ASSESSMENT OF IMPACT OF PETROL SUBSIDY REMOVAL ON USE OF CAR FOR JOURNEY TO WORK AMONG STAFF OF FEDERAL UNIVERSITY OF TECHNOLGY, MINNA, NIGER STATE, NIGERIA

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Abstract

This research conducted at the Federal University of Technology Minna, Niger State, examines the consequences of petrol subsidy removal on the commuting patterns of university staff. The study utilizes a mixed-methods approach, employing surveys and interviews to gather comprehensive data. Surveys quantify changes in commuting behaviours, including alterations in car usage frequency, adoption of alternative transportation, and overall travel costs. Interviews provide qualitative insights into staff experiences. The study explores mitigating factors like public transportation availability, carpooling initiatives, and flexible work arrangements. Primary and secondary data sources were used, with descriptive statistics employed for analysis. Finding reveals that fuel subsidy removal did not significantly improve the majority of staff members' quality of life because, the research shows that Mean spending on fuel per week increased significantly after subsidy removal (from ₦5,391.41 to ₦26,544.67) while the median spending also increased (from ₦5,000 to ₦28,000 per week) which led to 66.48% of the respondent in the study area to adopt the strategy of cutting expenditures on other things. The study recommends government investment in infrastructure and human capital rather than solely focusing on subsidy removal. The research contributes insights for policymakers, university administrators, and transportation planners, offering valuable lessons for similar policy changes in different sectors and regions. Understanding the impact on commuting behaviours can inform the development of targeted strategies and policies for sustainable transportation choices. The study contributes to the broader discourse on the intersection of economic policies and individual behaviour.

Keywords: Petrol subsidy, Journey to work, coping strategy and subsidy removal

1. Introduction

The roles and responsibilities of governments will always be ensuring provision for the basic need of its citizens in all ramifications. They are needed to enable a society that can work to common standards and limit externalities for many. Over time, the roles change and modern challenges such as economic crises, social inequalities and the influence of technological giants make it increasingly important to understand and adapt their roles (Bratton et al., 2021). However, Rothstein (2011) opined that to better the lives of its citizens, government always come up with policy and programs that will positively affects the lives and wellbeing of its citizens to ensure good governance of its people. In developed and developing nations of the world, the policies and programs of the government always centres around items that have direct and indirect impacts on the lives and wellbeing of its people (Frijters et al., 2020).

Hence, Fuel is a crucial component for the production of goods and services across the entire economy of the world. International fuel prices have demonstrated a substantial volatility in recent years, from year 2000 until late 2015, nominal international fuel prices has increased more than five times (Setyawan, 2014),which also have triple effects on economics lives of domestic products in developing countries which

Nigeria is not left out. However, the government subsidy on petrol motor spirit (PMS) is geared towards cushioning the effects of the fluctuations of PMS price. Furthermore, government gasoline subsidies, as outlined by (Yakubu et al., 2023) are framed as interventions addressing market failures, particularly in poverty-stricken developing nations. These subsidies not only facilitate economic activities for the impoverished but also act as a shield for weak economies against global market shocks. Similarly, Ali et al. (2024) highlights that in Nigeria context, fuel is an inelastic product, both in terms of supply and demand which obey the market forces.

Devereux (2021), elucidated that despite the financial burden on the government side for providing subsidies, they considered it a social duty to assist poor and vulnerable populations, a perspective shared by many governments worldwide. According to Hossain et al. (2021) the term "fuel subsidy removal" simply describes the reduction or elimination of government support for fuel-related goods like diesel and gasoline. That is, governments frequently provide fuel subsidies to lower the cost of living for consumers by maintaining artificially Low Prices for these necessities. Subsidies are implemented to support economic expansion, stabilize home prices, and lessen the negative effects of growing worldwide oil costs on consumers. Thus, governments may choose to eliminate or scale down these subsidies for budgetary, tax, or environmental reasons (Fan et al., 2023). Fuel subsidies can be removed in a few ways, such as by reforming the subsidy structure, gradually phasing them out, or completely eliminating them (Sovacool, 2017).

There are complexity of problems identified by the dynamic interplay between economic, political, environmental, and societal factors. Hence, removal of the fuel subsidy in Nigeria in 2023 project different problems which is characterized by intricate links between economic viability, social equity, environmental sustainability, and political stability However,

This study will make great contributions to our understanding of the precarious effects of fuel subsidy removal. The study's holistic analysis and insights into the diverse dimensions of subsidy removal will lay very sound footing for informed decision-making, fostering equitable economic growth, social welfare, and environmental sustainability. Furthermore, the study will also equip stakeholders and policymakers with a right direction on the complexities of subsidy reform. Whereas its findings will offer valuable solutions into the potential challenges, opportunities, and the need for holistic approaches that will enhance economic development, social welfare, and environmental sustainability.

2. Literature Review

The literature review matrix in Table 1 gives an insight of the overview of the research objectives, methodologies used and key results or implications from each of the selected sources, highlighting the diverse dimensions and impacts of subsidy removal across different contexts. In the thematic analysis of the literature on the effects of subsidy removal, several key themes emerge across the various studies. These themes encompass the diverse objectives, methodologies, and results of the research. Many studies, such as Majekodunmi (2013), explore the political economy of fuel subsidy removal in Nigeria, opined that subsidy removal in Nigeria involves political dynamics, including public protests and government decisions.

While Chiluwa (2015), analyse the role of Facebook posts in the fuel subsidy removal protests in Nigeria, where he argued that social media played a role in shaping public discourse during the fuel subsidy removal protests. Additionally, Prabowo et al.(2022) and Heger et al. (2019), focus on the economic and environmental impact of subsidy removal, that

the impact of fuel subsidy removal and metro line extension on congestion and air pollution, suggest that Subsidy removal and infrastructure projects can influence traffic congestion and air pollution level in the environment whereas Prabowo et al. (2022) opined that Subsidy removal scenarios can have economic implications, especially for low-income earners in the society. Furthermore Taghvaee et al. (2023) highlighted that Subsidy removal and energy efficiency strategies have distinct effects on diesel demand and sustainable development. Similarly, Evans (2024) and Adeoti et al. (2016) states its significance of informed decision-making to mitigate negative short-term impacts, harness long-term gains, and safeguard the vulnerable segments of the population.

In summary, the literatures reviewed show the different impact of subsidy removal, ranging from the environment, economics, and social dimensions. The studies give an insight into the complex nature of subsidy removal policies and pointing out the significance of the analysis especially during implementation. While the previous studies has given an insight on the economic and environmental consequences of various subsidy removal holistically, there appears to be limited studies on potential challenges in specific economic sectors.

Table1: Related studies on the effects of petrol subsidy removal

Author/Date	Research objectives/question	Methodology	Implication/result
Majekodunmi (2013)	Explore the political economy of fuel subsidy removal in Nigeria	Qualitative analysis Fuel	Subsidy removal in Nigeria involves political dynamics, including public protests and government decisions
Chiluwa (2015)	Analyse the role of Facebook posts in the fuel subsidy removal protests in Nigeria	Content analysis of Facebook posts	Social media played a role in shaping public discourse during the fuel subsidy removal protests
Adeoti et al. (2016)	Study compensation mechanisms for fuel subsidy removal in Nigeria	Policy analysis and recommendations	Compensation mechanisms can mitigate the negative impacts of subsidy removal on vulnerable populations in Nigeria
Bekhet (2016)	Investigate the effect of energy subsidy removal on energy demand and potential energy savings in Malaysia	Econometric analysis	Energy subsidy removal can impact energy demand and potentially lead to energy savings
Heger et al. (2019)	Assess the impact of fuel subsidy removal and metro line extension on congestion and air pollution	Data analysis and Modeling	Subsidy removal and infrastructure projects can influence traffic congestion and air pollution levels

Prabowo et al. (2022)	Analyse the economic price of liquid petroleum gas, poverty, and subsidy removal compensation in Indonesia	Econometric analysis	Subsidy removal scenarios can have economic implications, especially for low-income households
Taghvaee et al. (2023)	Compare the impacts of subsidy removal and energy efficiency on diesel demand and sustainable development pillars	Econometric analysis and modeling	Subsidy removal and energy efficiency strategies have distinct effects on diesel demand and sustainable development
Evans et al. (2023)	The socioeconomic impact of 2023 of fuel subsidy removal	case study approach to dig deep into the multi-faceted impacts of subsidy removal on the Nigerian economy and society.	the significance of informed decision-making to mitigate negative short-term impacts, harness long-term gains, and safeguard the vulnerable segments of the population.

Table 2: Present history of petrol pump price Adjustment in Nigeria from 1978-2024

S/N	Date	Administration	Price	Percentage change
1	1978	Obasanjo	15k	
2	1990	Babangida	60k	300%
3	1992	Babangida	70k	17%
4	1992	Babangida	3.25k	364%
5	1993	Babangida	N5	54%
6	1994	Shonekan	N11	120%
7	1994-1998	Abacha	N11.00	
8	1998-1999	Abacha	N20.00	82%
9	2000	Obasanjo	N20.00	
10	2000	Obasanjo	N22.00	10%
11	2001	Obasanjo	N26.00	18%
12	2003	Obasanjo	N40.00	54%
13	2004	Obasanjo	N45.00	13%
14	2007	Obasanjo	N70.00	56%
15	2007	Yar'Adua	N65.00	7%
16	2010-2012	Jonathan	N65.00-N141.00	117%
17	2012	Jonathan	N141.00- N97.00	Drop 31.21%
18	2015	Jonathan	N97.00-N87.00	Drop 10.31%
19	2016	Buhari	N87.00- N145.00	66.67%
20	2016-2023	Buhari	N87.00- N195.00	124%
21	*2023	Tinubu	N195.00-N557.00	285.2%
22	*2023-date	Tinubu	N557.00-N617.00	316.4%

Source: Modified Table,2024 adopted from Oil Subsidy Management and Performance of the Nigerian Economy (Agbaeze & Abner, 2018). *Modified.

From table 2, revealed the Pump prices of fuel and how it increases since 1978.Though economic intrigues and fluctuations in the world oil prices prompted the introductions of fuel subsidies in Nigeria energy sector in the 1980s. (Agbaeze & Abner, 2018).The need for subsidy by preceding government becomes necessary given the economic realities in the country. However, subsidy comes with reasons as money which would have been used for developmental project were channel to subsidy payment. Preceding government in Nigeria attempt to remove this subsidy but failed due to some political reasons, until this present government of Ahmed Bola Tinubu lead administration that give it a shot of total removal of fuel subsidy which in turn as affected all facet of human endeavour in the country.

It is therefore, against this background that this research tends to seek to understand how the subsidy removal has affected the use of private cars among university staff and explore the adjustments made in response to the increased petrol prices and the research is premise on the following research questions

1. Changes in Car Usage: How does the use of cars by Federal University of Technology Minna staff change in response to the increase in gas prices?

2. Coping Mechanisms: How are employees coping with the recent surge in petrol prices?

3. Shifts in Work Commutes: How has the use of cars by Federal University of Technology Minna staff for work commutes evolved?

4. Alternative Modes of Mobility: What alternative modes of mobility do university employees consider in response to the elimination of gasoline subsidies?

3. Study Area

3.1 Federal University of Technology, Minna, Niger State, Nigeria

The Federal University of Technology Minna (FUT Minna) in Nigeria was established on February 1, 1983, with the aim of enhancing the country's independence in science, engineering, and technology which Specialized and evolving over the years. The University is situated in Bosso Local Government Area of Niger State, lies the university initially utilized the buildings of the former Government Teachers' College in Bosso, which now houses its Bosso Campus (Adamu et al., 2017). According to Anifowose and Lawal (2013) to accommodate future growth, FUT Minna acquired 10,650 hectares of land in Gidan-Kwano along the Minna – Kataeregi – Bida Road as its permanent site, which is over 10km from Minna town and and bounded by some communities which includes Beji, Paiko, Kateregi, and Mutuntaya within a 50 km radius as shown in Figure 2. Thus, FUT Minna lies within latitude 9° 251 0011 and 9°4010011 North of the equator and longitude 6°24'20" and 6°36'40" East of the meridian(Opaluwa et al., 2015).

General Ibrahim Badamasi Babangida performed the Sod Turning Ceremony on June 2, 1992, marking the official start of projects on the main campus. The university has witnessed significant physical development, including the completion of buildings for various schools.FUT Minna houses ten schools, numerous centres, and affiliations with other institutions including a postgraduate school. The campus offers a variety of recreational facilities, including sports arenas, athletic tracks, indoor courts, and a golf course. The university had a student-run radio station, Search FM 92.3, which unfortunately faced a fire in 2013 but was later reconstructed in 2014 (Shehu et al., 2020). The university has seen substantial growth, with over 800 academic staff and over 13,000 students. The

establishment of Internet connectivity, VSAT facilities, and online student registration reflects its commitment to Technological advancement. The university library, named Ibrahim Badamasi Babangida, supports teaching, learning, and research with over 80,000 printed volumes and electronic resources.

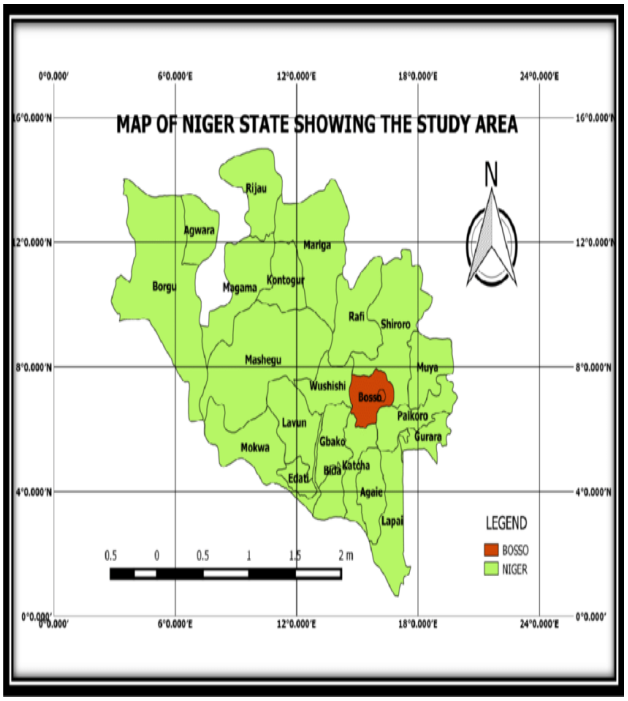


Figure 1 Map of Niger State showing Bosso L.G.A that houses Gidan Kwano Showing Federal University of Technology Minna

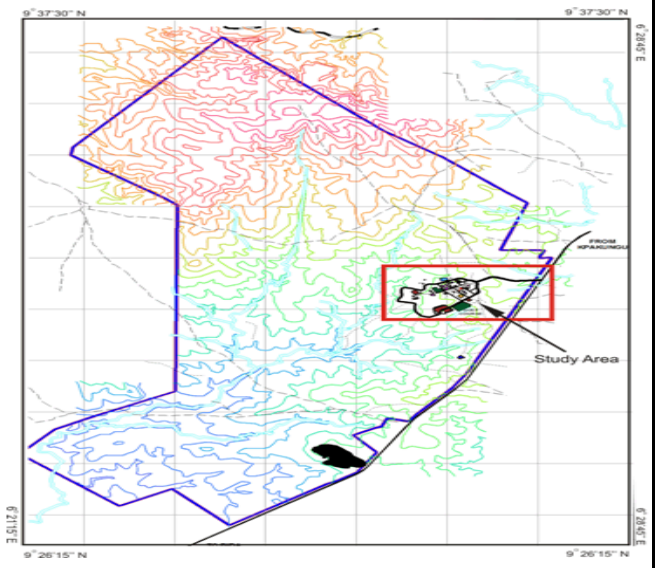


Figure 2 Map of Bosso L.G.A that houses Federal University of Technology Minna Gidan Kwano Campus

4. Materials and Method

The study employed a mixed-method approach of survey, interviews, and questionnaire administration to collect data of research on assessing the impact of petrol subsidy removal on staff commuting behaviours at the Federal University of Technology Minna. The research utilised data from both primary and secondary sources. The data collected from secondary sources were used to establish the background of the study, while data from the primary sources formed the basis of the research analysis.

The literatures used in the introductory part of the study were obtained from the relevant journal articles, conference proceedings and dissertations. while data used in the analysis was sourced from interviewed and questionnaire administration to the staff members of federal University of Technology Minna, specifically those that are using their personal cars to commute to work, over 764 employees were identified in FUT Minna out of which 200 questionnaires distributed resulting to 20% of the total population identified which represent the sample size used in the study n = N / (1 + Ne^2

5. Results and Discussion

5.1 Socioeconomics characteristics of the members and staff of FUT Minna

5.1.1 Gender of the Respondents:

Data on gender of respondents, it is evident from Table3 that majority of those that commute with their cars to FUT Minna are male (72.53%) while females are (27.47%). It is evident from the analysis that, there are a greater number of males that commute with their cars to FUT Minna in both senior and junior staff categories. Hence, they are the most affected with the impact of the subsidy removal.

Table 3: Gender of Staff Members of FUT Minna

1: Gender of the respondent	Frequency	Valid %
Male	132	72.53%
Female	50	27.47%
Total	182	100%

Source: Author Field work 2023

5.1.2 Employment Status:

The data reeled out from the research on table4 shows that Senior staff members comprised of 80.22% of the respondents, with junior staff members making up 19.78%. which conclude that Senior staff members were the majority and commute more with their personal car to work. Hence, Senior staff members were predominantly most affected, with impact of subsidy removal.

Table4: Employment Status in FUT Minna

Employment status respondents	Frequency	Valid %
Senior staff	146	80.22%
Junior staff	36	19.78%
Total	182	100%

Source: Author Field work 2023

5.1.3 Commuting Behaviour

It is also evident from the research as shown in table5, daily commuting was the most common (65.38%), followed by thrice a week (14.84%) and four times a week (9.89%). This conclude that more than half of the total number of staff members commute to FUT Minna on daily bases.

Table 5: Journey to work by staff members of FUT Minna

Weekly Commuting periods to work by personal car	Frequency	Valid %
Daily	119	65.38%
Four times	27	14.84%
Thrice	18	9.89%
Twice	15	8.24%
Once	3	1.65%
Total	182	100%

Source: Author Field work 2023

5.1.4 Distance Covered to Work:

The data reeled out from the research analysis as shown in Table 6 elucidate that Most respondents covered 15-20 km daily (34.62%). Considerable variability was observed, with notable percentages in the 21-25 km and 11-15 km categories. A smaller percentage covered less than 10 km (16.93%), with 9.89% in the 5-10 km range. This concludes that, there are a greater number of staff that covered a longer distance to commute to the university on daily basis.

Table 6: Distance to Work by Respondents

Average Distance Covered in Kilometres (Km) to and from work daily	Frequency	Valid %
Less than 5km	11	34.62 %
5-10 km	18	21.43 %
11 - 15 km	33	18.13 %
15-20 km	63	34.62 %
21-25km	39	9.89 %
Above 25km	18	9.89 %
Total	182	100%

Source: Author Field work 2023

5.2 Fuel Consumption Before and After Subsidy Removal

Data from table 7 shows the amount of fuel consumed by respondents to work per week before the subsidy removal. It is evident that the Mean spending on fuel per week increased significantly after subsidy removal (from ₦5,391.41 to ₦26,544.67). The median spending also increased (from ₦5,000 to ₦28,000 per week).

Table 7: fuel Consumption by the Respondents

	Amount spent on fuelling personal car per week before the petrol subsidy removal	Amount spent on fuelling personal car per week after the petrol subsidy removal
Mean	5391.41	26544.67
Median	5000	28000

Source: Author Field work 2023

5.3 Adaptation Strategies

Data from table 8 reveals the different Strategies adopted by the respondent in the events of subsidy removal to cushion its attendant effect. The strategies includes changing to motorcycles, cutting expenditures on other things, sharing car rides, soliciting free rides, trekking part of the journey, joining public transport, and using the university bus. The analysis of the result shows that most respondents in the study area adopt the strategy of cutting expenditures on other things with (66.48%). the results depicts that the respondents cut down their expenses drastically in the events of subsidy removal.

Table8; Strategies employed to cushion the impact of subsidy removal

Row Labels	Distinct count Raw	Distinct count Raw
Change to using motorcycle	8 change	4.47%
Cut my expenditure on other things	119 cut my exp.	66.48%
I share car with others and share the cost of fuelling	20 I share	11.17%
I solicit for free ride	149 solicit	83.24%
I trek part of the journey	47 I trek part.	26.26%
Join public transport	97 join public	54.19%
Join University bus	19 join univ. bus	10.61%
Ground Total	179 G.Total	100 %

Source: Author Field work 2023

5.4 Hypothesis Testing

From table 9, the Mann-Whitney U-Test revealed a statistically significant difference between junior and senior staff in terms of amount of money spends on fuel per week after subsidy removal. The mean and median values for junior staff spending on fuel per week were lower than those for senior staff, with a statistically significant difference.

Table 9: Mann-Whitney U-Test for members of staff FUT Minna

		Frequency	Mean	Median
Amount spent on fuelling personal car per week before the petrol subsidy removal.	Senior staff	146	5578,24	5000
	Junior staff	36	4638,89	4500
Amount spent on fuelling car per week after the petrol subsidy removal	Senior staff	146	27566,25	30000
	Junior staff	36	22458,33	20000

Source: Author Field work 2023

6. Conclusions

The research findings offer insightful information about how the loss of gasoline subsidies may affect Federal University of Technology Minna staff members' commuter habits. The analysis highlights shifts in the

frequency of private car use for commuting, providing insight into how higher gas prices directly affect transportation preferences. The study provides a deep insight of the elements influencing commute decisions and also emphasizes the difficulties faced by staff members in adjusting to the higher petrol prices. These results can help universities support sustainable mobility practices and lessen the negative effects of economic shifts on employee well-being through policies and programs which corroborate the findings of Soto et al. (2018) effectively promote the adoption of alternative fuel vehicles (AFVs) and reduce reliance on conventional fuel vehicles, programs and policy frameworks must include a complete approach that goes beyond infrastructure and vehicle. In summary, the study adds to the larger conversation about how economic policies, commuting practices, and personal adaptation methods interact in the face of external shocks like the elimination of gasoline subsidies.

7. Recommendation

The following suggestions are put out in light of the study's findings about how the elimination of gasoline subsidies affected Federal University of Technology Minna employees' commuter behaviour: Execute Initiatives for Sustainable Transportation: The institution ought to investigate and put into practice sustainable transportation programs in light of the possible rise in the expense of utilizing private vehicles. This could entail encouraging the use of public transit, carpooling, and eco-friendly commute choices, among other things. Flexible Work Arrangements the challenges faced by staff in adjusting to increased petrol prices, the university administration should consider offering flexible work arrangements. This could include options for telecommuting, flexible working hours, or compressed workweeks, allowing staff members to reduce their commuting frequency and costs.

Furthermore, Provide Financial Support or Subsidies, recognizing the financial strain on staff caused by increased petrol costs, the university may consider providing financial support or subsidies to alleviate the burden. This support could be in the form of transportation allowances, fuel subsidies, or other financial assistance programs. More also, advocacy for Policy Change by engaging with relevant stakeholders, including government bodies and local authorities, to advocate for policies that support sustainable and affordable transportation. Such as improved public transportation infrastructure, incentives for fuel-efficient vehicles, or revisiting subsidy policies.

Hence, the need to form a transportation task force within the university to continually assess and address the evolving commuting needs of the staff. This task force can serve as a liaison between the university administration and the staff, ensuring that transportation-related challenges are promptly identified and addressed. Lastly, given the dynamic nature of fuel prices and transportation challenges, the university should establish a mechanism to regularly review and update its policies related to commuting. This will enable the institution to adapt to changing circumstances and proactively address the evolving needs of its staff. By implementing these recommendations, the university can foster a supportive and adaptable transportation environment for its staff, promoting both individual well-being.

Reference

Adamu, M. S., Dogara, L., & Edimeh, A. (2017). Procedures and challenges of retrospective catalogue conversion in two Nigerian University Libraries: A comparative study of Federal University of Technology, Minna, Library and University of Jos, library.

Adeoti, J., Chete, L., Beaton, C., & Clarke, K. (2016). Compensation mechanisms for fuel subsidy removal in Nigeria.

Agbaeze, E., & Abner, I. P. (2018). Oil subsidy management and performance of the Nigerian economy. International Research Journal of Finance and Economics, 165.

Ali, H., Ahmad, D., & Jibrilla, A. (2024). An empirical analysis of the immediate socio-economic impact of fuel subsidy removal on households'living standard in Adamawa state-Nigeria. American Research Journal of Contemporary Issues, 2(1), 158-178.

Anifowose, O. M., & Lawal, P. O. (2013). State of Physical Facilities in Nigerian Tertiary Educational Institutions: Case study of the Federal University of Technology Minna.

Bratton, J., Gold, J., Bratton, A., & Steele, L. (2021). Human resource management. Bloomsbury Publishing.

Chiluwa, I. (2015). Occupy Nigeria 2012': A critical analysis of Facebook posts in the fuel subsidy removal protests. Revista Clina, 1, 47-69.

Devereux, S. (2021). Social protection responses to COVID-19 in Africa. Global social policy, 21(3), 421-447.

Evans, O. (2024). The investment dynamics in renewable energy transition in Africa: The asymmetric role of oil prices, economic growth and ICT. International Journal of Energy Sector Management, 18(2), 229-247.

Fan, W., Anser, M. K., Nasir, M. H., & Nazar, R. (2023). Uncertainty in firm innovation scheme and impact of green fiscal policy; Economic recovery of Chinese firms in the post-Covid-19 era. Economic Analysis and Policy, 78, 1424-1439.

Frijters, P., Clark, A. E., Krekel, C., & Layard, R. (2020). A happy choice: wellbeing as the goal of government. Behavioural Public Policy, 4(2), 126-165.

Hossain, N., Agbonifo, J., Atela, M., Gaventa, J., Gonçalves, E., Javed, U., McCulloch, N., Natalini, D., Oosterom, M., & Ojebode, A. (2021). Demanding power: do protests empower citizens to hold governments accountable over energy?

Heger, M., Wheeler, D., Zens, G., & Meisner, C. (2019). Motor vehicle density and air pollution in Greater Cairo: fuel subsidy removal and metro line extension and their effect on congestion and pollution. World Bank.

Majekodunmi, A. (2013). The political economy of fuel subsidy removal in Nigeria. International Journal of Management and Social Sciences Research, 2(7), 76-81.

Opaluwa, Y. D., Okorocha, V. C., Abazu, I. C., Odumosu, J. O., & Ajayi, G. O. (2015). The effect of GPS satellite geometry on the precision of DGPS positioning in Minna, Nigeria. JurnalTeknologi, 77(12), 109-115. https://doi.org/10.11113/jt.v77.6318.

Prabowo, E., Harianto, H., Juanda, B., & Indrawan, D. (2022). The economic price of liquid petroleum gas, poverty and subsidy removal compensation scenario in Indonesia. International Journal of Energy Economics and Policy, 12(5), 169-177.

Rothstein, B. (2011). The quality of government: Corruption, social trust, and inequality in international perspective. University of Chicago Press.

Soto, J. J., Cantillo, V., & Arellana, J. (2018). Incentivizing alternative fuel vehicles: the influence of transport policies, attitudes and perceptions. Transportation, 45(6), 1721-1753.

Setyawan, D. (2014). The impacts of the domestic fuel increases on prices of the Indonesian economic sectors. Energy Procedia, 47, 47-55.

Shehu, M., Jimoh, O., Kolo, S. S., & Adeleke, O. O. (2020). Frequency and vehicle capacity determination of Bosso and gidan kwano campuses, Federal

University of Technology, Minna: A literature review.

Sovacool, B. K. (2017). Reviewing, reforming, and rethinking global energy subsidies: towards a political economy research agenda. Ecological Economics, 135, 150-163.

Taghvaee, V. M., Arani, A. A., Soretz, S., & Agheli, L. (2023). Diesel demand elasticities and sustainable development pillars of economy, environment and social (health): comparing two strategies of subsidy removal and energy efficiency. Environment, Development and Sustainability, 25(3), 2285-2315.

Yakubu, M., Abdullahi, M. M., Maijama'a, R., & Musa, K. S. (2023). Investigating the Effect of Petroleum Subsidy Removal on Standard of Living Amidst Rising Poverty in Nigeria. Asian Journal of Economics, Finance and Management, 359-364.