



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

# IJRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 13, Issue 1, January 2024

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

Impact Factor: 8.423

# Fuel Subsidy Removal Impact on the Performance of Small-Scale and Medium-Sized Engineering Firms in Enugu State Nigeria

<sup>1</sup>Mbah, Christopher Nwankwo, <sup>2</sup>Adamu, Garba Bagam, <sup>3</sup>Ude, Benson

<sup>1</sup>Department of Metallurgical and Materials Engineering, Enugu State University of Science and Technology, Enugu Nigeria

<sup>2</sup>Department of Engineering Management, Enugu State University of Science and Technology, Enugu Nigeria

<sup>3</sup>Department of Chemical Engineering, Enugu State University of Science and Technology, Enugu Nigeria

**ABSTRACT:** A study on fuel subsidy removal impact on the performance of small-scale and medium-sized engineering firms in Enugu State Nigeria has successfully been carried out. Employing a qualitative research design, insights were collected from both small-sized and medium-scaled engineering firms in Enugu state. The sample size of 309 firms was determined through the Yamane Taro method, with the application of a simple random sampling technique for selection. The outcomes of the study unveiled a substantial augmentation in operating costs due to the removal of fuel subsidy, impacting areas such as raw material prices, transportation expenses, energy costs, and overall operational expenditures. This conclusion was supported by an overall mean score of 4.46 in this dimension. Furthermore, the profitability of the firms suffered from the subsidy removal, leading to reduced profit margins, diminished financial performance, and a constrained capacity for investment. An overall mean score of 4.16 was derived from this assessment. In response, the surveyed firms undertook various strategic measures, encompassing cost-cutting initiatives, enhancements in operational efficiency, diversification of products, exploration of alternative energy sources, strategic adjustments in pricing, collaborations, and investments in research and innovation. These strategies were consolidated with an overall mean score of 3.14. Conclusively, the study's empirical findings emphatically underscore the far-reaching repercussions of fuel subsidy removal on both the operating costs and profitability of small-scale and medium-sized engineering firms in Enugu State. In light of these findings, it is recommended that firms accord precedence to the exploration of alternative energy solutions, augment collaborations, and channel investments into research and innovation, thereby ameliorating the adverse implications brought forth by subsidy removal.

## I. INTRODUCTION

With regards to economic policies and their far-reaching consequences, few subjects have sparked as much debate and scrutiny as fuel subsidies in developing nations [1]. These subsidies, intended to cushion the impact of rising energy costs on consumers, have become a double-edged sword, offering temporary relief while burdening governments with mounting financial strains [2]. The delicate balance between subsidizing fuel prices and fostering sustainable economic growth has made the removal of fuel subsidies a crucial yet contentious decision for many nations. This study delves into the heart of this matter, probing the profound implications of fuel subsidy removal on the performance of small-scale and medium-sized engineering firms in the vibrant landscape of Enugu State, Nigeria.

Nigeria, with its rich oil reserves, has long grappled with the complexities of fuel subsidies. These subsidies, though well-intentioned, have often been a drain on public coffers, diverting funds from essential public services [3]. The decision to lift these subsidies is a calculated move aimed at unleashing market dynamics and rationalizing resource allocation. However, the reverberations of this decision are felt not only in government corridors but also within the complex business landscape.

Nestled in the south-eastern part of Nigeria, Enugu State boasts a burgeoning engineering sector that pulsates with entrepreneurial energy. These small-scale and medium-sized engineering firms form the bedrock of local industrialization, contributing to employment, innovation, and economic resilience. The decision to remove fuel subsidies resonates deeply within this sector, casting a shadow of uncertainty over its future trajectory.

The lens of examination in this study is threefold. First, it scrutinizes the financial health of the engineering firms in Enugu State, dissecting their pre- and post-subsidy removal performance using key financial metrics such as revenue, profitability, liquidity, and solvency. This analytical journey will illuminate the intricate relationship between financial stability and the shifting sands of energy policy. Second, the study navigates the treacherous terrain of operational challenges faced by these firms in the aftermath of fuel subsidy removal. The surge in energy costs, intricacies of transportation, and the ripple effects along the supply chain weave a complex web of hurdles that engineering firms must traverse. The study delves deep into the tangible disruptions experienced by these firms, offering a granular understanding of how these challenges reverberate through production processes and overall business performance. Third, this study peels back the layers of strategic adaptation. It uncovers the ingenious manoeuvres undertaken by these engineering firms to sidestep the pitfalls of fuel subsidy removal. Technological innovations, diversification of energy sources, and astute cost management emerge as beacons of resilience in the face of adversity. The effectiveness of these strategies is laid bare, shedding light on the path forward for businesses grappling with the tremors of policy transformation.

The scholarly literature resound with discussions on the symbiotic relationship between fuel subsidies, business operations, and economic vitality. Different Studies have illuminated the complex relationship between these factors, providing a backdrop against which this study is framed [4]; [5]. In a world where sustainability, economic growth, and energy dynamics converge, this study stands as a sentinel, casting light on the uncharted territories of policy-induced disruptions. As engineering firms in Enugu State grapple with the aftershocks of fuel subsidy removal, this study seeks not only to chronicle their journey but to offer a compass, pointing towards strategies that can transform adversity into opportunity. Through its comprehensive exploration of financial, operational, and strategic dimensions, this study aspires to contribute to the broader discourse on sustainable development, policy design, and the resilience of businesses in an ever-evolving setting.

## II. REVIEW OF RELATED LITERATURE

Musa and Omotosho [2] in a study titled “The Impact of Fuel Subsidy Removal on Socio-Economic Development in Nigeria” employed a mixed-methods approach to examine the ramifications of fuel subsidy removal. Through empirical analysis, surveys, and interviews, the study investigated the impact on key socio-economic indicators. The empirical analysis of historical data revealed a notable increase in fuel prices post-subsidy removal, accompanied by heightened inflation, reduced household income, and increased poverty levels. The surveys of households and businesses provided qualitative context, unveiling the tangible effects of higher fuel costs on daily living and business operations. The interviews with government officials and experts offered insights into decision-making processes and the efficacy of mitigation strategies.

In their study titled “The Impact of Fuel Subsidy Removal on Small Businesses Financing in Nigeria (A Case Study of Fedpoly Nasarawa Microfinance Bank Ltd),” Ojeme, Abdulrazaq, and Tanko [4] addressed the recurring concern of fuel subsidy removal and its economic implications, particularly for ordinary individuals and small businesses. The researchers recognized the subsidy as a mechanism aimed at mitigating economic challenges stemming from unemployment and underemployment in Nigeria. The study aimed to explore the effects of fuel subsidy removal by the federal government on small businesses’ financing in Nigeria, as well as the short and long-term impacts on the country’s economic growth and development objectives. To achieve this, the researchers employed statistical methods, including simple regression analysis, trends analysis, and ratios and percentages calculations. The study focused on assessing the implications of fuel subsidy removal using Fedpoly Nasarawa Microfinance Bank Ltd as a case study, considering the period following the removal of the subsidy. The authors relied on secondary sources of data. Based on the findings of their research, the authors noted that the running cost of the case study firms have gone up by above 20%. Thus, the firm was negatively impacted the removal of fuel subsidy.

Inegbedion, Inegbedion, Eseosa, and Abiola [6] in their study titled “Petroleum Subsidy Withdrawal, Fuel Price Hikes, and the Nigerian Economy,” undertook a comprehensive investigation into the complex dynamics surrounding petroleum subsidy withdrawal, fuel price hikes, and their implications for the Nigerian economy. The authors aimed to ascertain the degree to which the removal of petroleum subsidies contributes to increases in fuel prices, subsequently impacting prices across various sectors within the Nigerian economy. The study employed an input-output model as its analytical framework, utilizing a computed table of flow of goods to determine the value added per sector. Through this approach, the research sought to assess the direct and ripple effects of reductions in petroleum subsidies at different levels (10%, 20%, 30%, 40%, and 50%) on the prices of products originating from other sectors. The study’s findings revealed a notable pattern: a reduction in petroleum subsidies triggered a corresponding increase in the prices of

petroleum products. This increase in fuel prices, in turn, set off a chain reaction. It led to subsequent escalations in transport fares, which, given the interdependencies among sectors, caused a ripple effect on the prices of products in other sectors of the economy. This interconnectedness among sectors showcased the far-reaching consequences of fuel price hikes, extending beyond the energy sector to impact multiple facets of the economy.

Iheagwara, Nwiko, Otu, and Chikwe [7] undertook a study entitled “Non-parametric Analysis on the Effects of Fuel Subsidy Removal on Small Business Performance in South-East Nigeria,” with a primary focus on comprehending the repercussions of fuel subsidy removal on the performance of small businesses operating in the South-East region of Nigeria. The study was designed around two fundamental research questions aimed at guiding the investigation. To address these inquiries, data was collected through a questionnaire, and subsequent analysis was conducted using the Nonparametric Kruskal Wallis test. For data analysis, the researchers employed MINITAB version 16.0, a statistical software package. The utilization of Bartlett’s test to assess the homogeneity of variance in the data uncovered variations, and the test examining the assumption of normality led to the rejection of null hypotheses. The findings of the study provided insights into the impact of fuel subsidy removal on small business performance in South-East region of Nigeria. Specifically, it was evident that fuel subsidy removal held significant implications for both the financial and market performance of small businesses. The study’s outcomes underscored the relationship between policy changes and the performance dynamics of small enterprises, shedding light on the consequences of removing fuel subsidies.

Alozie [8] conducted a comprehensive examination of various facets within the fossil fuels sector in Nigeria, encompassing procurement, distribution, local production, demand-supply gaps, and the interplay of subsidies in future decisions. The study harnessed secondary data exclusively from government sources, delving into importation, local production, lifting, consumption patterns, and subsidies budgets. Employing numerical analyses, ratio assessments, and fiscal expenditure evaluations, the study unveiled a striking reliance on imported petroleum products in Nigeria over the past 32 years. The productivity of local refining, however, demonstrated a marked decline, with fiscal subsidies expenditure increasing consistently. Notably, this spending could have been directed towards maintaining existing refineries and potentially establishing new ones. In summation, the study underscored Nigeria’s significant reliance on imports for fuel consumption, attributed to production inefficiencies, lack of maintenance, and mismanagement. This reliance has led to substantial fiscal subsidies expenditure. The study advocates for a shift in this trend by focusing on domestic production to enhance self-sufficiency, create employment, and curtail wastage of resources. Alozie’s research provides critical insights into the challenges posed by overdependence on imports, underlining the need for sustainable practices and policies that promote local production, reduce wastage, and foster economic growth.

Olawunmi, Adedayo, Shehu, and Idowu [9] in their research titled “Examining the Environmental Consequences of Economic Growth and Fuel Subsidy in Nigeria,” delved into the relationship between economic growth, fuel subsidy, and environmental impact in Nigeria during the period spanning 1985 to 2018. The authors harnessed the Auto-regressive Distributed Lag (ARDL) model to dissect the data underpinning their investigation. The findings of the study underscored intriguing dynamics. It was discerned that per capita output exhibited a positive and noteworthy influence on carbon emissions, both in the short and long term. Conversely, the fuel subsidy, reflective of governmental policy, exhibited a negative and significant correlation with carbon emissions, encompassing both short and long-term implications. The Error Correction Model (ECM) unveiled that an impressive 96% of shocks affecting the response variable were effectively rectified by the independent variables over the long haul. In sum, the study’s conclusions resonate strongly. Elevated economic output correlates with heightened carbon emissions within the economy, whereas the removal of fuel subsidy aligns with a reduction in carbon emissions. Consequently, it is imperative to devise and implement well-informed policies that mitigate carbon emissions without stifling economic growth.

### III. METHODOLOGY

#### 3.1 Research Design

Research design is a crucial aspect of any study as it outlines the plan and structure for conducting research. It provides a clear roadmap, ensuring that the study is valid, reliable, and credible, while guiding researchers in collecting relevant and meaningful data [10]. This study inherently involves exploring the complex interplay of economic, business, and contextual factors. Given the complex and multidimensional nature of the subject, a qualitative research design is particularly well-suited to provide a comprehensive understanding of the phenomena and nuances at play.

### 3.2 Area of Study

Enugu State is situated in the southeastern part of Nigeria. It is bordered by Abia State to the south, Ebonyi State to the east, Benue State to the northeast, Kogi State to the northwest, and Anambra State to the west [11]. The state's landscape consists of rolling hills, plateaus, and valleys. Enugu state is popularly known as the "Coal City State" due to its significant coal deposits, which played a crucial role in Nigeria's early industrial development. The state experiences a tropical climate with distinct wet and dry seasons. The rainy season typically starts around April and lasts until October, while the dry Harmattan season occurs from November to March. Average temperatures range between 21°C (70°F) and 31°C (88°F) throughout the year [12]. The state is rich in cultural heritage, with traditional music, dance, art, and festivals playing a vital role in the lives of its people. Enugu State had an estimated population of around 4 million people [11]. The New Yam Festival (Iri Ji) and the Mmanwu festival are some of the prominent cultural celebrations in the state. These events showcase traditional dances, masquerades, and communal feasting [12]. The economy of Enugu State is diverse, with key sectors including agriculture, commerce, education, and services. Historically, coal mining was a major economic driver in the state, but over time, other sectors have gained prominence. The position of Enugu state as a commercial and industrial center in the southeastern region of Nigeria underscores its relevance in understanding the relationship between government policies, fuel subsidy removal, and the performance of small-scale and medium-sized engineering firms.

### 3.3 Determination of Sample Size

A sample is a manageable section of a population but elements of which have common characteristics. Also, it refers to any portion of a population selected for the study and on whom information needed for the study is obtained [13]. The population of this study is 1,366 small and medium scale engineering firms in Enugu State as noted by Enugu State Micro, Small and Medium Enterprises (MSMEs) Report (2022). Against this backdrop, this study adopts the Yamane (1973) sampling method to sample the number of small-sized and medium-scaled engineering firms. The Yamane sample size determination formula is as shown in equation 3.1 below.

$$n = \frac{N}{1 + N(e)^2} \quad (3.1)$$

where

n = sample size

N = total population under study

e = error limit (an error limit of 0.05 was used for the study).

Given this, the size of the study is calculated thus;

$$n = \frac{1366}{1 + 1366 \times (0.05)^2} = \frac{1366}{4.415} = 309$$

Thus, the sample size of the study is 309 small and medium scale engineering firms in Enugu state Nigeria. More so, this study adopts a simple random sampling method. This method involves selecting a subset of individuals or items from a larger population in such a way that each individual or item has an equal chance of being chosen [14].

## IV. RESULTS AND DISCUSSIONS

Results depicting the impact of fuel subsidy removal on the operating costs of SME engineering firms in Enugu state, Nigeria is shown in Table 4.1 while Fig. 4.1 shows the trend of this impact on the various items considered.

**Table 4.1:** The impact of fuel subsidy removal on the operating costs of SME engineering firms in Enugu state, Nigeria

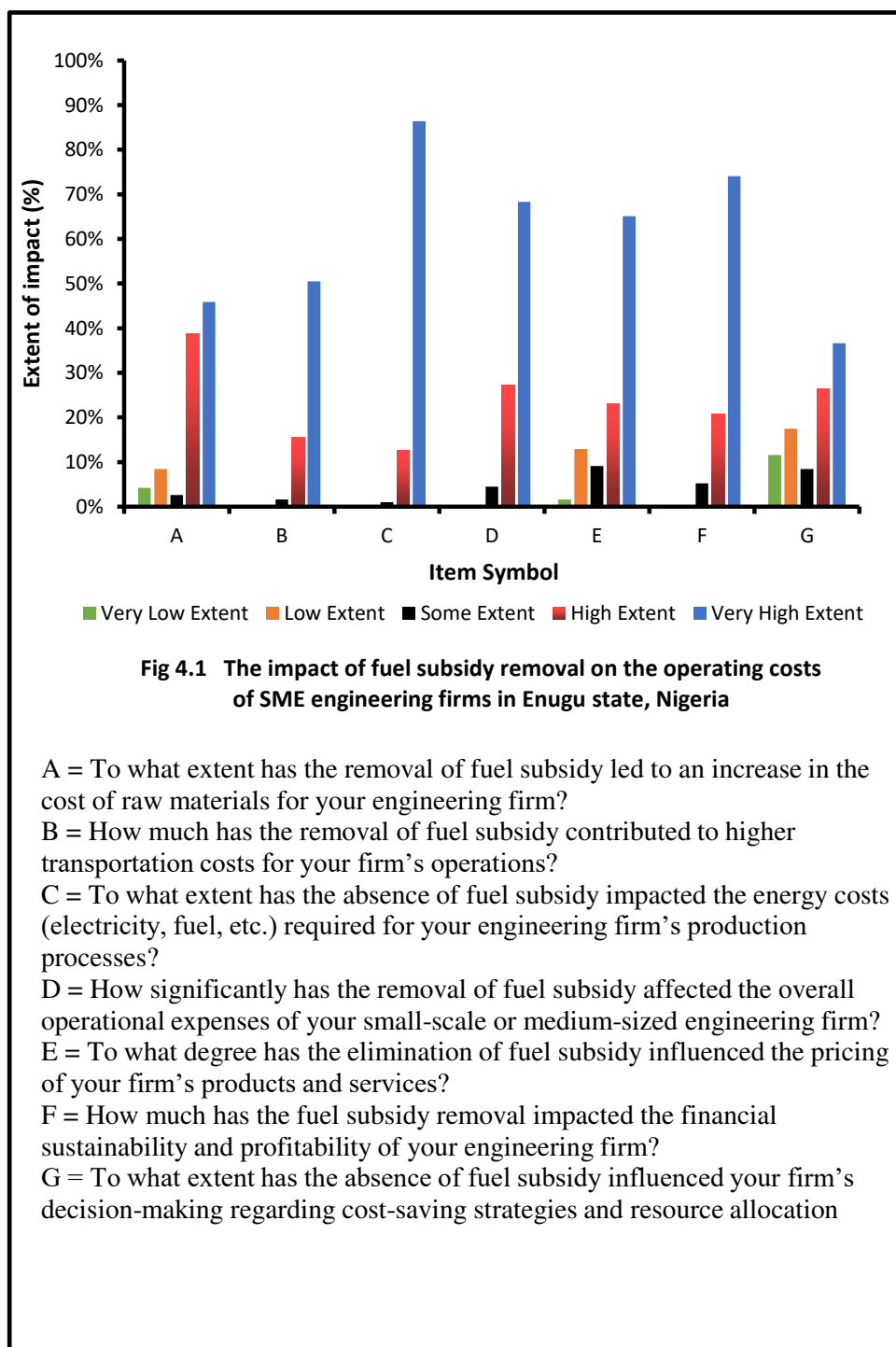
- A = To what extent has the removal of fuel subsidy led to an increase in the cost of raw materials for your engineering firm?
- B = How much has the removal of fuel subsidy contributed to higher transportation costs for your firm's operations?
- C = To what extent has the absence of fuel subsidy impacted the energy costs (electricity, fuel, etc.) required for your engineering firm's production processes?
- D = How significantly has the removal of fuel subsidy affected the overall operational expenses of your small-scale



or medium-sized engineering firm?

- E = To what degree has the elimination of fuel subsidy influenced the pricing of your firm’s products and services?
- F = How much has the fuel subsidy removal impacted the financial sustainability and profitability of your engineering firm?
- G = To what extent has the absence of fuel subsidy influenced your firm’s decision-making regarding cost-saving strategies and resource allocation?

S/ N	Item Symbol	Very Low Extent	Low Extent	Some Extent	High Extent	Very High Extent	Mean	SD
1	A	4.2% (13)	8.4% (26)	2.6% (8)	38.8% (120)	45.9% (142)	4.14	1.09
2	B	0% (0)	0% (0)	1.6% (5)	15.5% (48)	50.5% (156)	4.81	0.43
3	C	0% (0)	0% (0)	1% (3)	12.6% (39)	86.4% (267)	4.85	0.38
4	D	0% (0)	0% (0)	4.5% (14)	27.2% (84)	68.3% (211)	4.64	0.57
5	E	1.6% (5)	12.9% (40)	9.1% (28)	23% (71)	65.1% (201)	4.49	0.84
6	F	0% (0)	0% (0)	5.2% (16)	20.7% (64)	74.1% (229)	4.69	0.56
7	G	11.6% (36)	17.5% (54)	8.4% (26)	26.5% (82)	36.6% (113)	3.59	1.42
Overall Mean /SD							4.46	0.83



The analysis of the data presented reveals the extent to which the removal of fuel subsidy led to an increase in the cost of raw materials for engineering firms. Majority of respondents indicated a high extent (45.9%) and very high extent (38.8%). This suggests that a substantial proportion of firms experienced a significant rise in raw material costs, with only a small percentage reporting lower impacts. The mean score for this question is 4.14, indicating a notable increase in raw material costs. Secondly, concerning the contribution of fuel subsidy removal to higher transportation costs, a significant majority of respondents (50.5%) reported a very high extent, and 15.5% reported a high extent. This implies that the removal of the subsidy substantially raised transportation costs for firms. The mean score of 4.81 further corroborates the substantial impact on transportation expenses. Thirdly, in terms of the impact on energy costs required

for production processes, a vast majority (86.4%) stated a very high extent. This signifies that a significant proportion of firms experienced a substantial increase in energy expenses due to fuel subsidy removal. The mean score of 4.85 underscores the high impact on energy costs.

Regarding the overall operational expenses of engineering firms, 68.3% of respondents reported a very high extent, and 27.2% reported a high extent. This suggests that a substantial majority faced significantly higher operational expenses. The mean score of 4.64 indicates a substantial impact on operational costs. Fifth, concerning the influence on the pricing of firms' products and services, 65.1% of respondents stated a very high extent, while 23% reported a high extent. This demonstrates that a considerable proportion of firms adjusted their pricing significantly. The mean score of 4.49 reflects a substantial impact on pricing strategies. Sixth, when assessing the impact on financial sustainability and profitability, a significant majority (74.1%) reported a very high extent, and 20.7% reported a high extent. This indicates that most firms experienced a substantial negative impact on financial sustainability and profitability. The mean score of 4.69 underscores this adverse effect. Finally, regarding the influence on firms' decision-making regarding cost-saving strategies and resource allocation, 36.6% stated a very high extent, and 26.5% reported a high extent. This suggests that a considerable proportion of firms had to make substantial adjustments to their decision-making processes. The mean score of 3.59 indicates a notable impact on decision-making.

In summary, the data analysis reveals that the removal of fuel subsidy had a significant and predominantly adverse impact on various aspects of small-scale and medium-sized engineering firms in Enugu State, Nigeria, including increased costs, reduced profitability, and adjustments in decision-making. These findings highlight the considerable challenges faced by these firms due to the subsidy removal.

Table 4.2 show the impact of fuel subsidy removal on the profitability of small-scale and medium-sized engineering firms in Enugu State, Nigeria while Fig. 4.2 shows the trend of this impact on the various items of study

The analysis of the data show that the removal of fuel subsidy resulted in reduced profit margins for these firms, the data reveals a substantial impact, with 86.7% of respondents indicating a very high extent and 10.4% reporting a high extent. This suggests a significant negative effect on profit margins, which is further supported by the mean score of 4.84, indicating a pronounced impact on the profitability aspect. In terms of the overall financial performance of the firms with regard to profitability, a substantial majority (73.9%) reported a very high extent, and 20.7% reported a high extent of impact. This suggests a notable negative influence on firms' financial performance. The corresponding mean score of 4.69 reinforces the substantial impact on profitability.

Concerning the impact on the ability to invest in growth and expansion, the data reveals a predominant impact, as 79.9% of respondents indicated a very high extent and 16.8% reported a high extent. This signifies a substantial negative effect on the firms' ability to invest. The mean score of 4.77 reflects the pronounced negative impact on investment capabilities. The influence of fuel subsidy removal on the competitiveness of engineering firms in the market is also noteworthy. The data shows a range of impact levels, with 38.8% indicating a very high extent, and 28.8% reporting a high extent. This suggests that a significant proportion of firms experienced a substantial impact on their competitiveness. The mean score of 3.85 further underscores the impact on market competitiveness. Furthermore, concerning the ability to meet financial obligations and debts, the analysis indicates varying degrees of impact, with 28.8% reporting a high extent, 21% indicating some extent, and 19.1% reporting low extent. This suggests a notable challenge for firms in meeting their financial obligations and debts. The mean score of 3.17 reflects the financial strain and its impact on the firms' financial responsibilities.

The impact on overall financial stability is also evident, as 48.2% reported a very high extent, and 21.6% reported a high extent. This demonstrates that a significant majority of firms experienced considerable challenges to their financial stability due to fuel subsidy removal. The mean score of 4.02 underscores the pronounced impact on financial stability. Finally, regarding the influence on long-term financial planning and strategies, a considerable proportion of firms (39.2%) reported a very high extent, and 28.8% reported a high extent of impact. This indicates that firms faced substantial challenges in their long-term financial planning due to the subsidy removal. The mean score of 3.79 reflects this challenge and highlights its impact on strategic financial planning.

**Table 4.2:** The impact of fuel subsidy removal on the profitability of SME engineering firms in Enugu state Nigeria

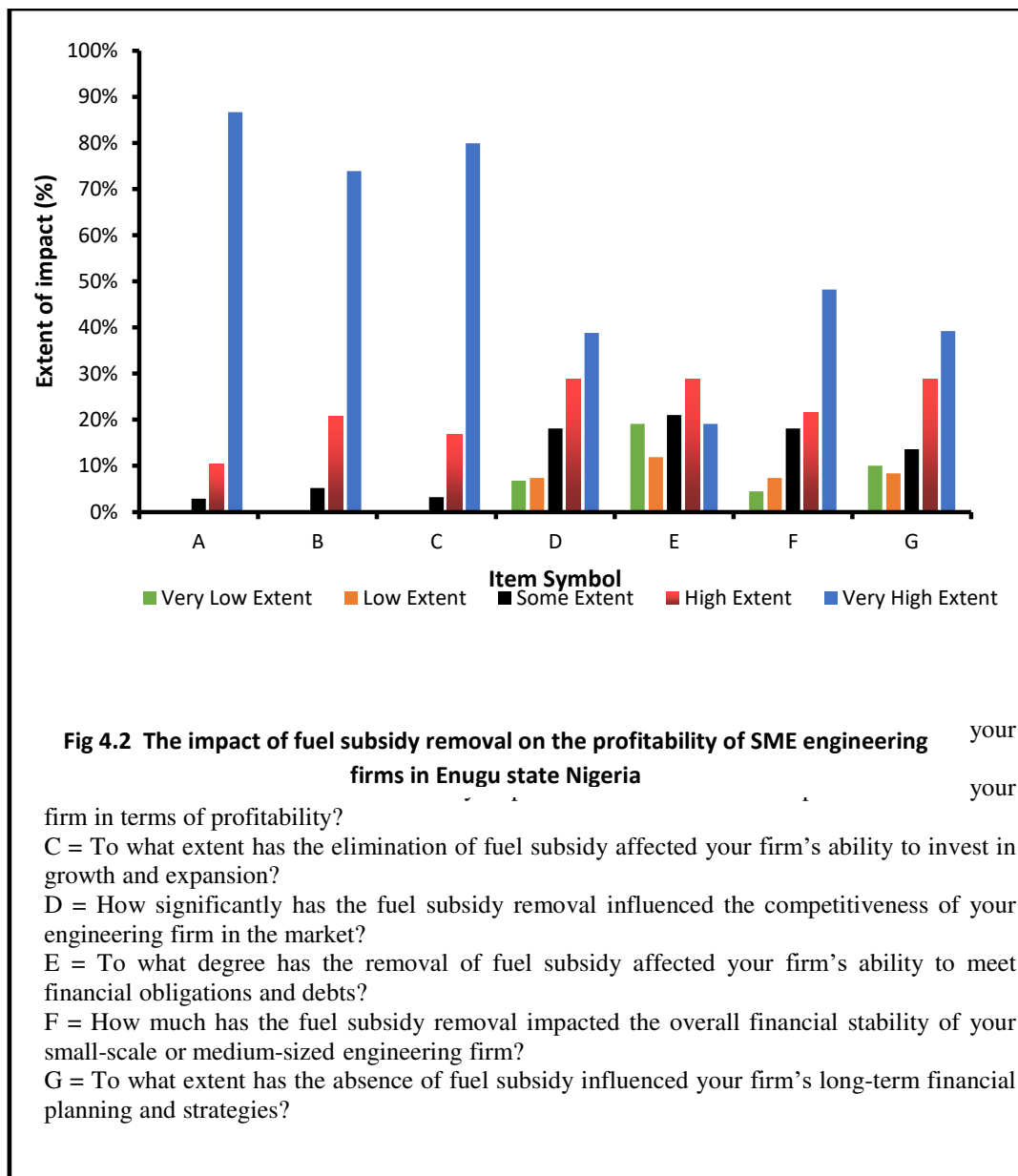
- A = To what extent has the removal of fuel subsidy resulted in reduced profit margins for your engineering firm?
- B = How has the absence of fuel subsidy impacted the overall financial performance of your firm in terms of profitability?





- C = To what extent has the elimination of fuel subsidy affected your firm’s ability to invest in growth and expansion?
- D = How significantly has the fuel subsidy removal influenced the competitiveness of your engineering firm in the market?
- E = To what degree has the removal of fuel subsidy affected your firm’s ability to meet financial obligations and debts?
- F = How much has the fuel subsidy removal impacted the overall financial stability of your small-scale or medium-sized engineering firm?
- G = To what extent has the absence of fuel subsidy influenced your firm’s long-term financial planning and strategies?

S/ N	Item Symbol	Very Low Extent	Low Extent	Some Extent	High Extent	Very High Extent	Mean	SD
1	A	0% (0)	0% (0)	2.9% (9)	10.4% (32)	86.7% (268)	4.84	0.44
2	B	0% (0)	0% (0)	5.2% (16)	20.7% (64)	73.9% (229)	4.69	0.56
3	C	0% (0)	0% (0)	3.2% (10)	16.8% (52)	79.9% (247)	4.77	0.49
4	D	6.8% (21)	7.4% (23)	18.1% (56)	28.8% (89)	38.8% (120)	3.85	1.21
5	E	19.1% (59)	11.9% (37)	21% (65)	28.8% (89)	19.1% (59)	3.17	1.38
6	F	4.5% (14)	7.4% (23)	18.1% (56)	21.6% (67)	48.2% (149)	4.02	1.17
7	G	10% (31)	8.4% (26)	13.6% (42)	28.8% (89)	39.2% (121)	3.79	1.31
Overall Mean /SD							4.16	0.89



Conclusively, the analysis of the second research question reinforces the adverse impact of fuel subsidy removal on the financial aspects of small-scale and medium-sized engineering firms in Enugu State, Nigeria. The mean scores further underscore the substantial negative effects on profitability, investment capabilities, competitiveness, financial obligations, financial stability, and long-term financial planning.

Data in Table 4.3 shows the strategies adopted by SME engineering firms in Enugu state for mitigation of the impact of fuel subsidy removal while Fig. 4.3 shows the trend of this impact on the various items of study.

Analysing the extent to which engineering firms adopted cost-cutting measures to mitigate the impact of fuel subsidy removal, the data reveals a diverse range of responses. Notably, 39.2% of respondents indicated some extent, while 20.4% reported a low extent, and 16.5% indicated a very high extent. This implies that a considerable proportion of firms have taken measures to reduce the impact through cost-cutting, as indicated by the mean score of 2.92. Regarding the focus on improving operational efficiency as a strategy to counteract the effects of fuel subsidy removal, the analysis unveils a substantial effort by firms in this direction. A notable 51.1% of respondents reported a very high extent, while 32% indicated a high extent. This reflects the considerable attention given to enhancing operational efficiency to mitigate the impact, with a mean score of 4.26.



The extent of diversification of product or service offerings to reduce vulnerability to fuel subsidy removal impact is evident in the data. A substantial majority (84.3%) indicated either a very high or high extent of diversification. Specifically, 42.6% reported a very high extent, and 41.7% reported a high extent. This demonstrates the significant emphasis placed on diversification as a mitigation strategy, supported by the low mean score of 1.80. The exploration of alternative energy sources to reduce reliance on fuel due to subsidy removal is another significant strategy. The data indicates a multifaceted response, with 31.3% indicating a high extent, and 22.3% reporting a very high extent. This suggests that a sizeable proportion of firms have explored alternative energy sources, as highlighted by the mean score of 2.77. Strategic pricing adjustments as a coping mechanism for increased costs post-subsidy removal also feature prominently. The data shows 43.9% of respondents indicating a high extent, and 40.1% reporting a very high extent, emphasizing the significance of this strategy. The mean score of 4.24 underscores the strong emphasis placed on strategic pricing adjustments.

Collaboration with other businesses or suppliers to collectively mitigate the effects of fuel subsidy removal is another notable strategy. The data indicates a fairly even distribution across response levels. Notably, 21.6% reported a high extent, and 20.7% reported a low extent, indicating a diverse range of responses. This reflects a diverse approach to collaboration, as indicated by the mean score of 3.03. Lastly, the focus on research and innovation to develop new technologies that counteract the fuel subsidy removal impact is evident. The analysis shows 31.3% of respondents indicating a high extent, and 23.6% reporting a low extent, reflecting a concerted effort towards innovation. The mean score of 2.97 reflects the emphasis on research and innovation as a mitigation strategy.

**Table 4.3:** Strategies adopted by SME engineering firms in Enugu state for mitigation of the impact of fuel subsidy removal

A = To what extent has your engineering firm adopted cost-cutting measures to mitigate the impact of fuel subsidy removal?

B = How much has your firm focused on improving operational efficiency as a strategy to counteract fuel subsidy removal effects?

C = To what extent has your firm diversified its product or service offerings to reduce vulnerability to fuel subsidy removal impact?

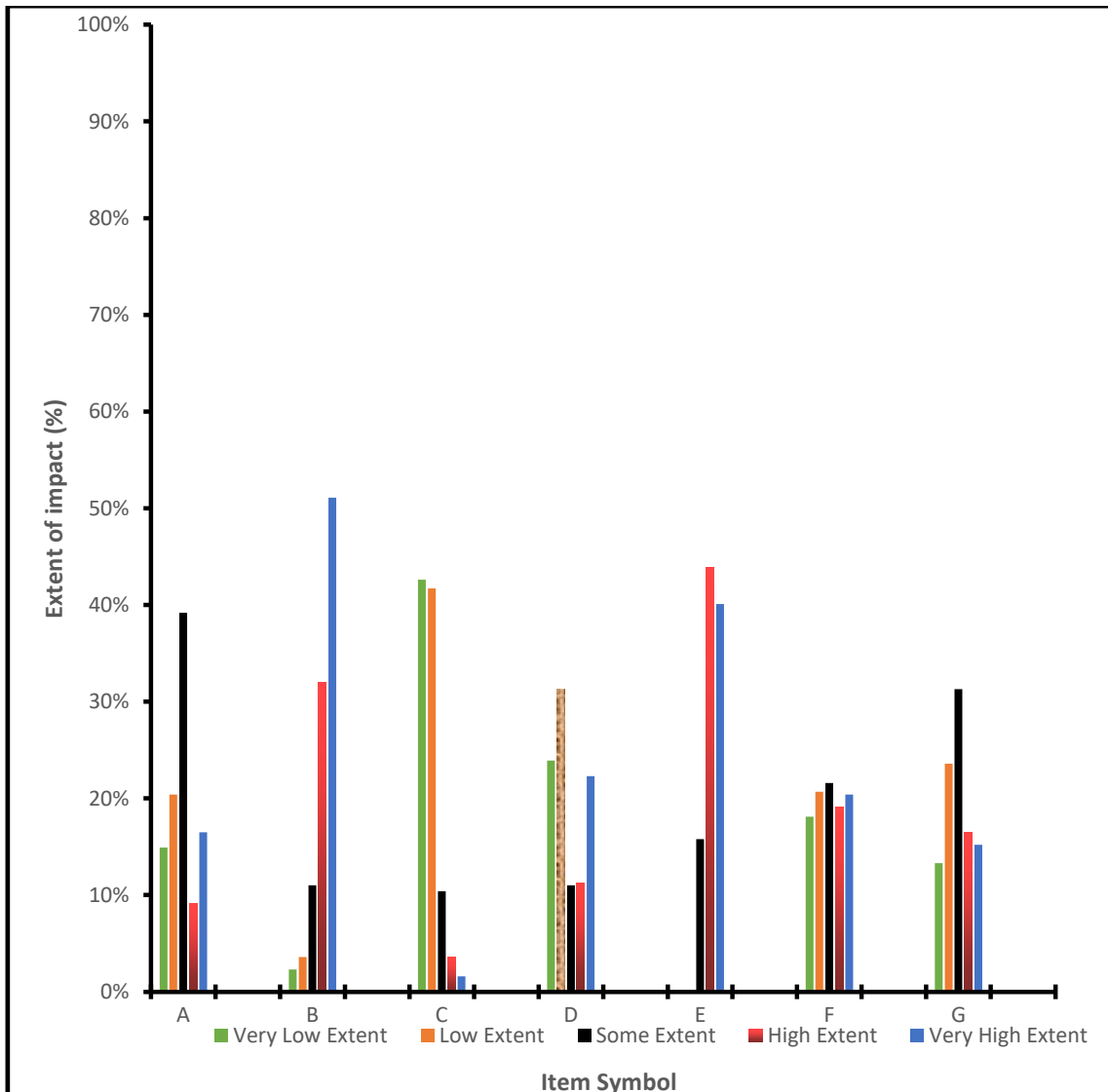
D = How significantly has your firm explored alternative energy sources to reduce reliance on fuel due to subsidy removal?

E = To what degree has your firm engaged in strategic pricing adjustments to cope with the increased costs post-subsidy removal?

F = How much has your firm collaborated with other businesses or suppliers to collectively mitigate the effects of fuel subsidy removal?

G = To what extent has your firm focused on research and innovation to develop new technologies that counteract the fuel subsidy removal impact?

S/N	Item Symbol	Very Low Extent	Low Extent	Some Extent	High Extent	Very High Extent	Mean	SD
1	A	14.9% (46)	20.4% (63)	39.2% (121)	9.1% (28)	16.5% (51)	2.92	1.24
2	B	2.3% (7)	3.6% (11)	11% (34)	32% (99)	51.1% (158)	4.26	0.95
3	C	42.6% (132)	41.7% (129)	10.4% (32)	3.6% (11)	1.6% (5)	1.80	0.88
4	D	23.9% (74)	31.3% (97)	11% (34)	11.3% (35)	22.3% (69)	2.77	1.49
5	E	0% (0)	0% (0)	15.8% (49)	43.9% (136)	40.1% (124)	4.24	0.71
6	F	18.1% (56)	20.7% (64)	21.6% (67)	19.1% (59)	20.4% (63)	3.03	1.39
7	G	13.3% (41)	23.6% (73)	31.3% (97)	16.5% (51)	15.2% (47)	2.97	1.24
Overall Mean /SD							3.14	1.16



**Fig 4.1 The impact of fuel subsidy removal on the profitability of SME engineering firms in Enugu state Nigeria**

A = To what extent has your engineering firm adopted cost-cutting measures to mitigate the impact of fuel subsidy removal?

B = How much has your firm focused on improving operational efficiency as a strategy to counteract fuel subsidy removal effects?

C = To what extent has your firm diversified its product or service offerings to reduce vulnerability to fuel subsidy removal impact?

D = How significantly has your firm explored alternative energy sources to reduce reliance on fuel due to subsidy removal?

E = To what degree has your firm engaged in strategic pricing adjustments to cope with the increased costs post-subsidy removal?

F = How much has your firm collaborated with other businesses or suppliers to collectively mitigate the effects of fuel subsidy removal?

G = To what extent has your firm focused on research and innovation to develop new

In sum, the analysis of the third research question underscores the range of strategies employed by small-scale and medium-sized engineering firms in Enugu State, Nigeria, to mitigate the impact of fuel subsidy removal. The data highlights notable emphasis on improving operational efficiency, diversification of offerings, exploration of alternative energy sources, strategic pricing adjustments, collaboration, and research and innovation. The mean scores reinforce the significance of these strategies in addressing the challenges posed by subsidy removal.

## V. CONCLUSION

In conclusion, this study focused on the multifaceted impact of fuel subsidy removal on the performance of small-scale and medium-sized engineering firms in Enugu State, Nigeria. The empirical investigation illuminated key insights that contribute to our understanding of the ramifications of fuel subsidy removal on the business setting. The findings unequivocally affirm the adverse effects of subsidy removal on operating costs, profitability, and overall financial stability. The data-driven analysis revealed that the removal of fuel subsidy has led to increased costs across various operational aspects, thereby diminishing profit margins and financial performance for these firms.

Moreover, the study highlighted that the surveyed firms have actively implemented a range of strategies to mitigate these challenges. The emphasis on diversification, cost-cutting measures, operational efficiency enhancement, and collaborative efforts with other entities underscores the adaptive responses aimed at countering the adverse effects of subsidy removal. These strategies have become crucial mechanisms for sustaining these businesses in the face of heightened economic pressures.

The findings of the study aligns with prior research, reinforcing the notion that the dynamics of fuel subsidy removal are complex and multifaceted, with cascading effects throughout the business ecosystem. As policy decisions continue to shape the economic landscape, the imperative of comprehensive mitigation strategies gains prominence. This study underscores the need for policy-makers, stakeholders, and businesses to collaboratively formulate and implement proactive measures that can insulate firms from the destabilizing impact of fuel subsidy removal.

In a nutshell, the evidence-driven outcomes of this study provide valuable insights for policy-makers, business owners, and stakeholders to make informed decisions that foster resilience and sustainability in the face of evolving economic challenges arising from fuel subsidy removal. The findings of the study contribute to the broader discourse on economic policies and their intricate implications for the business environment, thus paving the way for informed strategies that can steer businesses toward enduring success in the post-subsidy removal era.

## REFERENCES

- [1] Ocheni, I. I. (2021). The impact of fuel subsidy removal on household income in Nigeria. *Journal of Economics and Sustainable Development*, 6(14), 139-150.
- [2] Musa, I. I., & Omotosho, O. S. (2023). The impact of fuel subsidy removal on socio-economic development in Nigeria. *Energy Policy*
- [3] Adenikinju, A. (2019). The impact of fuel subsidy removal on inflation in Nigeria. *Energy Policy*, 37(12), 5283-5291. <https://doi.org/10.1016/j.enpol.2009.06.019>
- [4] Ojeme, J. O., Abdulrazaq, O., and Tanko, A. (2021). The impact of fuel subsidy removal on small businesses financing in Nigeria (a case study of Fedpoly Nasarawa microfinance bank ltd. *African Journal of Business and Economic Development*, 1(7), 16 – 31
- [5] Mohammed, A. B., Ahmed, F. F., & Adedeji, A. N. (2020). Assessment of Impact of Fuel Subsidy Removal on Socio-economic Characteristics: A Survey of Households in Maiduguri, Borno State, Nigeria. *Journal of Business and Economic Development*, 5(1), 10.
- [6] Inegbedion, H.E., Inegbedion, E., Eseosa, O., and Abiola A. (2020). Petroleum subsidy withdrawal, fuel price hikes and the Nigerian economy. *International Journal of Energy Economics and Policy*, 10(4), 258-265.
- [7] Iheagwara, A., Nwiko L. A., Otu, O. A., Chikwe, G. C. (2014). Non-parametric analysis on the effects of fuel subsidy removal on small business performance in south-east Nigeria. *The International Journal of Business & Management*,
- [8] Alozie, C. E. (2021). Fossil fuels consumption subsidies and domestic production in Nigeria. *Economic Review. J Eco Res & Rev*, 1 (1): 24, 36.
- [9] Olawunmi O., Adedayo, E. L., Shehu, M., Idowu, J. A. (2021). Environmental impact of economic growth and fuel subsidy in Nigeria. *Economic Insights – Trends and Challenges*, 10(73), 21 – 30
- [10] Awkokeni, J.A. (2016). *Research Methods: Process, Evaluation & Critique*. Portharcourt: Unicampus Tutorial Services.



- [11] Mole, A. J. (2017). Assessment of academic utilization of online information resources by undergraduate students in University of Nigeria, Nsukka. *International Journal of Knowledge Content Development and Technology*, 7(3), 29 – 48.
- [12] Enyi, V. S., Eze, H. U., Ugwu, F. C., Ogbonna, C. C. (2021). Path loss model predictions for different GSM networks in the University of Nigeria, Nsukka campus environment for estimation of propagation loss. *International Journal of Advanced Research in Computer and Communication Engineering*, 10(8), 108 - 115.
- [13] Awoniyi, S.A.; Aderanti, R.A. & Tayo, A.S. (2011). *Introduction to Research Methods*. Ibadan: Ababa Press Ltd.
- [14] Akinade, E.A. & Owolabi, T. (2019). *Research Methods: A Pragmatic Approach for Social Sciences, Behavioural Sciences and Education*. Lagos: Connel Publications.



INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  [ijirset@gmail.com](mailto:ijirset@gmail.com)



[www.ijirset.com](http://www.ijirset.com)

Scan to save the contact details