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THE ROLE OF INDIVIDUAL SOCIOECONOMIC FACTORS IN INFLUENCING PUBLIC TRANSPORT PREFERENCE IN NIGERIA

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Abstract -This study investigates the relationship between socioeconomic factors and public transport preferences in Nigeria, emphasizing the role of socioeconomic variables. The study employed quantitative data through a survey questionnaire using online platforms and collected data. Structural Equation Modeling (SEM) was used to analyse the 225 data collected using SPSS and AMOS. The study considered experts and those associated with the public transportation system for better output. The results highlight that the income level positively influences public transport preferences. Similarly, education level, gender dynamics, urbanization geo- location, cultural context, and employment status directly impact public transport preferences. In addition, it indicates a strong relationship between socioeconomic variables and transport preferences. The above results highlight the vital role of socioeconomics in enhancing public transport. The study suggests that policymakers consider socioeconomic dynamics to improve accessibility and satisfaction in the public transport system in northern Nigeria. The study provides new insights on the preferences selection around public transport in Nigeria as well as providing insights into improving transport infrastructure and services in Nigeria.

Keywords-Public transport, Socioeconomic, Structural Equational Modelling, Nigeria

I. INTRODUCTION

Public transport is considered the most significant and critical backbone of urban and rural infrastructure, enabling access to mobility for diverse communities and populations around (Porru et al., 2020). With the growing urbanization and vast geographical expanse, the number of public transport options is limited, and the available ones are overburdened with various challenges and difficulties (Yannis & Chaziris, 2022). Policymakers are currently discouraging massive investments and enhancing the sector (Hansson et al., 2019). Socioeconomic factor is considered the most crucial factor influencing individuals' preferences linked to public transport. Understanding such factors assists urban planners and policymakers in enhancing efficiency and equitable transportation services in the country (Narayanaswami, 2017). The transportation system in Nigeria is a microcosm of the economic and social realities where formal and informal transportation systems run in different ways, including taxis, buses, and tricycle (Alogdianakis & Dimitriou, 2024). However, people prefer buses and taxis for safety and convenience (Porru et al., 2020). Each of these public transportation modes attracts different customers or clients, while others look for the cheapest due to constraints or difficulties. Education, income level, social norms, and geographic location significantly shape public transport preference.

Income level is the most significant socioeconomic factor influencing public transport preferences. Income disparities are marked as apparent transport preferences, often associated with the economic capacity of individuals. Individual income may differ due to the capacity and affordability of private vehicles, which leads to increased usage of personal vehicle options. Conversely, lower-income earners prefer public transport because of its affordability and cost-effectiveness. Understanding the effectiveness of the cost and income influences the preference for public transport related to subsidy allocation and demand service management (Göransson & Andersson, 2023). A crucial role is played by the educational level in addressing individual transport preferences; having a higher education level indicates the extent of the situation awareness and sustainability of the environmental implications in selecting the preferred transport choice (Egset & Nordfjærn, 2019). In addition, educational attainment influences the individual's ability to map and understand the public transport information (Almlöf et al., 2021). Moreover, an educated individual may likely understand the route, schedules, and fare structures using the formal understanding of transportation activities through accessing the established public transport activities and alternatives (Bastiaanssen et al., 2022). Further, a geographical area is considered crucial and influences the preference for public transport. In urban areas, public transport and its infrastructure are more accessible than in rural areas, where the transportation system is less developed and less accessible, and the rural population depends on informal or traditional transportation systems (Göransson & Andersson, 2023). Such discrepancies and discrimination between the rural and urban systems significantly affect population density. After determining the ease of access and the workability of public transport, urban areas are considered essential,

while rural areas suffer from scarcity and difficulty of access (Rasca & Saeed, 2022).

In addition, research on public transport behavior indicates that its use may be a complex phenomenon influenced by a multitude of economic factors. Various socioeconomic variables are used to test relationships among gender dynamics, income level, cultural context, urbanization, geo-location, and education regarding public transport preferences. These factors shape individual behaviors and the utilization of public transport in Nigeria. The diverse approach and proposed preference create more opportunities, including greater inclusivity and consideration of socioeconomic dynamics, and improve the development of resilience, which is an essential opportunity for the public network. Therefore, the paper aims to examine the role of individual socioeconomic factors in shaping public transport preference in Nigeria using structural equation modelling.

II. LITERATURE REVIEW

Theoretical underpinning and Literature review

Public transportation is vital to urban mobility in developing nations such as Nigeria. The factors that influence the selection of public transport are intricate and closely tied to socioeconomic effects (Ahmad & de Oliveira, 2016). Given Nigeria's diversity, huge population, different levels of income, and distinct cultural contexts, it is crucial to explore these preferences through the lens of socioeconomic factors to enhance public transport policies and systems (Ceder, 2021). This review seeks to consolidate existing research on how socioeconomic factors shape public transport and enhance socioeconomic factors in Nigeria. Public transport preferences are experienced through several theoretical approaches and frameworks. In contrast, the theory of planned behaviour is considered the most appropriate theory for the study and the Social Equity Framework (Romero-Colmenares et al., 2022). The Theory of Planned Behaviour states that individual moves or actions influence subjective norms, attitudes, and behavioural perceived control (Lim & Weissmann, 2023). In connection with public transport, individual views towards the quality of transport, economic ability, and social norms influence the ability to make choices (Nogueira et al., 2023). The theoretical approach towards social equity for general access to public transport indicates the relation and influence on how socioeconomic disparities influence individual choices (Zhao & Wan, 2021). The financial aspect of the individual significantly affects the level of perception, which substantially affects the lower communities' access to private vehicles, leading to public transport being considered a necessity rather than a preference or luxury (Jiao & Azimian, 2021).

Socioeconomic Factors and Public Transport Preferences

Income Level

The literature discusses the connection between income levels and public transport preferences, indicating substantial research demonstrating the relationship between socioeconomic status and transportation preferences (Wang, et al., 2022). Some consider the income level identified as the essential factor influencing the availability of transport preferences; however, it affects people's willingness and view to participate in public transport. In addition, income level is considered the most critical factor influencing public transport (De Oña et al., 2021). Yousefzadeh Barri et al. (2025) indicate that individuals with higher incomes or wealth in their possession may be likely to own private cars, which decreases their participation in public transportation. Moreover, those with lower incomes often have no choice but to rely on public transport due to financial difficulties (Rozynek, 2024). A study indicates that almost 70% of vulnerable and low- income people cannot afford private vehicles, which is part of the reason for opting for public transportation (Khavarian-Garmsir et al., 2021). Income levels affect transportation choices directly or indirectly through the quality of services that the masses expect from the system. Those with higher incomes generally seek better services like cleanliness, punctuality, and safety, while those with lower incomes may prioritise cost over quality (Ibrahim et al., 2025). Such differences indicate the vital stage for public transport providers to address the needs of diverse income groups. Studies consistently show that individuals with higher net worth income feel deprived of utilising public transport and prefer private transportation for convenience and luxury due to the comfort and conveniences they offer. Valenzuela-Levi (2021) shows that the rise in household income is most likely determined by using the transport system in a particular household, income, and the usage of private vehicles, which leads to reduced public transport usage.

In contrast, the vulnerable masses, poor and average communities, plus lower- income households, solely depend heavily on public transport due to the constraint of financial access and vulnerability, as they cannot afford the expenses of private vehicles (Palm et al., 2021). In addition, income inequality has tremendously influenced individuals' perceptions, views, and preferences, even in the transport system geographically. Ermagun et al. (2023) reveal that vulnerable masses and low-income individuals are situated in a located in areas with significantly poor public transport infrastructure systems, despite the situation and lack of access to mass public transport become a serious concern that restricts their access to basic services needs and other opportunities that are considered primary needs. This separation situation underscores systemic inequalities that contain socioeconomic differences (Ibrahim et al., 2025).

People's perception of the quality of public transport significantly positively affects the general mass income, where the majority cannot afford to own private vehicles. Moreover, in our localities, those with higher incomes often link public transport with vulnerable societies and lower social status, giving less concern to their activities and infrastructure services based on service quality (Guzman et al., 2023). Such perception can create a massive gap between the leaders and the masses, leading to a stigma of using public transport as only vulnerable and

lower-income earners can access such vehicles (Upham et al., 2022). Such deterred individuals from utilising the system's potential to simplify public transport services in the country. Economic factors are closely related to psychological and social aspects, as indicated in studies investigating travel behaviours and preferences. For instance, the developed model by Göransson & Andersson (2023) shows how comfortable, reliable and safe public transport is perceived to play a key role in influencing people's preference choices.

Furthermore, public transport systems can be improved, and the narration can be changed regardless of the individual's income level. Therefore, the above review indicates that income plays a key role in shaping the preference for public transport, which is linked to infrastructure, service quality, and social structures. To attract inclusive transportation systems that can accommodate people of all income levels. In addition, stakeholders, regulators, and policymakers need to consider the infrastructure, perceptions and preferences of socioeconomic factors. Improving the appeal of public transport could lead to increased usage, ensuring fair access to mobility for various income groups.

H1: There is a positive relationship between income level and public transport preference.

Education Level

Education is considered one of the factors that significantly impacts preference selection for public transport (Abdullah et al., 2021). Individuals who attend higher education levels have a propensity for a better understanding of public transport systems, which are recognised to benefit the masses and vulnerable using public transit, relating to eco- friendliness and cost-effectiveness (Al-Rashid et al., 2023). Individuals with higher education levels tend to advocate and create awareness for improving the public transport system using greener alternatives, infrastructure and road networks (Banaji et al., 2021). Conversely, the group of masses that have a less educated background may be considered to be misleading and indicate less concern as seeing the policymaker as they might do and undo without knowing the experts ' respective rights in all angles, including private and public transport (De Masi et al., 2021). However, less reliable people with lower education levels often resort to using unregulated informal public transport, which costs many lives and causes insecurity in the entire transit and related activities of transport preferences (Abdullah et al., 2021).

Creating and enhancing educational programs for public transport positively influences people's perceptions and preferences for public transport (Zarabi et al., 2024). It is essential to understand that the academic program in urban areas related to public transport and other studies regions enhances the understanding of the masses and significantly advocates for such services. In contrast, rural areas were abundant with huge populations and less concern about infrastructure, road networks and sound public transport systems (Yu & Zhao, 2021). The transportation system needs to be improved, and such services must be enhanced efficiently. An education program needs to be created, and education-level attainment needs to be improved. However, studies indicate that educational level positively impacts public transport preference. Individuals with higher educational attainment tend to understand the significance and favourable opinion on the public transport system (Christoforou et al., 2021). In addition, it clearly indicates that educational attainment is more likely to relate to the public transport system and utilising its benefits and significance. Yap et al. (2021) opined that they suggest enhanced and sustainable public transport using education programs lined with high expectations of the educational level and preference selection of public transport services—conversely, individuals with lower education view private vehicles as prestigious and convenient for privileged individuals. Ahmad et al. (2023) indicate that individuals with less education often find default situations due to the reliability and safety of the public transport system. In addition, looking at the policymakers and variation of the public transport underscores the socio-economic aspect of the country's growth, where the revenue will be considered less compared to the system where the trust is considered and educational plan programs for transformation.

Therefore, studies show that education level plays a significant role in influencing public transport preference. Individuals with higher education levels might have a positive view of transforming public transport. At the same time, those with lower educational attainment tend to depend on private and personal vehicles for safety and comfort.

H2 There is a positive relationship between Education level and public transport.

Employment Status

In Nigeria, the level of employment significantly affects the use of public transport (Sogbe, 2021). The majority of individuals working in the formal sector who turn to stipulated working hours rely heavily on public transport in the developed world (Mogaji et al., 2022). Such individuals prefer using public transportation and arriving at the stipulated working time. On the other hand, workers in the informal sector, who have flexible working hours schedules, prefer private transport systems that can be used at all times (Kerzhner, 2023). However, the concept of public transportation in developing countries differs from that of the developed world, where employability status is transformed into luxury preference (Toro López & Van den Broeck, 2023). The employed individual may consider owning a private vehicle for convenience and luxury compared to an individual who has part-time work or is vulnerable and cannot afford a private car (Rozynek et al., 2022), regardless of the worker's location of employment. In addition, the transformed individuals within rural areas and urban employees with less earnings are the majority who prefer reliable services for public transport preference (Ahmad et al., 2023). Studies revealed that public transport is influenced by employment type, working hours and job location (Cooper & Vanoutrive, 2022). Busch-Geertsema et al. (2021) indicate that the influence of the relationship between employability status

and preference for public transport has been acknowledged and has mounted higher interest and potential in fields such as urban studies, economic geography, and transport sociology. Studies show that individual employment status plays a vital role in determining the preference selection of the transport system, which reflects broader socio-economic trends of transportation services (Calvert et al., 2022).

Bastiaanssen et al. (2022) show that individuals with employment status appear differently from the classical pattern compared with unemployed individuals who use public transport. For instance, studies show that full-time employees use frequent transportation based on punctuality and the reliability of the preferences that suit the employment schedules (Li et al., 2021). However, the employed person may be inclined to use public transport at peak hours due to the routing delay. Moreover, systems that provide direct routes to key employment hubs are considered preferable to public transport systems. In addition, jobless individuals may flexibly utilise the travel routine using public transport, looking for employment and less demanding leisure (Schaefer et al., 2021).

Furthermore, an individual's employment status influences the perception of public transportation services. For employed individuals who prefer public transport during their travel or working hours, essentials may be needed to meet the profession's demands, including frequent availability and quality services (Calvert et al., 2022). In contrast, unemployed individuals might have different opinions about using public transport as a significant means of accessing economic opportunities. However, they may experience challenges related to access and affordability, which influence the satisfaction of the system services (Cooper & Vanoutrive, 2022). Additionally, regional and area variations significantly influence employment status, affecting public transport preferences. The relationship between employment status and public transport preference differs among regions, countries, and even places where public transport renders activities within the area of investigation (Schaefer et al., 2021).

Therefore, existing studies show that the complexities of employment status affect public transport preferences, which is considered essential for policymakers. Designing public transport to serve the needs of different employment categories can address public transport accessibility, foster economic empowerment within societies, and increase quality service delivery within the area.

H3 There is a positive relationship between Empowerment status and public transport preference.

Gender dynamic

Gender dynamics significantly influence public transport preferences in Nigeria. In Northern Nigeria, studies have revealed that the female gender experienced serious challenges using public transport due to the safety and comfort of using public transport (Borker, 2024). Studies justified the identified safety issues, which, as a result, indicate that the alternative of public transport is considered safer and more comfortable for transportation (Owolabi et al., 2023). However, the right to public transport has been restricted and limited to the use of public transport in certain areas (Ikotun, 2023). Furthermore, women's household tasks and responsibilities influence daily transportation and movement around family-friendly transport preferences. Gender dynamics affect public transport preferences due to the perceived attitudes and cultural affiliation of our people through various demographic groups engaged in public transport systems (Chen et al., 2024). Studies show that gender and other socio-economic factors influence the perception of public transport usage. The findings reveal that gender perception emphasises their position in positioning public transport behaviour preferences.

Carver and Veitch (2020) indicate that men and women have various experiences using public transport; it suggests that women use public transport beyond commuting in all their cycling activities. Due to these schedules, they will likely frequently use public transport for their entire routine. Employment patterns compound this difference, with women using part-time or informal jobs that do not align with the traditional hours. Looking at such, the public transport systems that focus on peak-hour services within commuting cannot consider such struggles and often overlook female users' needs, leading to unequal access to the public transport system. In addition, safety issues are considered crucial and vital, affecting women's decisions when using public transport (Chowdhury et al., 2020). Studies show that women generally feel more nervous and cautious about safety and the risk of harassment while using public transport systems. Roberts et al. (2022) show that women cannot follow specific routes or travel times due to perceived dangers. This highlights the urgent need for public transport planners to implement gender-sensitive strategies to improve safety and inclusive systems. On the other hand, men's preferences are often influenced by efficiency and convenience, and they primarily use public transport for work-related purposes. The literature shows that male users tend to have more direct routes, leading to different satisfaction levels than female users. This difference emphasises the necessity of recognising gender-specific priorities in the public transport services and planning design (Sil et al., 2024).

Therefore, the interaction of gender dynamics plays a significant role in shaping the public transport preferences system. To effectively address this gender dynamic, the varying needs of both genders need to be addressed, adopting a gender-sensitive perspective that can help public transport become accustomed to the diverse requirements of all users and lead to a more reasonable commuting environment towards perceived gender dynamic preference.

H4 There is a positive relationship between gender dynamics and public transport preference.

Urbanization and Geographic Location

Swift urbanization and geographical location are considered significant factors influencing public transport preference, which has resulted in a growing need for public transportation. The accumulation of innovations and developmental strategies has significantly increased population growth, and urban centres have led to more traffic

congestion and made private vehicles less attractive and overburdened within societies (Jin et al., 2021). As a result, public transport systems must embark on strategising public transportation to accommodate the rising demands of city residents within society by using different plans and strategies. However, geographic factors affect public transport preference, as the urban population has better access to public transport than those in rural areas, where services may be intermittent or nonexistent (Göransson & Andersson, 2023).

Studies show that rural areas depend on informal transportation systems due to the absence of organised service providers. However, these informal transportation systems are often more affordable. They can pose safety and reliability issues, prompting rural residents to migrate to urban areas for employment, which in turn increases the demand for public transport in cities (Hansson et al., 2019). The rapid urbanisation in Nigeria has become a crucial issue, profoundly affecting various aspects of society, including public transportation systems. As urban populations expand, especially in major cities like Kano, Kaduna, and Maiduguri, the demand for public transport has risen sharply, highlighting the urgent need for a thorough understanding and analysis of transportation preferences. Existing research identifies several important themes related to this topic. A key theme is how socioeconomic factors affect the use of public transportation (Ryghaug et al., 2023). Zhao et al. (2020) indicate that the population growth in urban areas established a mixed economic combination through income generation and public transportation needs. Vulnerable and low-income earners depend on public transport due to its cost-effectiveness and increasing demand for accessible and efficient transportation. On the other hand, higher-income individuals prefer private vehicles for comfort, which shapes urban public transport to ensure an operational and policy-balanced system that serves entire income groups (Khalil et al., 2021). Liu et al. (2018) highlights that urban expansion frequently outstrips the development of necessary transportation infrastructure, leading to congestion and inefficiency. Roads, railways, and other public transport systems struggle to meet the growing demand, resulting in a systemic crisis that impacts commuters' choices. The lack of adequate public transport options often drives many to rely on informal transportation methods, such as motorcycles and shared taxis, which, while popular, present their own safety and regulatory challenges. Understanding urban residents' perceptions and experiences is essential for influencing transport policy.

Mueller et al. (2021) supported a participatory approach to public transport planning, indicating the importance of evaluations and community views in assessing user preference and service quality. Linking the public can effectively customise transport solutions and tackle the country's urban challenges. Therefore, the study on public transport preferences amid swift urban growth and pressing socio-economic needs to address inequality enhances infrastructure and sustainable public transport systems that effectively serve the urban population.

H5 There is a positive relationship between gender dynamics and public transport preference.

Cultural Context

Cultural context is considered a significant factor in influencing public transport preferences. Nigeria's diverse ethnicities lead to vastly different cultural attitudes towards public transport. In some areas and communities, cultural reservations must influence the modes of public transport, specifically regarding the involvement of travelling with people of different or opposite genders (Goel et al., 2022). However, cultural norms can directly affect the behavioural perception of both men and women regarding preferences for using public transport within communities. For instance, a preference for using private vehicles for cultural purposes is considered a socio-cultural activity that particularly indicates the cultural and middle class within communities. Public transport systems are considered an essential part of the infrastructure development of urban areas, associated with the cultural context factor, which indicates significant factors that affect people's preferences in using them for effective urban planning and policy development. Cultural influences affect emerging elements shaping the behaviour and attitudes towards public transport preferences. Cultural norms significantly affect an individual's perception towards public transport. Studies show that perceptions of public transport differ across cultures (Higueras-Castillo et al., 2023). In societies where car ownership is associated with status and personal achievement, public transport might be viewed as a last option or a service for those with lower incomes (Palm et al., 2021). Such cultural stigma discourages people from using public transport, resulting in a greater dependence on private vehicles (Nahiduzzaman et al., 2021).

Furthermore, cultures cannot be ignored as they emphasise community values and sustainability, and public transport may be regarded as a responsible and eco-friendly preference (Goel et al., 2022). Moreover, attitudes toward mobility vary greatly based on geographical and socio-economic factors. Studies show that cultures that emphasise collectivism prefer public transit in crowded urban regions with well-developed public transportation due to the social and economic benefits (Ganglmair-Wooliscroft & Wooliscroft, 2022). In contrast, individualistic societies are more inclined towards personal vehicles and cultural stories highlighting convenience and independence. A study indicates that marketing materials for public transport and resonating with local cultures and languages can significantly impact ridership. When public transport providers connect with communities in culturally relevant ways, such as offering bilingual services and culturally sensitive outreach campaigns, they can enhance public perception and increase usage (Townsend & Rosado, 2024). Additionally, social networks and peer influence are important cultural factors that affect preferences for public transport. Studies show that people often consult family and friends when making transportation decisions, with cultural norms influencing the types and modes of public transport deemed acceptable (Saxena et al., 2023). Communities that view public transport as a collective activity can create positive feedback to boost its appeal. At the same time, cultures that prioritise car ownership may foster a reluctance to adopt public transport options. Therefore, the relationship between

cultural factors and public transport preferences is obscure and varied. Understanding these factors can assist policymakers and urban planners in developing public transport systems that resonate with cultural values, ultimately improving usage and accessibility.

H6 There is a positive relationship between Cultural context and public transport preference.

Development framework

The development framework integrated the factors influencing public transport preferences in Nigeria using the socioeconomic variables of education level, income level, employment status, cultural context and urbanization geographical location. The framework analyses service quality and accessibility, which influences user preferences through motivation and identifies barriers to public transport. The framework is targeted to enhance the equitable public transport system in Nigeria (see Figure. 1)

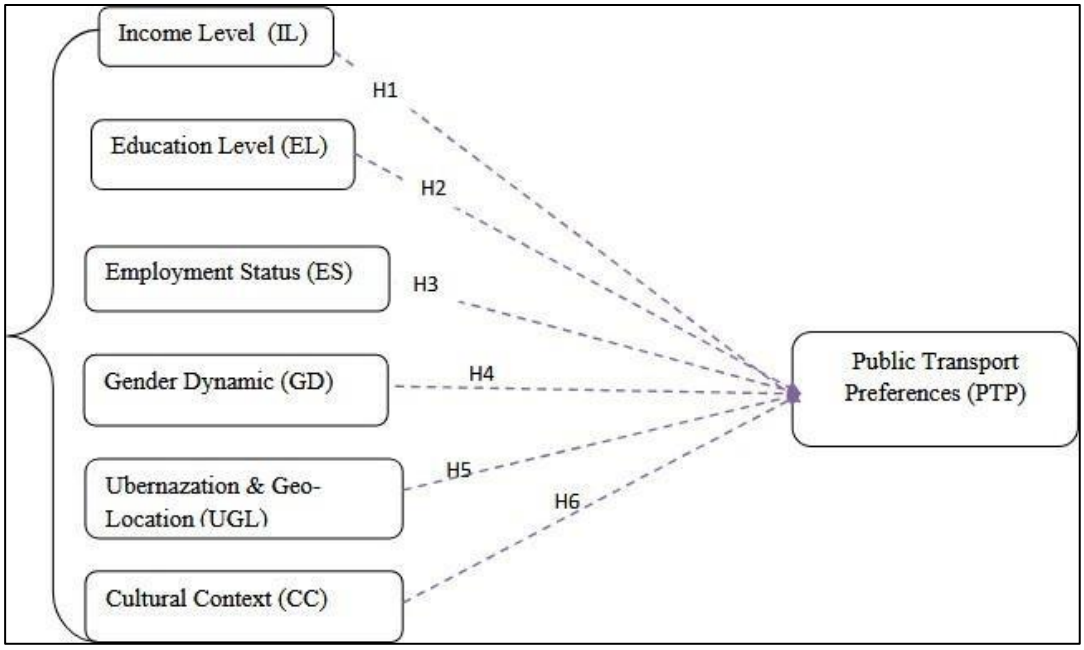

Figure 1: Development Framework

III. METHODOLOGY

The data collected using online platform software and analyses were used in SPSS and AMOS based on Structural Equation Modeling (SEM), which statistically analyzed the complex relationships among variables, which is used for multifaceted analysis of public transport selection. Structural Equation Modeling estimates multiple regressions simultaneously and generates insight through direct and indirect relationships within the variables (Byrne, 2017). Applying the Structural Equation Modeling indicates a versatile comprehension of the socioeconomic factors and their influence on the transportation preferences. A total of 225 respondents were served with the questionnaire; the questionnaires were selected using a random sampling approach at major public transport hubs using their social media platform in Nigeria. The survey includes demographics, education, gender, age categories, employability, and public transport preferences.

The Data were analysed using statistical software (AMOS and SPSS). The first section of the analysis summarized the demographics of the respondents for a better understanding of the categories of the respondents. The subsequent section examined the regression analysis and tested the complex relationship of the variables between the socioeconomic factor and public transport preferences. The hypotheses were designed and tested based on the literature reviewed using the conceptual framework to test the direct relationship of the dependent variable (DV) and independent variables (IV) for good model outcomes.

Assessment of Normality

The variable test to justifies the variables the normality and worthiness of the data and fit based on normality assessment

TABLE I. ASSESSMENT OF NORMALITY

Construct	Item	Skewness	CR	Kurtosis	CR
Income level (IL)	IL1	.780	4.775	.161	.494
	IL4	.692	4.240	-.150	-.460
	IL5	.963	5.897	.296	.905
	IL6	-.049	-.302	-1.177	-3.604
Education Level (EL)	EL1	1.138	6.970	.226	.693
	EL2	.721	4.418	.061	.188
	EL3	1.127	6.903	.847	2.594
	EL5	-.118	-.725	-.936	-2.866
	EL6	-.089	-.543	-.692	-2.120
Employment Status (ES)	ES1	.084	.514	-1.169	-3.578
	ES2	1.202	7.361	1.183	3.621
	ES3	.940	5.754	.811	2.483
	ES4	.324	1.985	-.668	-2.044
	ES5	.240	1.468	-.556	-1.703
	ES6	.862	5.279	.019	.058
Gender Dynamic (GD)	GD1	.156	.958	-1.100	-3.367
	GD2	.406	2.488	-.654	-2.002
	GD3	.060	.365	-1.183	-3.623
	GD4	.095	.582	-1.099	-3.365
Ubernization & Geo-location (UGL)	UGL1	.121	.743	-.881	-2.696
	UGL2	.340	2.084	-.979	-2.996
	UGL3	.744	4.556	.036	.110
	UGL4	.938	5.743	.544	1.665
	UGL6	1.025	6.279	.300	.919
Cultural Context (CC)	CC2	.288	1.763	-.696	-2.131
	CC4	.553	3.383	-.151	-.462
	CC5	.190	1.163	-.870	-2.664
	CC6	.574	3.512	-.113	-.347
Public transport Preferences	PTP1	.501	3.070	-.588	-1.802
	PTP2	.465	2.850	-.728	-2.228
	PTP3	.400	2.830	-1.097	-2.360
	PTP4	.719	4.405	-.021	-.065
	PTP5	.050	.305	-1.070	-3.277
	PTP6	.186	1.139	-.850	-2.603
	PTP7	.531	3.250	.081	.247
	PTP8	.441	2.703	-.615	-1.882
	PTP10	.779	4.771	-.014	-.043
	PTP11	.550	3.366	-.958	-2.933

Table 1 of the normality assessment test indicates the skewness and kurtosis of all items, and the variables placed between +-2 for skenewness. Kurtosis is considered +-7. The data set of all item constructs was well-constructed and distributed, as both met the threshold (Hair et al., 2017).

IV. RESULTS AND DISCUSSION

Results

Table II distribution of the demographic information of the respondents which consists of Gender, Age, Education, Household and status of the respondents.

Table II DEMOGRAPHIC ANALYSIS OF THE RESPONDENTS

Demographic Data	Categories	Frequency	Percentile
Gender	Male	189	84%
Age	Female	36	16%
	18-30	125	55.6%
	31-40	58	25.8%

	41-60	40	17.8%
Educational Level	60-above	2	0.9%
	Secondary	7	3.1%
	NCE/Diploma	17	7.6%
	Degree	147	65.3%
	Master & Above	54	24%
Household-Income Monthly			
	1000-10,000	52	23.1%
	10,001-50,000	60	26.7
	51,000-100,000	38	16.9%
	Morethan 100,000	75	33.3%
Status			
	Employed	92	40.9%
	Driver	7	3.1%
	Student	99	44%
	Unemployed	27	12%

Table II demographic information of the respondents indicates the characteristics of the demographic. The result shows that 55.6 per cent of the respondents are between 18 and 35. 84 percent of the respondents were male, while 16 percent were female. In addition, the education level is considered differently, indicating the capacity for knowledge and sound understanding of the public transport system to tackle the needs of the masses and enhance economic development in Nigeria. The educational level shows that degree level has more than 65 percent, followed by Master 's-above and secondary, and NCE/Diploma level of education were also observed in the third and fourth categories. Furthermore, the household income shows that those receiving 100,000 and above monthly have 33.3 percent, and the status of the respondents in terms of employability is 40.9 percent employed, and 44 percent are students.

TABLE III DESCRIPTION AND FACTOR LOADING

Construct	**Measurement**	**Items used**	**Loading Factor**	**Final Loading Factor**
IL	My income level influences how frequently I use public transportation	**LI1**	**0.580**	**0.580**
	Public transportation is affordable option for individuals with lower income levels	**IL2**	**0.479**	**Deleted**
	Do you currently receive any form of government assistance or subsidies related to public transportation costs?	**IL3**	**0.455**	**Deleted**
	People with higher income levels prefer private transportation over public transit	**IL4**	**0.618**	**0.620**
	Lower-income earners are dependent on the public transportation	**IL5**	**0.733**	**0.733**
	The cost of public transportation influences my decision to use it regularly	**IL6**	**0.750**	**0.750**
EL	My level of education influences my choice to use public transportation	**ED1**	**0.690**	**0.690**
	People with higher education levels are more likely to prefer using public transportation	**ED 2**	**0.567**	**0.567**
	Educational background affects awareness of public transportation options	**ED 3**	**0.620**	**0.623**
	Individuals with higher education tend to prioritize convenience over cost when choosing transportation	**ED 4**	**0.497**	**Deleted**
	Less educated individuals rely more on public transportation due to limited access to private vehicles	**ED5**	**0.810**	**0.814**
	Education level influences perceptions of safety and reliability of public transportation	**ED6**	**0.862**	**0.862**
ES				
	My employment status influences how often I use public transportation	**ES1**	**0.660**	**0.660**

	Employed individuals prefer using public transportation for their daily commute	**ES2**	**0.560**	**0.560**
	Unemployed individuals are more likely to rely on public transportation due to financial constraints	**ES3**	**0.605**	**0.605**
	My employment schedule affects my choice of public transportation	**ES4**	**0.628**	**0.628**
	Part-time workers prefer public transportation over private vehicles more than full-time workers	**ES5**	**0.770**	**0.770**
	Employment status impacts the preferred time of day I use public transit	**ES6**	**0.640**	**0.640**
GD	I feel safe using public transportation as a woman	**GD1**	**0.670**	**0.670**
	transportation is more accessible for men than women in my area	**GD2**	**0.574**	**0.574**
	Gender stereotypes influence the way public transport services are designed and operated	**GD3**	**0.830**	**0.830**
	Women prefer to use public transportation during daytime hours due to safety concerns	**GD4**	**0.765**	**0.770**
	Gender plays a role in the comfort level when using public transportation	**GD5**	**0.490**	**Deleted**
	Public transport policies should address gender-specific safety and comfort issues	**GD6**	**0.495**	**Deleted**
UGL	The level of urbanization affects my choice to use public transportation	**UGL1**	**0.828**	**0.830**
	In densely populated cities, public transportation is more convenient than private vehicles	**UGL 2**	**0.605**	**0.605**
	Public transport services are more reliable in urban areas than in rural regions	**UGL 3**	**0.589**	**0.589**
	My geographical location influences how often I use public transportation	**UGL 4**	**0.560**	**0.560**
	Public transportation infrastructure needs to be improved more in suburban and rural areas	**UGL5**	**0.460**	**Deleted**
	Urban areas have better public transportation options compared to rural areas	**UGL6**	**0.830**	**0.830**
CC	My income level influences my choice to use public transportation	**CC1**	**0.460**	**Deleted**
	Public transportation is more affordable than private vehicles for me	**CC2**	**0.703**	**0.703**
	Individuals with lower socioeconomic status prefer using public transport over private cars	**CC3**	**0.407**	**Deleted**
	The cost of public transportation influences my frequency of usage	**CC4**	**0.845**	**0.845**
	Owning a private vehicle is less feasible for people with limited financial resources	**CC5**	**0.830**	**0.830**
	Public transport is a necessary option for people with lower income levels	**CC6**	**0.648**	**0.648**
PTP	I prefer using public transportation because it is more affordable than owning a private vehicle, especially at my current income level	**PTP1**	**0.690**	**0.690**
	My income influence level influences my choice to use public transport over personal transportation options	**PTP2**	**0.713**	**0.713**
	The quality of public transport directly impacts my ability to stay employed	**PTP3**	**0.689**	**0.689**
	Improving public transportation services could help unemployed individuals find jobs	**PTP4**	**0.640**	**0.640**
	Public transport vehicles are equally safe for men and women	**PTP5**	**0.759**	**0.759**
	I believe public transport policies promote gender equality	**PTP6**	**0.589**	**0.589**

	Public awareness campaigns have improved gender respect on public transport	**PTP7**	**0.567**	**0.567**
	The availability of reliable public transport encourages urban residents to reduce private vehicle usage	**PTP8**	**0.689**	**0.689**
	The expansion of public transport infrastructure is essential for sustainable urban development	**PTP9**	**0.498**	**Deleted**

	Public transport services in this area adequately respect different cultural norms and practices	**PTP10**	**0.864**	**0.867**
	My cultural background influences my choice of public transport over other modes of transportation	**PTP11**	**0.567**	**0.567**

Table III shows the definition of factor loadings based on the setting of the standardized factor. The initial factor loadings indicate a variety of loadings, including poor loadings in the first column, while the second column shows the final loading using Figure 2. After deleting the poor loadings, constructs appear in the range of>0.5 (Neves et al., 2022); the higher the factor loading, the more positive the constructs.

TABLE IV.INTERNAL CONSISTENCY AND RELIABILITY

Variables	**Composite reliability**	**AVE**	**Cronbach alpha**
Income Level	0.709	0.670	0.703
Education Level	0.726	0.711	0.732
Employment Status	0.713	0.643	0.718
Gender Dynamic	0.825	0.918	0.822
Ubernization Geo-Location	0.702	0.682	0.705
Cultural Context	0.710	0.706	0.720
Public Transport Preferences	0.719	0.677	0.715

Table IV indicates that the composite reliability (CR) values exceeded the minimum 0.7 of the model's threshold (Hair et al., 2017). Similarly, the Cronbach's alpha value exceeded the recommended value of >0.70, the same as Cronbach's alpha with a value above 0.7. Further, Average variance Extraction has also met the minimum threshold of 0.5 above.

TABLE VDISCRIMINANT VALIDITY

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Income Level	**0.448**						
Educational Level	0.383	**0.505**					
Employment Status	0.487	0.830	**0.413**				
Gender Dynamic	0.511	0.695	0.791	**0.842**			
Ubernisation Geo-Location	0.189	0.288	0.317	0.243	**0.465**		
Cultural Context	0.478	0.787	0.724	0.283	0.426	**0.498**	
Public Transport Preference	0.483	0.793	0.728	0.360	0.422	0.544	**0.458**

Table V describes discriminant validity results for the latent structural variables and their correlation. It is defined based on the square root of AVE to indicate the distinctness between the variables. The results indicate that all items show good load in different configurations.

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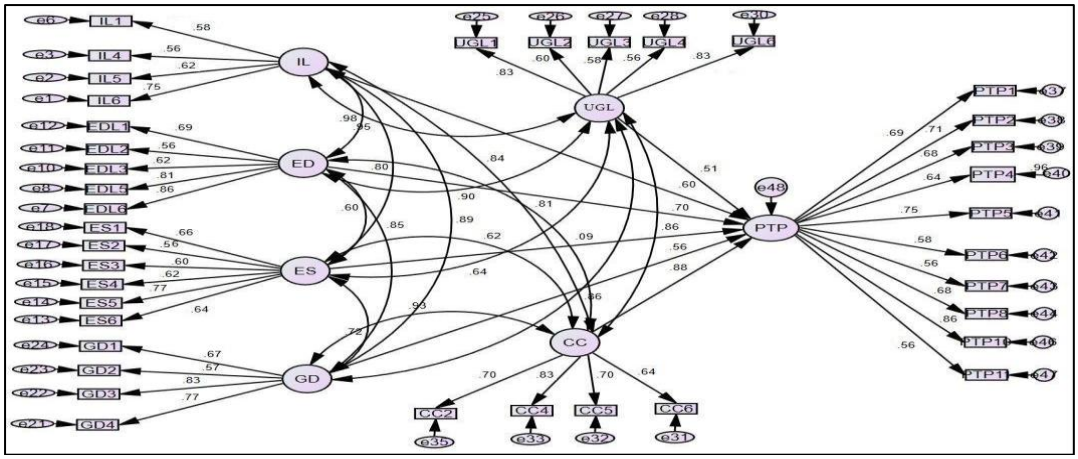

Figure 2: Measurement Model

TABLE VI MODEL OF FIT-BASED THEORIES

Model Fit	**Results**	**Theories**
CMIN/DF	1.924	(Hair et al., 2017)
GFI	0.950	(Byrne, 2013)
AGFI	0.912	(Hair, et al, 2017).
IFI	0.901	(Hair et al., 2017)
CFI	0.997	(Hair et al., 2017)
TLI	0.979	(Byrne, 2013)
RMSEA	0.064	(Hair, et al.,, 2017).

Table VI describes the model's measurement and model fit as indicated above. The CMIN/DF indicates 1.924, as Hair et al. (2017) recommended. The GFI, AGFI, IFI, CFI, and TLI were all recommended to be above 0.9 and have met the required threshold, while RMSEA is recommended below 0.08, which is 0.046 below 0.08 as suggested by Hair et al. (2017). Therefore, the model indicates the level of acceptance.

TABLE VII HYPOTHESES TESTING

Path	**Unstandardized Estimate**	**S.E.**	**Critical Ratio**	**P-value**	**Hypotheses**
IL-> **PTP**	.599	.171	3.502	.004	Supported (H1)
ED-> **PTP**	.601	.120	5.002	.000	Supported (H2)
ES-> **PTP**	.861	.180	4.783	.000	Supported (H3)
GD-> **PTP**	.862	.189	4.560	.000	Supported (H4)
UGL->**PTP**	.564	.120	3.889	.003	Supported (H5)
CC ->**PTP**	.881	.179	4.921	.000	Supported (H6)

Table VII testing hypotheses indicates the significant relationship between dependent and independent variables; the income level variable positively correlates with public transport preferences. The probability of getting a vital critical ratio as large as 3.502, with a p-value of 0.004. Therefore, the direct relationship link between income level and public transport preference indicates a positive relationship and supports (H1). The scenario is the same: the direct link between ED and PTP positively affects economic sustainability and accepts H2, H3, H4, H6, and H7. The above results and analyses indicate a direct link between the independent variables and **PTP,** as a direct link with positive effects, as indicated in Table VII.

The measurement of the structural model carried out in Table II indicates the demographics of the respondents; however, Table 3 defines the construct with its respective factor loadings, where some of the variables were poorly loaded and others have met the minimum threshold of the loadings >0.5 (Hair et al., 2017). The tested variable used indicates the validity and reliability measured for the variable justification, where the constructs used to form a variable were all met the requirements above threshold 0.7 for composity reliability and Cronbach's alpha, while Average Variance Extraction > 0.5 and assessment considered with the range ±2 and ±7 (Byrne, 2013).

The discriminant validity in Table V shows the square root assessment of AVE as the distinct relationship between the variables, which relates to the variables between the columns and rows. The requirement needed should be below 0.85 as indicated by (Hair et al., 2014); any value exceeding the above threshold stipulated is considered less expected and cannot be considered under discriminant validity. Therefore, the measurement test under discriminants has met the threshold and is considered valuable. Table 6 measures the model fit of the study, which is considered critical, starting from GFI, AGFI, CFI, TLI, and IFI, which have met the requirement above >0.9, and RMSEA has also met the threshold requirement of 0.064 below the maximum threshold of 0.08.

Moreover, Tables 7 indicate the results' direct effect status. The hypotheses on the direct effect between dependent and independent variables were accepted. The study confirmed the relationship between the Income

level of individuals, Education level, Employment status, Gender dynamics, urbanization, and Geographical location, cultural context towards public transport preferences in enhancing the socioeconomic development of public transport and the sustainable sector. All scenarios showed a positive relationship between the variables and the direct effect and influence on public transport preference. Such innovative ideas lead to the selection and preference for the public transport system within communities. Socioeconomic factors positively influence public transport preferences in Nigeria. The infrastructural funding of the transportation system encourages mass participation and establishes essential benefits and a strong relationship between direct effects and influences, as indicated in Table VII. The study stresses the significant role of applying socioeconomic and individual factors in influencing the transportation system in northern Nigeria.

V. CONCLUSION AND RECOMMENDATION

Conclusion

In conclusion, the study follows the stages of structural equation modeling based on confirmatory factor analysis to justify the relationship between the studied variables. The fit model of goodness indicates a consistent result with the perfect fit model, which various theories support the study findings. The study indicates a clear positive relationship between the various factors used in the research, using hypotheses 1-6 as shown in the above tables VII and figures 1-2. Furthermore, the study indicates that socioeconomic factors can influence the relationship with public transport preferences through income level, education level, employment status, gender dynamics, urbanization, geographic location, and cultural context. Therefore, the six variables used clearly indicate the direct relationship and its influence on public transport. This study shows that the public transport system can be a solution for the masses, and that government intervention may be needed to improve services in the sector.

The study is limited to Northern Nigeria. However, the model can be used elsewhere to achieve better outcomes and make new discoveries.

RECOMMENDATION

This will significantly reduce the severe socioeconomic setback towards public transport in Northern Nigeria. The government should utilize restructuring the system to address the following recommendations:

i. **Policy implication**: This enhances the socioeconomic influence in addressing public transport needs, shaped by income level.

ii. **Improving public transport infrastructure**: Improving and funding infrastructure demand is crucial; however, it can also be a massive source of income and better accessibility for various classes and socioeconomic groups.

iii. **Enhance safety**: Policymakers should also investigate security and safety, which are key to the transportation system

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