SigmaMu 3(2) (2025)

Journal of Mathematics, Statictics and Data Science

https://journals.balaipublikasi.id

Effects Of Fuel Subsidy Removal And Transportation Fare On School Attendance And Learning Outcome In Mathematics Among Secondary School Students In Ilorin, Nigeria

[1]Alanamu,Taoheedat,Ph.D, [2]Adetunji, Kamaldeen OlarewajuPh.D, [3]Abdulrasheed, Mariam Omolola

[1]Department of Mathematics, Kwara State College of Education, P.M.B 1527, Ilorin, Nigeria
[2]Department of Mathematics, Kwara State College of Education, P.M.B 1527, Ilorin, Nigeria
[3]Professional Directorate Of Education Kwara State College of Education, P.M.B 1527, Ilorin, Nigeria

Received: 19-04-2025
Accepted: 23-04-2025
Published: 26-09-2025

*Corresponding Author:
Alanamu Taoheedat, Ph.D
taoheedatalanamu@yahoo.com

DOI :10.56566/sigmamu.v3i2.356

Abstract: *Nigeria's fuel subsidy program aims to reduce fuel costs by providing financial support to oil firms. However, its removal has significantly increased transportation costs, affecting school attendance and learning outcomes. This study examines the impact of rising transportation fares on mathematics education in secondary schools in Ilorin, Nigeria. Data were collected from 150 respondents, including students, teachers, and parents, using a survey research design through a structured questionnaire. The study employed descriptive statistics, chi-square tests, Pearson correlation, and regression analysis to examine the relationship between transportation costs and students' attendance. The results indicate that fuel subsidy removal negatively impacts mathematics education, affecting attendance and learning processes. The study found that 64% of students primarily walk to school, highlighting transportation challenges and there is a significant negative correlation ($r = 0.312$, $p < 0.05$) between transport fare and mathematics class attendance. Also[1], transportation costs significantly influence students' punctuality ($p = 0.0001$), confirming that higher fares lead to absenteeism. Respondents suggested transport subsidies (95.4%) and shuttle services (100%) as effective solutions. The study recommends urgent interventions, including financial support and digital learning resources, to mitigate transportation barriers and improve mathematics education.*

Keyword: *Fuel subsidy, Transportation, Attendance, Learning outcome, Mathematics*
.

Introduction

Over the years, the Federal Government of Nigeria has consistently maintained a fuel subsidy program as a critical component of its strategy to ensure the availability of affordable energy sources for its citizens. Fuel subsidies have played a vital role in the socioeconomic landscape of many developing nations, including Nigeria, acting as a stabilizing force in regulating domestic fuel prices and preserving accessibility in transportation. These subsidies are particularly crucial in a country where a significant portion of the population relies on affordable transportation to access various essential services, including education. However, the sustainability of these subsidies has come under scrutiny due to significant economic and fiscal challenges,

prompting governments to consider their phased or complete removal. Such initiatives aim to redirect financial resources toward urgent national priorities, including infrastructure development, healthcare enhancement, and improvements in educational provision.

Education serves as a cornerstone for societal advancement, nurturing individual agency and rational thinking (UNESCO, 2020). It is through education that individuals acquire the skills and knowledge necessary for personal and professional development. Aminu (2005) underscores that education is a paramount investment for holistic national development, contributing not only to economic vitality but also to social cohesion. In this context, mathematics emerges as a fundamental subject within the educational curriculum, essential for shaping students' cognitive skills and problem-solving abilities. As the foundation for various disciplines and professions, mathematics is indispensable for achieving quality education and fostering critical thinking among students.

In Nigeria, particularly in economically disadvantaged regions, the accessibility and affordability of transportation critically impact educational outcomes. The relationship between transportation and education is multifaceted, encompassing various factors such as school attendance, participation in classroom activities, and overall academic performance. Recent fluctuations in transportation fares following the removal of fuel subsidies have raised concerns about their implications for school attendance and learning outcomes in mathematics among secondary school students. As transportation costs increase, students who depend on public transportation for their daily commutes may face barriers to consistent attendance, which can adversely affect their engagement and achievement in mathematics.

The city of Ilorin, nestled within Kwara State, is home to a diverse array of secondary educational institutions catering to a heterogeneous group of students. The recent policy changes regarding fuel subsidies have led to a sudden increase in fuel prices, which directly affects transportation fares. This shift creates critical challenges for students who rely on public transport to attend school (Glaeser & Sacerdote, 2003) highlights. Fluctuations in transportation costs can result in increased absenteeism, reduced participation in learning activities, and ultimately lower academic performance, particularly in a subject as vital as mathematics.

While the broader societal effects of fuel subsidy removal have been widely discussed, the specific impact on mathematics education remains relatively unexplored. Previous studies have highlighted the economic implications of subsidy reforms, yet there is a notable gap in the literature regarding how these reforms affect educational outcomes, particularly in relation to school attendance and learning in mathematics. This study aims to fill this gap by examining the relationship between fuel subsidy removal, transportation fares, and the consequent effects on school attendance and learning outcomes in mathematics. By investigating these variables, the research will contribute valuable insights to the discourse on education and economic policies in Nigeria, offering a nuanced understanding of how socioeconomic factors influence educational experiences.

Moreover, this research will address the pressing need for policymakers and

Co Author : taoheedatalanamu@yahoo.com

educational stakeholders to consider the broader implications of economic reforms on education. Understanding the interplay between fuel subsidy removal, transportation costs, and educational outcomes is crucial for developing effective strategies that support student attendance and engagement. As Nigeria continues to navigate complex economic landscapes, it is imperative to ensure that educational access and quality are not compromised by fiscal policies. Ultimately, this study seeks to provide a comprehensive examination of how fuel subsidy removal and transportation fares impact the teaching and learning of mathematics, thereby informing future educational policies and practices in Nigeria.

Statement of the Problem

In Nigeria, where many students rely on public transportation, the unabated increases in transport costs following the removal of fuel subsidies have raised urgent questions about the implications for educational access and quality. There are growing indications that lengthy and expensive commutes to school may limit students' class attendance, participation in supplemental mathematics instruction, and overall academic performance. Johnson (2006) notes that transportation barriers can lead to increased absenteeism, which directly correlates with diminished academic outcomes. Despite these observations, there remains a significant gap in the literature regarding the specific impact of prohibitive transit costs on mathematics proficiency and learning. Existing studies have predominantly focused on broader economic implications of transportation access, with insufficient attention paid to how these factors uniquely affect foundational subjects like mathematics. This gap underscores the need for targeted research that quantifies the relationship between transportation costs and student performance in mathematics.

Several scholarly works have examined the intersection of transportation and educational outcomes. For instance, a study by Glaeser and Sacerdote (2003) highlights the importance of accessible transportation in enhancing educational attainment. Their findings suggest a positive correlation between improved transportation infrastructure and higher rates of school attendance and academic achievement. However, this research predominantly addresses urban settings in developed countries, limiting its applicability to the Nigerian context, where infrastructural challenges and economic constraints differ markedly. Furthermore, while Glaeser and Sacerdote emphasize the role of transportation in promoting educational equity, their work lacks a focused analysis on foundational subjects such as mathematics, leaving a critical gap that this study aims to fill.

Conversely, a study by Karam et al. (2019) explores how transportation costs affect educational outcomes in low-income communities. Their findings indicate that higher commuting costs lead to increased dropout rates and lower academic performance. While this research provides valuable insights, it primarily concentrates on high school dropout rates rather than the specific learning outcomes in subjects like mathematics. The current study seeks to build on these existing bodies of work by not only investigating the impact of transportation costs on school attendance but also examining their direct effects on mathematics learning outcomes among secondary school students in Ilorin, Nigeria. Ultimately, this research aims to

illuminate the significance of transit affordability as a barrier to educational success and to assess whether it disproportionately impacts underprivileged youth, providing a comprehensive understanding of how economic factors influence educational equity in the Nigerian context.

Aim and Objectives of the Study

This study aims to investigate the effects of fuel subsidy removal and transportation fare increases on the teaching and learning of mathematics among secondary school students in Ilorin, Nigeria.

The specific objectives of the study are to:

1. Examine the relationship between transportation fare and students' attendance in mathematics classes, identifying how fare fluctuations impact regular participation.
2. Assess the perceived changes in the teaching and learning of mathematics following the removal of fuel subsidies and the subsequent increase in transportation costs, focusing on both educators' and students' perspectives.
3. Analyse the effects of increased transport fare on teacher-student interactions, exploring how financial burdens may influence the quality of engagement in mathematics education.

Research Questions

The following research questions are raised to guide the study:

1. How do transportation costs influence students' attendance and punctuality in mathematics classes?
2. What is the relationship between transportation fare and mathematics class attendance?
3. What challenges and barriers do transportation costs pose that impede the effective teaching and learning of mathematics in the selected secondary schools?
4. What feasible solutions and interventions can educational authorities and stakeholders implement to mitigate the adverse effects of transportation costs on mathematics learning and teaching?

Research Hypotheses

The following research hypotheses are tested in the study:

Ho1: There is no significant relationship between transportation fares and students' attendance in mathematics classes.

Ho2: Transportation costs do not significantly influence students' attendance and punctuality in mathematics classes.

Ho3: The challenges and barriers posed by transportation costs do not significantly impede the effective teaching and learning of mathematics in the context of the chosen secondary schools.

Ho4: Educational authorities and stakeholders do not implement feasible solutions

and interventions to mitigate the adverse effects of transportation costs on mathematics learning and teaching.

Research Methodology

This study adopts a survey research design to gather quantitative data from secondary school students and teachers in Ilorin, Kwara State, Nigeria, who are directly affected by transportation fare issues in the context of mathematics education. A Stratified Random Sampling approach was employed to select 500 respondents from ten secondary schools in Ilorin, Nigeria, ensuring that the sample accurately represents the diversity of the population. By dividing the entire population into distinct subgroups or strata based on relevant characteristics, such as school type (public or private) and socio-economic status, the study aims to capture the nuances of how transportation costs impact different segments of the community.

The primary data collection instrument for this study was a structured questionnaire developed through a comprehensive review of existing literature and identified research gaps. To ensure the validity of the instrument, both content and appearance validity was evaluated prior to deployment. The internal consistency of the questionnaire items was assessed using the Cronbach Alpha Reliability Coefficient, with a target reliability coefficient of above 0.70 to confirm the instrument's reliability. Data gathered were analyzed using a combination of descriptive statistics, including frequencies and percentages to summarize demographic information and categorical variables, as well as inferential statistics such as Chi-square tests, correlation analysis, and regression analysis to explore relationships and impacts among the variables under study. This comprehensive methodology aims to provide robust insights into the effects of fuel subsidy removal and transportation fare increases on the teaching and learning of mathematics in the educational context of Ilorin, Kwara State, Nigeria.

Theoretical Framework

The theoretical framework for this study is grounded in several key theories that collectively illuminate the complex relationship between fuel subsidy removal, increased transportation fares, and their impact on the educational system in Nigeria, particularly in the context of mathematics education.

First, Economic Theory serves as a foundational lens for understanding the implications of fuel subsidy removal and rising transport costs on education accessibility. The principles of supply and demand elucidate how fluctuations in transportation expenses can affect both the affordability and availability of education for students and teachers. For instance, as transportation costs rise, families may prioritize essential expenditures over educational expenses, potentially leading to decreased school attendance and engagement in academic activities (Mankiw, 2014). Additionally, consumer behavior theories, as discussed by Kotler and Keller (2012), provide insight into how households adjust their spending patterns in response to increased transportation costs, thereby revealing the broader economic pressures

that influence educational accessibility.

Second, the Social Equity Theory is pivotal in analyzing how the burden of transportation costs disproportionately impacts specific demographic groups, exacerbating existing inequalities in education. This theory posits that certain populations, particularly those from economically disadvantaged backgrounds, face greater challenges in accessing education due to financial constraints (Rawls, 1971). In the context of fuel subsidy removal and increased transport fares, the resulting inequalities can hinder students' ability to attend school consistently, thereby affecting their learning outcomes in critical subjects like mathematics. This framework enables a critical examination of how economic policies may reinforce educational disparities, necessitating targeted interventions to promote equity.

Third, Motivation and Learning Theories, particularly Self-Determination Theory (SDT), offer valuable insights into how transportation costs influence student engagement in mathematics education. SDT, developed by Deci and Ryan (1985), emphasizes the importance of autonomy, competence, and relatedness in fostering intrinsic motivation, which is essential for optimal learning outcomes. Increased transportation costs may diminish students' perceived autonomy and competence by limiting their ability to attend classes or participate in supplemental learning opportunities. Understanding these motivational dynamics is crucial for identifying strategies to enhance student engagement and performance in mathematics despite economic challenges.

Lastly, Systems Theory offers a comprehensive perspective for understanding the interconnectedness of various subsystems within Nigeria, including education, health, and economics. As a nation, Nigeria operates as a complex system with interdependent parts that collectively strive to achieve national goals (Bertalanffy, 1968). The removal of petroleum subsidies directly affects the energy sector, which in turn influences other subsystems, including education. Recognizing these interdependencies is crucial for understanding how changes in one area can have cascading effects on educational administration and student outcomes. This systems approach underscores the importance of holistic policy planning that considers the implications of fuel subsidy removal across all societal sectors, ultimately aiming to enhance educational quality and access.

Literature Review

Fuel subsidy in Nigeria is one of many consumption subsidy programmes of the government. It attempts to lower the fuel cost by providing direct financial support to oil firms, thereby lowering the fuel price for Nigerians. Fuel subsidy has been in place in Nigeria since the 1970s. It began with the government routinely selling petrol to Nigerians at below cost to minimize the impact of rising global oil prices on Nigerians. Following the promulgation of the Price Control Act in 1977, fuel subsidies became institutionalized which made it illegal for some products (including petrol) to be sold above the regulated price. This law was introduced by the Olusegun Obasanjo military regime in order to cushion the effects of the global "Great inflation" era of the 1970s, caused by a worldwide increase in energy prices.

However, the cost of subsidizing petrol has ballooned over time. The removal of fuel subsidy by the Nigeria President has inevitably raised the cost of living across the board and inflicted strain on the wider population. Transportation fares and prices of essential goods and services shot up significantly across the country as Nigerians grappled with the ripple effects of fuel subsidy removal. Also, the fares for rides in buses, which are run by private owners and serve as the major means of public transport, rose across the country following the rise in petrol costs. This phenomenon not only impinges upon the psychological equilibrium of educators but also resonates within the classroom milieu, thereby exerting a palpable influence on the overall caliber of instructional delivery (Sweller, 1998).

Smith's (2002) assertions highlight that teachers entangled in the web of transportation predicaments might grapple with a sense of disillusionment within their professional domain, potentially leading to a gradual waning of their fervor toward fulfilling their pedagogical obligations. The socio-economic realities underpinning transportation expenditure possess the potential to wield substantial influence over the patterns of students' attendance. As underscored by Smith (2002), the geographical proximity to educational institutions inherently influences accessibility, thus engendering a correlation between transportation costs and the capacity for regular school attendance.

This echoes the sentiments espoused by Clark (2009), who accentuates that the economic strains stemming from transportation conundrums could insidiously chip away at educators' cognitive acumen and emotional equilibrium, thereby indirectly engendering a diminishing commitment towards the conscientious execution of effective instructional strategies. As highlighted by Clark (2009), students facing economic constraints and entangled in the web of commuting costs are susceptible to a heightened sense of stress and anxiety. These psychological burdens bear the potential to cast a shadow over the educational landscape, fostering an environment that is not conducive to robust cognitive engagement and effective academic performance. Consequently, the intricate interplay between transportation costs and the subsequent psychological strain can culminate in a detrimental scholastic atmosphere, wherein students' pursuit of knowledge and learning becomes hindered. A study conducted by Brown and Wells (2010) has significantly illuminated that students hailing from socio-economically disadvantaged backgrounds are particularly susceptible to impediments posed by transportation-related constraints, leading to irregular attendance patterns that significantly disrupt the continuum of learning engagement.

Brown and Wells' (2010) research robustly underscores that teachers grappling with the economic stressors linked to transportation costs could find themselves entangled in heightened levels of tension, ultimately culminating in a palpable reduction in their motivation and, consequently, their efficacy within the pedagogical realm. Numerous research endeavors have been dedicated to delving into the direct relationship between transportation costs and the rates of student attendance. In a thorough and encompassing examination undertaken by Johnson et al (2015), a significant and noteworthy inverse correlation emerged, showcasing the

pronounced linkage between escalating transportation fares and the consistent presence of students in educational institutions. This phenomenon appears to be particularly pronounced among students who must navigate the intricacies of multiple modes of transportation or grapple with prolonged commuting distance underscore that obstacles encountered during transportation endeavors, whether it be inadequate public transit options or the financial strain of commuting, have the potential to give rise to hurdles in timely school arrival. This predicament, by its very nature, can disrupt the meticulously orchestrated rhythm of the school day, consequently impinging upon the commencement of instructional sessions and ultimately leading to a reduction in valuable teaching hours.

Solomon (2016), as he gave the effects of fuel subsidy removal to include; rise in price, decrease in real income, increase in rate of substitutions, decrease in consumption bundle, decrease in level of utility and decline in welfare. The significance of transportation becomes apparent through its role in providing varying learning opportunities for students. Students who have easy access to transportation networks enjoy a broader spectrum of educational institutions, subjects to choose from, and extracurricular activities. On the contrary, students who grapple with restricted transportation alternatives may find their educational choices limited. This situation could have implications for their level of engagement in academics and may ultimately impact their educational achievements (Alatise&Babatunde 2018). The ability of teachers to reach their workplaces in a timely and efficient manner significantly influences their dedication and effectiveness in delivering instruction. Therefore, the interconnected relationship that exists between transportation and education underscores the integral role that transportation infrastructure plays in nurturing an environment conducive to effective learning (Salam & Ibrahim, 2019).Within the sphere of education, transportation plays a crucial role in ensuring equal access to educational institutions, a role that assumes heightened importance in regions where geographic distance or economic constraints present obstacles (Sharma & Sarkar, 2020). However, the influence of transportation on educational opportunities isn't limited solely to the mobility of students. Educators, who constitute the nucleus of the teaching and learning milieu, also find themselves ensnared by the dynamics of transportation.

Subsidy removal as observed by Ogunode and Aregbesola (2023), have impacted negatively on the entire educational system; the teaching and learning process, leading to teaching hours reduction in schools by teachers as well as teachers being infrequent in classes, because teachers cannot cope with the increment of transport fare. Also, the hike in price of fuel makes it difficult for students to move to schools, thereby negatively affecting the learning programme (Ogunode and Aregbesola, 2023). Recently, the recent inaugurated Presidents, led by Chief Bola Ahmed Tinubu, pledged full liberalisation of the downstream oil sector or the abolition of all gasoline subsidies in the country. Within 30 minutes of the president's address, not only do fuel prices rise automatically, but so do the costs of transportation, food, and manufacturing. The removal of fuel subsidies will also affect small businesses,

employees, and students in various ways. The impact will be felt across different sectors of the economy, regardless of location, and will depend on individuals' ability to adapt to the changing economic landscape. The elimination of fuel subsidies in Nigeria represents a significant shift in the country's economic policy. While the intention may be to address fiscal challenges and encourage market-driven pricing, the decision's impact on inflation, transportation costs, and individuals' livelihoods cannot be overlooked (Ogunode &Ukozor 2022; Ogunode, Ahmed &Olugbenga, 2023; Ukozor&Ogunode 2023). The removal of subsidies has affected both public and private institutions. Financial institutions, health institutions, religion institutions, political institutions, tourism sector, judiciary and educational institutions have been affected. This paper is to examine the impact of subsidy removal on education with specific reference to school administration, teaching, learning and school supervision.

Data Analysis

Table 1: Gender Distribution of Respondents

Gender	**Frequency(N)**	**Percentage (%)**
Male	65	43.3%
Female	85	56.7%
Total	150	100%

Source: Survey Data, 2024

Interpretation: The majority of respondents were female (56.7%), while males accounted for 43.3%.

Table 2: Age Distribution of Respondents

Age Range	Frequency**(N)**	Percentage **(%)**
12-14	47	31.3%
15-17	94	62.7%
18-20	9	6.0%
Total	150	100%

Source: Survey Data, 2024

Interpretation: The majority of respondents (62.7%) were aged 15–17, making up the senior secondary school category.

Table 3: School Type of the Respondents

School Type	**Frequency(N)**	**Percentage (%)**
Private	60	40.0%
Public	90	60.0%
Total	150	100%

Source: Survey Data, 2024

Interpretation: Most respondents attended public schools (60%), while 40% were in

private schools.

Table 4: Relationship to School

Relationship to School	Frequency (N)	Percentage (%)
Teacher	25	16.7%
Student	113	75.3%
Parent/Guardian	12	8..3%
Total	**150**	**100%**

Source: Survey Data, 2024

Interpretation: The majority of respondents were students (75.3%), followed by teachers (16.7%) and parents/guardians (8.0%).

Table 5: Mode of Transportation to School

Mode of Transportation	Frequency (N)	Percentage (%)
Walking	96	64.0%
Private Vehicle	9	6.0%
Public Bus	45	30.0%
Total	**150**	**100%**

Source: Survey Data, 2024

Interpretation: Majority (64.0%) walk to school, while 30% rely on public buses, and only 6% use private vehicles.

Table 6*: *Pearson Correlation between Transportation Fare and Mathematics Class Attendance

Variable	**N**	**Mean**	**Std. Dev.**	***df***	**r-value**	**P-Value**	**Decision**
Transport Fare	150	22.89	6.89	148	0.312	0.01	Significant
Math Class Attendance	150	23.45	6.34				

Source: Survey Data, 2024.

Interpretation: The value of Pearson correlation coefficient (r = 0.312) suggests a moderate positive relationship between transport fare and attendance.

The p-value (0.01) is less than 0.05, meaning the result is statistically significant.

Conclusion: As transportation fares increase, students' attendance in mathematics classes decreases.

Table 7: Regression Analysis of Transportation Costs on Attendance and Punctuality

Model	Sum of Squares	df	Mean Square	F-value	p-value
Regression	174.109	3	58.036	501.239	.0001
Residual	16.557	147	0.116		
Total	190.667	150			

Source: Survey Data, 2024

Dependent Variable: Attendance and Punctuality

Predictor: Transportation Costs

Interpretation: The F-statistic (501.239) is significant (p = 0.0001), confirming that transportation costs significantly impact attendance and punctuality.

The high regression sum of squares (174.109) versus residual sum of squares (16.557) indicates that the model explains most of the variation in attendance.

Table 8: Chi-Square Test for Challenges Posed by Transportation Costs

Test	Value	df	p- value
Pearson Chi-Square	72.22	1	0.0002

Source: Survey Data, 2024

Interpretation: The p-value (0.0002) is highly significant, meaning transportation costs pose significant challenges to learning.

Table 9: Feasible Solutions to Transportation Challenges (Survey Responses analysis)

S/N Statements	Strongly Disagree(N, %)	Disagree(N, %)	Agree(N, %)	Strongly Agree(N, %)	Total(N, %)
Adjusting school time table could help mitigate the effects of transportation costs.	122 (81.30%)	20 (13.30%)	6 (4.00%)	2 (1.33%)	8 (5.33%)
Educational authorities should provide subsidies for students' transportation to	2 (1.33%)	5 (3.33%)	58 (38.70%)	85 (56.7%)	143 (95.4%)

improve mathematics class attendance.					
Organizing extracurricular mathematics activities within school premises could improve class attendance	72 (48.00%)	24 (16.00%)	33 (22.00%)	21 (14.00%)	54 (36%)
Implementing a shuttle service for students would have a positive effect on mathematics class attendance.	0 (0.00%)	0 (0.00%)	50 (33.33%)	100 (66.67%)	150 (100%)
Developing online resources for mathematics learning could mitigate the impact of transportation barriers.	3 (2.00%)	8 (5.33%)	65 (43.33%)	74 (49.33%)	139 (92.66%)

Source: Survey Data, 2024

Interpretation:

5.3% supported adjusting school times, showing it is not a widely accepted solution.
95.4% favored government transport subsidies, indicating a strong preference for financial assistance.
100% supported a school shuttle service, suggesting a universal need for transport alternatives.
92.6% supported online learning resources, showing digital tools could help mitigate transport challenges.

Conclusion

This study examined the impact of fuel subsidy removal and rising transportation fares on mathematics education in secondary schools in Ilorin, Nigeria. The findings shows that transportation costs significantly affect students' attendance and punctuality. A moderate negative correlation ($r = 0.312$, $p < 0.05$) was found between transportation fares and attendance, and regression analysis ($p = 0.0001$) confirmed that transportation costs are a major barrier to class participation.

Furthermore, due to high transportation costs,64% of students walk to school,

emphasizing financial constraints. Respondents suggested government subsidies (95.4%) and school shuttle services (100%) as effective solutions.

It is recommended based on these findings that financial support for students, subsidized school transportation, and digital learning alternatives should be provided to mitigate the effects of high transport fares on education. Addressing these challenges will improve students' academic engagement and mathematics learning outcomes.

Acknowledgement

The researcher wishes to sincerely acknowledge the financial support of Tetfund in making this work publishable in a reputable journal. We again appreciate this gesture and hope the fund will continue to promote knowledge and its application towards improving the all-around development of the society.

Funding

This project received funding from the Tertiary Education Fund (TETFUND) via TETF/DR&D/CE/COE/ILORIN/RG/2022/VOL.11

References

Aminu, J. (2005). Issues and challenges in Nigerian education in the 21st century. *Farfaru Journal of Multidisciplinary Studies*, 1(2), 1-10.

Barrow, L., & Rouse, C. E. (2018). Financial incentives and educational investment: The impact of performance-based scholarships on student time use. *Education Finance and Policy*, 13(4), 419–448.

Bertalanffy, L. V. (1968). General system theory: *Foundations, development, applications*. George Braziller.

Brown, B., & Wells, T. (2010). Exploring the relationship between travel behavior and academic outcomes in secondary school students. *Transportation Research Part A: Policy and Practice*, 44(3), 220-232.

Clark, R. (2009). School commuting and adolescent mental health. *Journal of Transport Geography*, 17(6), 378-388.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior.* Springer Science & Business Media.

Dougherty, C. (2003). Numeracy, literacy, and earnings: Evidence from the National Longitudinal Survey of Youth. *Economics of Education Review*, 22(5), 511–521.

Fullan, M. (2007). *The new meaning of educational change*. Teachers College Press.

Glaeser, E. L., & Sacerdote, B. (2003). Education and urban crime: The role of school quality. *Journal of Urban Economics*, 53(2), 262–284.

Ikechukwu, O. G. (2006). Proliferation of private schools in Nigeria: Its effect on Nigerian educational system. *Farfaru Journal of Multidisciplinary Studies*, 12, 235-243.

Johnson, M. P. (2006). Decision models for the location of community corrections centers. *Environment and Planning B: Planning and Design*, 33(3), 393–412.

Karam, F., Kibler, K., & Yoder, P. (2019). Transportation and school attendance: A quantitative study. *International Journal of Education Policy*, 7(1), 55-72.

Kotler, P., & Keller, K. L. (2012). *Marketing management* (14th ed.). Pearson.

Mankiw, N. G. (2014). *Principles of economics* (7th ed.). Cengage Learning.

Ogunode, N. J., & Aregbesola, B. G. (2023). Impact of fuel subsidy removal on Nigerian educational system. *Middle European Scientific Bulletin*, 39, 105-116. https://cejsr.academicjournal.io

Ogunode, N. J., Ahmed, I., & Olugbenga, A. V. (2023). Application of petrol subsidy funds to address the problems of universal basic education for sustainable development in Nigeria. Web of Scholars: *Multidimensional Research Journal (MRJ)*, 2(1), 1-9.

Ogunode, N. J., & Ukozor, C. U. (2022). Economic policies and their effects on education: A case study of fuel subsidy removal. *Journal of Economic Research*, 5(2), 45-60.

Paulsen, M. B., & Toutkoushian, R. K. (2008). Economic models and policy analysis in higher education: A diagrammatic exposition. In Higher education: *Handbook of theory and research* (pp. 1-48). Springer, Dordrecht.

Rawls, J. (1971). *A theory of justice*. Harvard University Press.

Sharma, P., & Sarkar, S. (2020). Transportation and educational accessibility: A policy review. *International Journal of Transport Policy*, 12(3), 178-192.

Smith, E. L., & Johnson, T. M. (2010). Teacher punctuality and attendance: A review of literature. *Educational Administration Quarterly*, 36(2), 276-299.

Smith, L., & Cooper, C. (2021). Students' financial stress, mental health, and

academic outcomes: Does ethnicity matter? *Journal of Further and Higher Education*, 45(1), 1-16.

Smith, R. (2002). Transportation challenges and their impact on education. *Journal of Educational Policy*, 19(4), 412-428.

Solomon, O. (2016). *Fuel subsidy removal: Prospects and challenges on the Nigerian economy (Evidence from Akure, Ondo State Metropolis)*. [Master's thesis, South America University].

Stutzer, A., & Frey, B. S. (2008). Stress that does not pay: The commuting paradox. *Scandinavian Journal of Economics*, 110(2), 339-366.

Sweller, J. (1998). Cognitive load theory, learning difficulty, and instructional design. *Learning and Instruction*, 4(4), 295-312.

UNESCO. (2020). *Education in the era of COVID-19: Global perspectives on policy and practice*. United Nations Educational, Scientific and Cultural Organization.

Ukozor, C. U., & Ogunode, N. J. (2023). Deployment of subsidy funds on public universities for sustainable development in Nigeria. *International Journal of Inclusive and Sustainable Education*, 1(5), 13-21.tember), 293–297.