistically significant coefficient ($\beta = 0.209$, $p < 0.001$). Higher interest rates and debt obligations limit access to affordable capital, reducing funds available for expansion, innovation, and productivity improvements. Since many SMEs depend on credit to finance fuel purchases, increased borrowing costs force them to scale back operations, delay investments, or abandon growth plans altogether. This finding, consistent with Ihenyen and Pouzigha (2024), underscores how expensive financing compels businesses to operate below capacity and miss

opportunities for technological upgrades or market expansion. Ultimately, the study highlights that without affordable and accessible financing solutions, fuel-dependent SMEs will continue to struggle with growth constraints, limiting their contribution to Nigeria's economic development.

Conclusion

While the policy aims to reduce government expenditure and promote economic efficiency, it often imposes significant challenges on small and medium enterprises (SMEs). The immediate rise in fuel prices increases operational costs, leading to higher transportation, production, and logistics expenses, which disproportionately affect SMEs with limited financial resilience. Over time, some SMEs may adapt by optimizing operations or seeking alternative energy sources, but many struggle to remain competitive, leading to reduced profitability, downsizing, or even closures. The long-term impact depends on government mitigation measures, such as targeted financial support, access to affordable energy alternatives, and policies to enhance SME competitiveness. Without such interventions, fuel subsidy removal can stifle SME growth, exacerbate unemployment, and weaken economic diversification, particularly in developing economies where SMEs are critical drivers of employment and innovation.

Recommendations

The study recommended that,

- i. To mitigate rising production costs and maintain operational efficiency, SMEs should adopt cost-saving measures such as lean production techniques and bulk purchasing. Investing in energy-efficient technologies and automation can reduce long-term expenses while boosting productivity. Additionally, leveraging government grants, low-interest loans, and tax incentives can help offset financial pressures and sustain business growth.
- ii. Rising supply chain costs negatively impact the profitability of SMEs by increasing operational expenses and reducing profit margins. To counter this, SMEs should optimize logistics through local supplier partnerships, bulk purchasing, and efficient inventory management. Additionally, leveraging technology (e.g., digital tracking tools) and exploring government-backed logistics support can help reduce costs and sustain profitability.
- iii. Higher financing costs reduce SMEs' access to affordable credit, limiting their ability to invest in expansion, innovation, and working capital, this slows business growth, reduces competitiveness, and may force cost-cutting measures like downsizing or delayed projects. To mitigate this, SMEs should explore alternative funding (grants, venture capital), improve creditworthiness, and adopt cost-efficient financial strategies to sustain growth.

Limitation of the Study

The major limitation of this study lies in its restricted geographical scope, which may limit the generalizability of the findings to other states with different economic structures or policy environments. The study also relied on self-reported data from SME owners and managers, which could be influenced by personal bias or inaccurate recall. Additionally, the cross-sectional design captures the impact of subsidy removal at a specific point in time, without accounting for long-term adaptive responses or

macroeconomic fluctuations. Limited access to accurate secondary data and possible non-response from some participants further constrained the robustness of the analysis, making it difficult to fully capture the diverse effects of fuel subsidy removal on SME operations across sectors.

Suggestion for Further Studies

Future studies on Fuel Subsidy Removal and SMEs' Performance in Edo State, Nigeria should expand their scope to include multiple states or regions for a more comparative and generalizable analysis of how subsidy reforms affect businesses under different socio-economic and infrastructural conditions. Researchers could adopt a longitudinal research design to track changes in SME performance over time, providing a deeper understanding of both the short-term disruptions and long-term adaptations following subsidy removal. In addition, future studies should explore sector-specific effects, as manufacturing, transportation, and retail enterprises may experience varying degrees of impact due to differences in energy dependency and cost structures.

Moreover, future research could integrate both qualitative and quantitative approaches to capture not just the financial outcomes but also the behavioural and strategic responses of SME owners to subsidy reforms. Investigating the mediating roles of government interventions such as grants, tax reliefs, or access to renewable energy alternatives would also provide valuable insights into policy effectiveness. Finally, scholars could examine the role of innovation, technological adoption, and energy efficiency practices as resilience mechanisms helping SMEs mitigate the negative impacts of fuel subsidy removal, thereby contributing to sustainable business development in Nigeria's evolving economic landscape.

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