

**INTERCAMPUS SHUTTLE-RELATED TRANSPORTATION  
STRESS AMONG NIGERIAN UNIVERSITY STUDENTS: A  
LITERATURE REVIEW**

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**ABSTRACT:** Transportation stress is a significant concern affecting university students worldwide, impacting their academic performance, mental well-being, and overall educational experience. This paper explores the causes of transportation stress among Nigerian university students. The methodology employed is the narrative approach to content analysis of relevant literature. Factors such as long commuting times, poor transportation infrastructure, financial constraints, and safety concerns are identified as primary contributors globally. In Nigeria, issues like inadequate inter-campus transportation, poor road conditions, rising transport costs, and insecurity exacerbate the problem. This paper concludes with recommendations for improving transport infrastructure, enhancing inter-campus services, and providing financial support to mitigate student transportation stress.

**Keywords:** Transportation Stress, University Students, Intercampus Shuttle, Commuting Challenges, Nigeria

## **INTRODUCTION**

In several countries, buses are a critical element of public transportation, providing the most inclusive and sustainable mode of transportation to all forms of citizenry, including staff and students of universities. (Charbatzadeh et al., 2016). It is a common global practice to see a university operating on two or more different campuses where students are expected to shuttle from one campus to another to attend classes, exams, laboratory work, library use, and other learning facilities. Nigeria is not an exception to this practice, as numerous universities, particularly public ones, have one or more campuses run outside the main campus. Where this is the case, more often than not, the University operates a public bus system that will run the inter-campus shuttles of its students either free or for a fee.

Transportation stress is seldom seen as the anxiety, frustration, or discomfort associated with travelling. These stressful commuting experiences can have a wide range of negative consequences on health and well-being. Empirical research suggests that stressful experiences during commuting can impact emotions and cognitive functions (Nadimi et al., 2023a; Loo & Tsoi, 2024) . Students face transportation stress arising from their patronage of the Inter-Campus Shuttle (ICS).

Transportation plays a vital role in students' access to education (Gottfried, 2019), yet it remains a source of considerable stress for many university students. While commuting to campus is a daily necessity for many students, the quality and efficiency of transport services can significantly influence their overall educational experience.

Arising from this, the research question of the study is thus;

- What are the causes of intercampus shuttle-related transport stress among university students?

Therefore, this paper aims to analyse the causes of ICS-related stress among university students through a systematic literature review, with specific emphasis on the Nigerian. The goal is to understand the dynamics of this phenomenon and proffer lasting solutions. By so doing, the study has contributed to the transportation stress literature, a research niche with so much empirical dearth, particularly in Nigeria. This makes this paper both apt and timely.

## **Conceptual Issues**

### **Transportation stress**

This concept of transport stress dates back to the 1980s and is largely referred to as the unpleasant experience commuters face during travel (Tsoi & Loo, 2023). In other words, transportation stress is seldom seen as the anxiety, frustration, or discomfort associated with travelling. These negative encounters are called stressors, and they include but are not limited to overcrowding, delays in both waiting periods and during the journey, as well as traffic ill-treatment and negative attitudes from passengers and other road users (Rosida et al., 2019).

### **Inter-Campus Shuttle**

Shuttle bus service is considered a public transport of short trips using small buses or vans (Rohani et al., 2013). Shuttle bus systems mostly commute within a given municipal town or city. The inter-campus shuttle bus system is, therefore, a shuttle bus service that conveys students and staff of the University from one campus to another or from students' accommodations (both within and off-campus) to the campus for their academic activities. Where a university has multiple campuses, the need arises for intercampus shuttle buses. According to Juarez (2011), a shuttle bus service is necessary for a university even when the university operates on a single campus where a large number of students reside off-campus and are distantly apart from the university (Agyemang et al. 2014).

## **METHODOLOGY**

### **Research Design**

This study employs a narrative literature review approach to explore the concept of transportation stress. A narrative review is suitable for synthesising and critically analysing existing knowledge

on a topic because of its simplicity and flexibility without resorting to the rigid structure of systematic reviews. This method allows for flexibility in selecting relevant literature to provide a broad and contextual understanding of transportation stress.

### **Selection Criteria**

The literature was selected based on its relevance to the subject of transportation stress. No specific database was used; sources were identified through keyword searches such as "transportation stress and ICS" on various academic repositories, search engines, and institutional libraries. Priority was given to peer-reviewed journal articles, books, and reputable reports discussing transportation stress from various perspectives, including psychological, economic, and infrastructural aspects.

### **Scope of Literature Review**

This study does not impose a strict time frame for included studies. The rationale behind this decision is to allow for a comprehensive analysis of transportation stress by incorporating both historical and contemporary perspectives. This approach enables the identification of trends, patterns, and shifts in scholarly discourse over time.

### **Causes of Transportation Stress**

#### **A Global Perspective**

The causes of transportation stress among university students across the globe are well-documented, with common issues related to commuting time, public transportation reliability, financial constraints, and environmental factors. Globally, transportation stress among university students has been identified as a multifaceted issue influenced by several interrelated factors. According to Tsoi and Loo (2023), commute stressors are seen from three angles: travel or impedance, the transit environment and commuters, and personal attributes.

- a) Travel stressors, otherwise called impedance, include distance and time taken
- b) Personal stressors: socio-demographics such as; such as gender, age, income, and occupation of a commuter correlate with his commute stress.
- c) Environmental stressors: These are further divided into three as follows:
  - i. Overcrowding
  - ii. Service unpredictability: This refers to uncertainty about journey time (Journey duration and arrival time), poor road network, and heavy traffic-induced delays and congestion
  - iii. Service-related stressors: hygiene, safety, convenience to scenery viewing.

According to Loo and Tsoi, (2024), the fundamental causes of commute stress among road users include travel characteristics (travel time ), environmental and personality-related stressors (i.e. stress in one's life domains such as health conditions), bus-specific environmental stressors, including bus stop environment, crowding, the attitude of passengers and drivers, and time-related

factors (i.e. congestion and reliability). Conversely, some authors posit that the causes of transportation stress depend on one's gender. In other words, females, particularly during pregnancy, tend to experience more stress than their male counterparts. However, (2024) differ on this, as they revealed that all students, irrespective of their gender, experience the same level of stress when commuting to school. The only cause of the difference in their stress level is their educational levels as senior students tend to be less stressed than the juniors.

Another binary ascribed to the root cause of commute stress is identified as a lack of personal control over the trip and travel discomfort (Sepúlveda-Murillo et al., 2024). In this study, it was learned that stress perceived by students during school commutes is largely explained by variables unrelated to individual students, rather than social and environmental factors like urban violence, traffic accidents, or the state of sidewalks.

In Malaysia, the study's results showed that students were lowly satisfied with the three constructs of safety, convenience, and comfort according to Mohamed et al., (2022). When utilizing the ICS, however, the students of the University of North Dakota added affordability issues to safety concerns as their two causes of transportation discomfort (Scott et al., 2011). Edwards (2022) supports the affordability argument, as he reported that when free transportation is provided, even the students most likely to miss school attend classes consistently.

Research in countries like the United States and Canada has shown that long commuting times are a significant cause of stress among students. According to studies by Choi & Mokhtarian (2020), prolonged travel times reduce available time for academic activities and leisure, impacting students' mental health and academic performance. Gottfried et al. (2014) agree with the travel time argument, positing that, while school buses entrench positive outcomes on student attendance, long travel time is a barrier as it stresses the students.

In many urban centres globally, the reliability of public transportation significantly influences transportation stress. For instance, in metropolitan cities such as London and New York, disruptions in public transit services, delays, overcrowding, and infrequent scheduling have been reported as primary stressors for commuting students (Gatersleben & Uzzell, 2017).

Moreover, the cost of transportation is a significant burden for many students, particularly in countries with high living costs like Australia and the UK. This financial strain associated with commuting expenses can increase stress, forcing students to make trade-offs between essential needs and transport costs (Blumenberg & Agrawal, 2014). In densely populated cities across Europe and Asia, heavy traffic congestion exacerbates transportation stress. Another study in South Korea and Japan reveals that traffic delays and the lack of alternative transport routes contribute to student anxiety, fatigue, and reduced productivity (Yang, 2024). Wu (2014) identified the non-reliability of school buses as arrival time and travel time as the leading causes of students' transport stress. From the foregoing, it is understood that the phenomenon of ICS-related stress is a global phenomenon that transverses Asia, Europe, and North America. Hence, one expects a similar or even worse scenario in Africa, owing to the poor infrastructure.

### **Causes of transportation stress in African Universities**

The issue of transportation stress takes on distinct characteristics in Africa, particularly Sub-Saharan Africa, where infrastructural and socio-economic challenges are more pronounced. Sub-Saharan Africa's transport infrastructure is generally underdeveloped, with poorly maintained roads and limited public transport systems. Agyemang et al. (2014) undertook a study across three Universities in Ghana - the University of Cape Coast, the University of Ghana, and Kwame Nkrumah University of Science Technology to test their service quality with specific reference to keeping to time so that students don't miss classes. The findings of the study reveal that the buses are inefficient across the three universities as they cause students to attend classes late or sometimes miss them. Similarly, the students of the University of Johannesburg no longer trust their intercampus buses about punctuality hence, they now consider other alternative transport means (Mkwanazi et al., 2015). Additionally, the financial implications of commuting are particularly burdensome in Sub-Saharan Africa, where many students come from low-income backgrounds. As a result, the high transport fares, coupled with the rising cost of living, exacerbate the stress experienced by students who must navigate these economic challenges daily.

In another study by Bonsu (2023) in Ghana, the author highlighted that the absence of reliable public transport options forces students to rely on informal and often unsafe modes of transportation, increasing stress levels. In many African cities, rapid urbanisation has not been matched by effective urban planning, leading to chaotic traffic situations. The lack of designated bus stops, poorly regulated traffic, and the absence of pedestrian pathways make commuting a stressful experience for university students (Agyeman & Cheng, 2020). Thus, transportation stress in the sub-Saharan region is compounded by concerns about personal safety. Similarly, in South Africa, high crime rates in public transit areas have been reported as a significant source of anxiety for students commuting to universities (Ceccato & Loukaitou-Sideris, 2022). The fear of harassment, theft, or assault during transit can deter students from attending classes regularly.

According to Mugoro (2014), Tanzanian students seldom attend school because the bus is unavailable, and when it arrives, it is almost always late, causing the students to miss their first periods in the morning. Hence, Tanzania's case could be said to border on a lack of resources, a characteristic most African countries share, including Nigeria.

### **Transportation Stress in Nigerian Universities**

In Nigeria, transportation stress among university students is a growing concern due to unique socio-economic and infrastructural issues. Many Nigerian universities operate on multiple campuses, often situated far apart. Thus, students face significant delays and inconvenience when commuting between campuses due to poor road networks and unreliable inter-campus bus services. This inter-campus transportation stress affects punctuality, class attendance, and students' overall academic experience. The state of road infrastructure in many parts of Nigeria is poor, with potholes, erosion, and poorly maintained roads being common issues. Research conducted in Lagos State highlights that these road conditions contribute to traffic congestion and prolonged commuting times, significantly impacting students' stress levels and reducing their time available for studying (Gbadamosi, 2023). In another similar study in the same Lagos, Kadiri Show

in his survey how dissatisfied students are with the LASU shuttle service, largely due to overcrowding and delays. These result in stress that retard the students' performance.

Nigerian universities are currently facing an unprecedented level of paucity of funds; hence, their inability to procure new buses and maintain old ones has made the ICS services inefficient. Take, for example, the case of Federal University Dutsin-Ma. The scarcity of inter-campus buses negatively affects both the academic performance and the well-being of many students. This is because, on several occasions, they pay for their mobility to and from the permanent site (25km) out of their little pocket money at the cost of N1,500 for a round ticket. To this set of students, the opportunity cost of attending lectures is their food, learning, medical, and other life-supporting supplies that will ensure dignified and healthy living. Put differently, students who chose to attend to their academic schedules at their own expense have automatically chosen to scale down their living standards. This manifests in increased starvation and malnutrition among students and an overall decline in the general welfare and well-being of FUDMA students. Additionally, the welfare implications of the transportation stress experienced by students in FUDMA are sometimes nonmonetary. For instance, students who want to meet up with their morning classes do come to the bus station early enough to avert long queues and waits to the extent that, more often than not, they sacrifice their breakfast, sleep, and sometimes bathing.

Relatedly, Tukur and Darma (2021) study the transportation needs of some postgraduate students at the University of Ibadan and their effect on their ability to use the library. They find that respondents who use the school bus to commute in and out of the University have to cut their study time short in the evenings to catch up with the last buses. This cut in study time certainly has negative consequences on their academic performance as it limits their time for consulting the learning materials in the library.

The public transport system in Nigeria is largely unregulated, with private operators dominating the sector. This lack of regulation leads to unpredictable schedules, overcrowding, and frequent breakdowns, which contribute to heightened transportation stress among students (Mwangi, 2014). The informal nature of transport services, such as the use of motorcycles (*Okadas*) and tricycles (*Keke NAPEP*), further exacerbates safety concerns. Nigeria's economic challenges, including inflation and rising fuel prices, have led to increased transportation costs. For many students, especially those from low-income families, the high cost of commuting represents a significant financial burden, leading to stress and potential absenteeism (Oyeleye, 2021). This economic hardship is particularly evident in federal universities where tuition is subsidized, but the indirect costs of transportation remain high. The rise in insecurity, including kidnappings and armed robbery on highways, has added a layer of stress for students who commute long distances. The fear of travelling in unsafe regions or during late hours has become a deterrent for students, impacting their attendance and participation in academic activities (Olojede et al., 2017).

### **Effects of transportation stress among Nigerian university students**

ICS-related transportation stress, defined as the physical and emotional strain students experience while commuting between campuses due to an ineffective inter-campus shuttle system, has



significant negative implications. As highlighted in the literature, these effects can be broadly classified into academic and welfare.

### Academic Consequences

From an academic perspective, transportation stress often results in lateness to classes and absenteeism, primarily caused by poor road networks (Hamza, 2016) and the limited availability of buses. Research has consistently shown that these challenges contribute to a decline in students' academic performance, an outcome contrary to the initial objectives of the ICS system. Even in cases where students manage to reach campus, the fatigue associated with prolonged and stressful commutes can reduce their ability to concentrate, participate, and perform effectively in their studies. Many students find themselves arriving late to lectures, missing practical sessions, tests, and sometimes even exams due to transportation challenges. For those unable to cope with the inconsistencies of the ICS, skipping classes altogether becomes a coping mechanism, ultimately leading to poorer academic outcomes.

### Welfare Implications

On the welfare front, ICS-related stress has been linked to psychological strain (Mallari & Delariarte, 2021), fatigue, physical strain, and increased health risks, such as respiratory issues caused by overcrowding (Rosida et al., 2019). In addition to its direct impact on students' academic performance and well-being, transportation stress has financial implications. Due to the inefficiencies of the ICS, students often wait long hours under extreme weather conditions or resort to costlier transportation alternatives. This increases their financial burden, making them spend more on commuting than initially anticipated.

Figure 1 below shows the transmission mechanisms through which this phenomenon can negatively impact the students' academic performance and welfare.

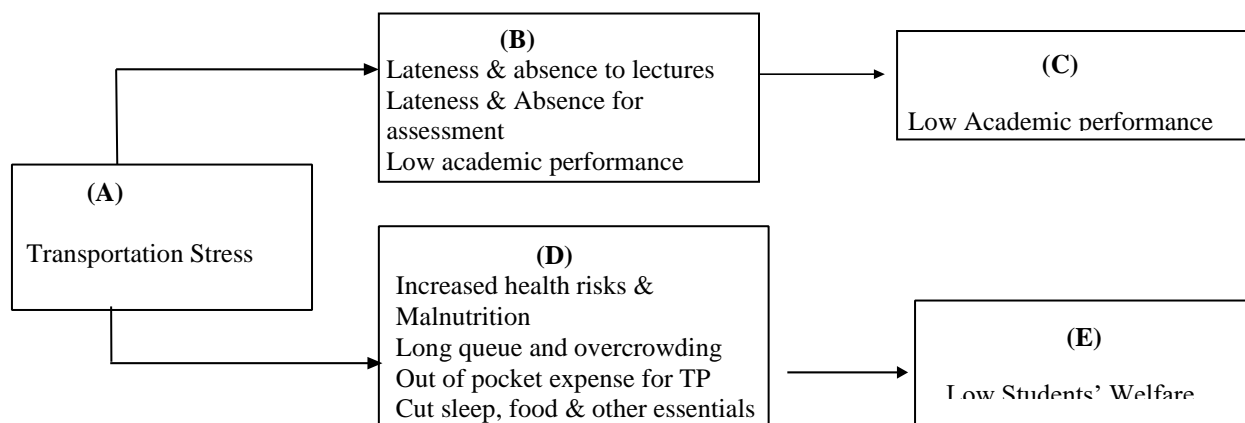


Figure 1: Impact of transportation stress on Students' welfare and academic achievement.

Source: *Research team*

As illustrated in Figure 1, transportation stress (A) leads to challenges in punctuality and attendance (B)—both of which are critical to academic success. Consequently, lateness and absenteeism translate into lower academic performance (C). Beyond the direct academic impact, students frequently endure hunger, dehydration, and exhaustion, further reducing their ability to engage in learning activities, as illustrated in (D) and (E). Those who can afford alternative transport often opt for commercial buses, leading to increased out-of-pocket expenditures.

From the various literature analysed herein, it is vividly clear that the phenomenon of transportation stress of ICS is real and debilitating to the students the system was meant to protect. The causes are wide and diverse. Despite the existence of some salient ones that cut across the globe, such as lateness and overcrowding, there exist some peculiarities that border on the geographical location under study. This includes security, inadequacy, and affordability in Nigeria, and the safety of walkways and roads in South Africa. Recognising these region-specific challenges underscores the need for localised policy interventions to mitigate the impact of transportation stress on students.

### **Conclusion and Recommendation**

Transportation stress is a significant issue for university students globally, with distinct regional and local factors influencing its impact. In Nigeria, the problem is exacerbated by poor infrastructure, unreliable public transport, economic challenges, and rising insecurity. Addressing these issues requires a comprehensive approach that involves improving transport infrastructure, enhancing inter-campus services, and providing financial assistance to students by the Federal Ministry of Transport and that of Works, the NUC & TETFUND, as well as the University management in respective order. The Universities need to collaborate with local and state governments to develop more reliable and efficient campus transport systems. Universities could introduce financial support measures, such as transport subsidies for low-income students, to alleviate the economic burden of commuting.

### **Limitations and suggested areas of further studies**

As this study relies exclusively on secondary data, potential limitations include selection bias and the risk of omitting relevant studies that may not have been easily accessible through general search methods. Additionally, the absence of a predefined database may affect the replicability of the study. Future research may benefit from employing a systematic approach with clearly defined databases and inclusion criteria to enhance objectivity and reproducibility.

### **REFERENCES**

- Agyeman, S., & Cheng, L. (2020). Analysis of barriers to perceived service quality in Ghana: Students' perspectives on bus mobility attributes. *Transport Policy*, 99, 63-85.
- Agyemang, W., Ojo, T. K., & Amoako-Sakyi, R. (2014). Perceived quality of campus shuttle bus service in Ghana. *International Journal of Physical and Social Sciences*, 4(12). <http://www.ijmra.us>



- Bonsu, C. (2023). A comparative study of institutional responses to sustainable mobility for public transport in cities in Ghana and Tanzania. *Humboldt Universitaet zu Berlin (Germany)*.
- Birabwa, S., Nsibambi, C. A. N., & Kibirige, I. (2014). Sources and effects of stress among university students. *The International Journal of Humanities & Social Studies*, 2(8), 160-165.
- Blumenberg, E., & Agrawal, A. W. (2014). Getting around when you're just getting by: Transportation survival strategies of the poor. *Journal of Poverty*, 18(4), 355-378.
- Ceccato, V., & Loukaitou-Sideris, A. (2022). Fear of sexual harassment and its impact on safety perceptions in transit environments: A global perspective. *Violence Against Women*, 28(1), 26-48.
- Charbatzadeh, F., Ojiako, U., Chipulu, M., & Marshall, A. (2016). Determinants of satisfaction with campus transportation services: Implications for service quality. *Journal of Transport and Supply Chain Management*, 10(1), 1–14. <https://doi.org/10.4102/jtscm.v10i1.203>
- Choi, S., & Mokhtarian, P. L. (2020). How attractive is it to use the internet while commuting? A work-attitude-based segmentation of Northern California commuters. *Transportation Research Part A: Policy and Practice*, 138, 37-50.
- Gbadamosi, B. (2023). Challenges and prospect of operating university campus shuttle services in Lagos State University. Available at SSRN 4541109.
- Gottfried, M. A. (2014). Chronic absenteeism and its effects on students' academic and socioemotional outcomes. *Journal of Education for Students Placed at Risk*, 19, 53–75. <https://doi.org/10.1080/10824669.2014.962696>
- Gottfried, M. A. (2019). Chronic absenteeism in the classroom context: Effects on achievement. *Urban Education*, 54(1), 3–34. <https://doi.org/10.1177/0042085915618709>
- Hamza, Y. (2016). An assessment of road transport infrastructure development in Kaduna State, Nigeria. *Unpublished M.Sc. Thesis, Ahmadu Bello University, Zaria*.
- Johanes, M. (2014). Transport problems for students and their effects on attendance in community secondary schools in Dar Es Salaam City, Tanzania. *Unpublished Thesis, The Open University of Tanzania*.
- Juarez, B. (2011). Best practices for university bus transit programs: Identifying strategies for success. *Applied Research Projects, Texas State University-San Marcos*. <https://digital.library.txstate.edu/handle/10877/352>
- Kadiri, B. (n.d.). Challenges and prospects of operating university campus shuttle services in Lagos State University, Ojo.

- Loo, B. P. Y., & Tsoi, K. H. (2024). Stressors for bus commuters and ways of improving bus journeys. *Transportation Research Part A: Policy and Practice*, 187, 104164. <https://doi.org/10.1016/j.tra.2024.104164>
- Mallari, E. F., & Delariarte, C. F. (2021). Academic stress mediates the relationship between satisfaction with travel and psychological well-being. *North American Journal of Psychology*, 23(3), 397-414.
- Mkwanazi, M. S., Mbohwa, C., & Nemarumane, T. (2015). Evaluation of the reliability performance of an inter-campus bus system. *2015 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM)*, 1762–1766. <https://doi.org/10.1109/IEEM.2015.7385950>
- Mohamed Elias, E., Ta'a, A., Abu Bakar, M. S., Abu Al-Rejal, H. M. E., Mahidin, N., & Hashim, A. (2022). Student satisfaction index from the construct of safety, facility, and comfort of bus services in university campus and the e-tracking application. *Journal of Information System and Technology Management*, 7(25), 238–252. <https://doi.org/10.35631/JISTM.725020>
- Mwangi, S. M. (2014). Gender relations in public road transport in Africa. *Doctoral dissertation, University of Nairobi*.
- Nadimi, N., Zamzam, A., & Litman, T. (2023). University bus services: Responding to students' travel demands? *Sustainability*, 15(11), 8921. <https://doi.org/10.3390/su15118921>
- Rohani, M. Md., Wijeyesekera, D. C., & Karima, A. T. A. (2013). Bus operation, quality service, and the role of bus provider and driver. *Procedia Engineering*, 53, 167–178.
- Scott, M., Sarker, M., Peterson, D., & Hough, J. (2011). University of North Dakota campus shuttle study. *Small Urban & Rural Transit Center, Upper Great Plains Transportation Institute, North Dakota State University, Fargo, ND*.
- Sepúlveda-Murillo, F. H., Lizárraga, C., & Chica-Olmo, J. (2024). Factors affecting school commute-related perceived stress in adolescents in Colombia. *Sage Open*, 14(4). <https://doi.org/10.1177/21582440241293195>
- Sumicad, R., Palanas, K. V. G., Ebesa, A. B., Sesante, M. A., Nuñez, K. A., Pacaide, A., & Navarro, H. L. D. (2024). Student commuters' perceived level of stress. *Journal of Psychology and Behavior Studies*, 4(2), 58–92. <https://doi.org/10.32996/jpbs.2024.4.2.6>
- Tsoi, K. H., & Loo, B. P. Y. (2023). A people-environment framework in evaluating transport stress among rail commuters. *Transportation Research Part D: Transport and Environment*, 121, 103833. <https://doi.org/10.1016/j.trd.2023.103833>

- Wu, Q. (2014). Associations between travel behavior and the academic performance of university students. *Unpublished M.Sc. Thesis, Clemson University*.  
[https://open.clemson.edu/all\\_theses/2063](https://open.clemson.edu/all_theses/2063)
- Yang, C. (2024). Governing transportation through communication: A cultural history of intelligent transportation systems (ITS) in South Korea. *International Journal of Communication, 18*, 20.
- Olojede, O., Daramola, O., & Olufemi, B. (2017). Metropolitan transport safety and security: An African experience. *Journal of Transportation Safety & Security, 9*(4), 383-402.
- Oyeleye, I. J. (2021). Stress factors and parental socio-economic status on class attendance and academic performance of business education students in colleges of education. *Unpublished Doctoral dissertation, Kwara State University - Nigeria*.