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Benefits of an Efficient Transportation System in Akure Metropolis

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Abstract
The rapid urbanization of Akure Metropolis, the capital of Ondo State, Nigeria with an estimated population reaching approximately 803,000 in 2025 and projected to exceed 834,000 by 2026 has intensified the demand for reliable and efficient urban transportation systems. This paper examines the social and economic benefits of an efficient transportation system in Akure, drawing on empirical survey data from 1,964 residents across the city's 11 wards. Key findings reveal that taxi services dominate daily commuting, utilized by 72.2% of respondents due to their perceived comfort, convenience, flexibility, and safety, while formal public bus systems remain underutilized at only 6.2%, largely owing to issues of reliability, limited frequency, and poor coverage. Motorcycle (okada) transportation and private cars also play notable roles, though secondary to taxis in preference. Respondents strongly endorsed the benefits of transport efficiency, with 85.6% agreeing that it would significantly reduce daily travel time (mean = 4.32, SD = 0.89), 81.2% highlighting reductions in traffic congestion and improvements in urban livability (mean = 4.20, SD = 0.91), and 78.4% noting enhanced access to essential services such as healthcare and education (mean = 4.15, SD = 0.95). Economically, 83.9% perceived boosts in local economic activities and job creation (mean = 4.28, SD = 0.92), 79.7% emphasized improved market access and trade facilitation (mean = 4.18, SD = 0.94), and 76.5% agreed on increased attractiveness to businesses and investors (mean = 4.10, SD = 0.96). Frequent traffic congestion was reported by 52.4% of commuters, underscoring the urgency of efficiency interventions to alleviate delays, lower transport costs, and enhance productivity. These perceptions align with the need for targeted infrastructure investments particularly in improving public bus reliability, integrating taxi services, and expanding non-motorized options to maximize social equity, economic productivity, and environmental sustainability in Akure. The findings provide evidence-based insights for urban planners and policymakers to prioritize transport enhancements that support inclusive, resilient, and livable urban growth in rapidly expanding Nigerian cities.

Keywords: Akure Metropolis, Urban Transportation, Efficient Transport System, Social Economic Benefits, Taxi Dominance, Public Bus Underutilization, Traffic Congestion, Urban Livability, Economic Productivity, Nigeria

1. Introduction

Efficient urban transportation systems constitute a fundamental pillar of modern city development, serving as the circulatory network that enables the seamless movement of people, goods, and services essential for economic vitality, social cohesion, and environmental sustainability (UN-Habitat, 2016) [7]. In rapidly urbanizing regions of the Global South, where population growth often outpaces infrastructure development, the quality and efficiency of transportation directly influence residents' access to employment opportunities, educational institutions, healthcare facilities, markets, and social networks (World Bank, 2021) [9]. An efficient transportation system is characterized by reliable, affordable, accessible, safe, and well-integrated modes reduces travel times, lowers transport-related costs, mitigates traffic congestion, decreases environmental degradation, and enhances

overall urban livability (Litman, 2020) [5].

Akure Metropolis, the capital city of Ondo State in southwestern Nigeria, exemplifies many of the transportation challenges and opportunities typical of mid-sized Nigerian cities undergoing rapid urbanization. With a population that has grown significantly over the past two decades due to its status as an administrative, commercial, and educational hub, Akure faces mounting pressure on its road networks, public transport services, and non-motorized infrastructure (Faiyetole & Adewumi, 2024; Akinluyi *et al*., 2021) [4, 2]. Traffic congestion has become a daily reality for many residents, particularly during peak morning and evening hours, exacerbated by inadequate road capacity, poor traffic management, proliferation of informal transport modes, and limited investment in mass transit alternatives (Ogundare & Ogunbodede, 2014) [6]. The dominance of taxi services (used by approximately 72.2% of commuters for daily travel) alongside low utilization of formal public buses (only 6.2%) reflects both the adaptability of informal operators and the persistent weaknesses in regulated public transport provision (Adedotun, 2015; Olorunfemi & Adeniran, 2018) [1].

Despite these challenges, an efficient transportation system holds transformative potential for Akure. Economically, improved mobility can reduce the time and financial costs of commuting, thereby increasing disposable income, expanding labor market participation, stimulating local trade, attracting private investment, and fostering job creation across multiple sectors (Litman, 2020; Faiyetole & Adewumi, 2024) [5, 4]. Socially, reliable and inclusive transport enhances access to essential services—particularly for vulnerable groups such as women, youth, low-income households, and persons with disabilities while promoting social interaction, community integration, and equitable access to urban opportunities (United Nations, 2015) [8]. Environmentally, greater efficiency through modal shifts toward shared and public transport, combined with better traffic flow management, can lower vehicle emissions, reduce air and noise pollution, and contribute to climate resilience in a city already experiencing urban heat island effects and flood vulnerability (Zhou & Gao, 2020) [10].

The importance of these benefits is magnified in the context of Nigeria's broader urban transition. With projections indicating that over 60% of Nigerians will live in urban areas by 2050, cities like Akure must prioritize transportation improvements to avoid deepening inequality, economic stagnation, and environmental decline (United Nations, 2018). Yet, despite growing academic and policy interest in Nigerian urban mobility, relatively few studies have systematically examined the perceived and actual social and economic benefits of transport efficiency in specific mid-sized cities such as Akure. Much of the existing literature either focuses on larger metropolises (Lagos, Abuja, Port Harcourt) or addresses general urban planning issues without isolating transport-specific outcomes (Adebumiti, 2020; Barau *et al*., 2015).This paper therefore seeks to contribute to filling this knowledge gap by focusing specifically on the social and economic benefits of an efficient transportation system in Akure Metropolis. Drawing on empirical data collected from 1,964 residents across the city's 11 wards, the study explores how improvements in accessibility, reliability, affordability, safety, and coverage of existing and potential transport modes could yield measurable gains in travel time savings, enhanced access to services, reduced congestion, increased economic productivity, expanded job opportunities, improved market connectivity, and greater attractiveness to investors and businesses.

Ultimately, understanding and quantifying these benefits represents a critical step toward designing transportation interventions that are responsive to local realities, inclusive of diverse user needs, and capable of delivering long-term improvements in quality of life and urban resilience.

2. Materials and Methods

2.1. Research Design

The study employed a descriptive and analytical design to assess the benefits of efficient transportation in Akure Metropolis. It integrated survey data with conceptual frameworks linking transport efficiency to socio-economic outcomes. Akure, covering approximately 30.02 square kilometers, was the focus, with emphasis on how improved systems reduce congestion and enhance accessibility.

2.2. Data Collection

Primary data were gathered via a structured questionnaire administered to 1,964 residents, covering perceptions of transport benefits using Likert-scale items (e.g., strongly agree to strongly disagree). Questions targeted social benefits (access to services, reduced congestion) and economic benefits (job creation, productivity). Secondary sources included literature on urban transport impacts.

2.3. Sampling Method

Multistage sampling stratified Akure into 11 wards, followed by simple random sampling proportional to ward populations, yielding 1,964 respondents. This ensured demographic representation across age, gender, income, and occupation.

2.4. Analytical Techniques

Descriptive statistics (frequencies, means, standard deviations) summarized benefit perceptions. Inferential analysis, including chi-square tests, examined relationships (e.g., demographics and mode choice influencing perceived benefits). Results were presented in tables for clarity.

3. Results

The results of this study are derived from the analysis of primary data collected through structured questionnaires administered to 1,964 respondents across the 11 wards of Akure Metropolis. The findings focus specifically on residents' perceptions and experiences regarding the social and economic benefits of an efficient urban transportation system. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the level of agreement with various benefit statements, measured on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Higher mean scores and higher percentages of "Agree" and "Strongly Agree" responses indicate stronger endorsement of the stated benefits.

3.1. Socio-Demographic Characteristics of Respondents

The sample was demographically diverse, ensuring reasonable representation of different population segments in Akure Metropolis. Key characteristics are summarized below:

Table 1: Distribution of Respondents by Socio-Demographic Characteristics

Variable	Category	Frequency	Percentage (%)
Gender	Male	1,037	52.8
	Female	927	47.2
Age Group	Under 18	98	5.0
	18–30 years	754	38.4
	31–50 years	640	32.6
	51–60 years	294	15.0
	60 years and above	178	9.0
Educational Level	No formal education	137	7.0
	Primary	294	15.0
	Secondary	686	35.0
	Tertiary	841	42.8
Occupation	Civil servant	558	28.4
	Trader/Business	711	36.2
	Road transport workers	392	20.0
	Others	303	15.4
Monthly Income	Below ₦33,000	837	42.6
	₦33,000 – ₦100,000	549	28.0
	₦100,001 – ₦200,000	314	16.0
	₦200,001 – ₦500,000	196	10.0
	Above ₦500,000	68	3.4

The sample was slightly male-dominated, with the largest age cohorts being young adults (18–30 years) and middle-aged adults (31–50 years), reflecting the active commuting population. Tertiary-educated respondents formed the largest educational group, while traders/business owners constituted the modal occupational category. A substantial proportion (42.6%) earned below the national minimum wage threshold at the time of data collection, indicating a significant low-to-middle income representation.

3.2. Perceived Social Benefits of an Efficient Transportation System

Respondents expressed strong agreement that an efficient transportation system would deliver multiple social advantages. The highest-rated benefit was reduced travel time, followed closely by lower congestion and improved livability and improved access to essential services (healthcare, education, markets, etc.).

Table 2: Perceived Social Benefits of an Efficient Transportation System

Benefit Statement	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Agree + Strongly Agree
reduce my daily travel time	4.32	0.89	48.2%	37.4%	9.1%	3.8%	1.5%	85.6%
improve access to healthcare, education, and other essential services	4.15	0.95	41.6%	36.8%	12.4%	6.2%	3.0%	78.4%
reduce traffic congestion and improve overall urban livability	4.20	0.91	44.1%	37.1%	10.8%	5.3%	2.7%	81.2%
promote safer and more comfortable commuting experiences	4.18	0.93	42.9%	37.5%	11.2%	5.6%	2.8%	80.4%
reduce stress and fatigue associated with long commutes	4.11	0.97	39.8%	36.2%	14.5%	6.8%	2.7%	76.0%

The consistently high mean scores (all above 4.1) and agreement rates exceeding 76% indicate widespread belief among Akure residents that transport efficiency would yield meaningful social improvements, particularly in time savings and quality-of-life enhancement.

3.3. Perceived Economic Benefits of an Efficient Transportation System

Respondents also strongly endorsed the economic advantages of improved transportation. The most highly rated benefit was boosted economic activities and job creation, followed by enhanced market access and trade.

Table 3: Perceived Economic Benefits of an Efficient Transportation System

Benefit Statement	Mean	SD	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Agree + Strongly Agree
boost local economic activities and create more jobs	4.28	0.92	46.5%	37.4%	9.8%	4.2%	2.1%	83.9%
improve access to markets and facilitate trade	4.18	0.94	43.2%	36.5%	11.6%	5.9%	2.8%	79.7%
make Akure more attractive to businesses and investors	4.10	0.96	40.1%	36.4%	13.7%	6.5%	3.3%	76.5%
increase workers' productivity by reducing commuting costs and time	4.14	0.95	41.8%	37.2%	12.1%	6.0%	2.9%	79.0%
support the growth of small and medium enterprises through better connectivity	4.09	0.98	39.4%	36.8%	14.2%	6.7%	2.9%	76.2%

Economic benefits were perceived almost as strongly as social ones, with mean scores ranging from 4.09 to 4.28 and agreement rates between 76.2% and 83.9%. This suggests that residents clearly recognize the linkage between transport efficiency and local economic dynamism.

3.4. Congestion and Commuting Context Influencing Benefit Perceptions

A large proportion of respondents (52.4%) reported encountering traffic congestion frequently during their daily commute, while 31.7% experienced it occasionally. Only 15.9% reported rare or no congestion. This high exposure to congestion likely amplified the perceived value of efficiency gains.

Table 4: Frequency of Traffic Congestion Encountered During Daily Commute

Frequency	Frequency	Percentage (%)
Frequently	1,029	52.4
Occasionally	622	31.7
Rarely	238	12.1
Never	75	3.8

In summary, the results reveal overwhelming resident support for the proposition that an efficient transportation system would deliver substantial social benefits (time savings, better access to services, reduced congestion, improved livability) and economic benefits (job creation, enhanced trade, increased productivity, business attraction). The high mean scores, narrow standard deviations, and large majorities in agreement categories across all measured items indicate a clear and consistent perception of the value of transport improvements in Akure Metropolis.

4. Discussion of Results

The findings from this study provide compelling evidence of the substantial social and economic benefits that an efficient transportation system could deliver to residents of Akure Metropolis, as reflected in the high levels of agreement across surveyed indicators. With mean scores consistently exceeding 4.0 on a 5-point Likert scale and agreement rates (combining "Agree" and "Strongly Agree") ranging from 76.0% to 85.6% for social benefits (Table 2) and 76.2% to 83.9% for economic benefits (Table 3), the results underscore a strong consensus among respondents that targeted improvements in transport infrastructure and services would yield transformative outcomes. This perception is particularly pronounced among a demographically diverse sample (Table 1), where young adults (18–30 years, 38.4%) and low-income earners (below ₦33,000 monthly, 42.6%) groups often most affected by transport inefficiencies formed significant proportions, suggesting that benefits would be broadly inclusive and address existing inequities in urban mobility (Litman, 2020) [5].

Socially, the results highlight reduced travel time as the most endorsed benefit (mean = 4.32, 85.6% agreement; Table 2), which aligns with the reported frequency of traffic congestion (52.4% encountering it frequently; Table 4). In a city like Akure, where commuting patterns often involve twice-daily trips lasting 15–30 minutes or more (as noted in complementary commuting data), efficiency gains could free up valuable time for personal and family activities, thereby alleviating commute-related stress and fatigue (mean = 4.11, 76.0% agreement; Table 2). This inference is supported by the high incidence of congestion, which likely amplifies the perceived value of time savings, as prolonged delays not only disrupt daily routines but also contribute to mental health burdens in urban environments (Krishna *et al*., 2023). Furthermore, improved access to essential services such as healthcare and education (mean = 4.15, 78.4% agreement; Table 2) emerges as a critical social advantage, particularly for female respondents (47.2% of the sample; Table 1) and those with lower education levels (primary or no education, 22.0%; Table 1), who may rely more heavily on affordable public transport. This finding corroborates research in similar Nigerian contexts, where efficient transport systems enhance social equity by bridging spatial divides and enabling better utilization of public services (Olorunfemi & Adeniran, 2018) [1]. Lower congestion and improved urban livability (mean = 4.20, 81.2% agreement; Table 2) further reinforce these gains, as reduced traffic flows potentially achieved through integrated modes which could minimize environmental stressors like air pollution and noise, promoting healthier communities (Zhou & Gao, 2020) [10]. The emphasis on safer and more comfortable commuting (mean = 4.18, 80.4% agreement; Table 2) also ties into demographic variations, with road transport workers (20.0%; Table 1) and traders (36.2%; Table 1) likely prioritizing safety due to their occupational exposure to transport risks, echoing studies that link transport efficiency to reduced accident rates and enhanced user satisfaction (Ogundare & Ogunbodede, 2014) [6].

Economically, the results indicate that an efficient transportation system would act as a catalyst for local growth, with boosted economic activities and job creation receiving the strongest support (mean = 4.28, 83.9% agreement; Table 3). This perception is particularly relevant in Akure, where urban expansion has increased demand for connectivity, and inefficiencies like frequent congestion (Table 4) currently hinder productivity. By reducing commuting costs and time (mean = 4.14, 79.0% agreement; Table 3), an efficient system could enhance workforce efficiency, allowing more hours for productive work, especially among civil servants (28.4%; Table 1) and low-income groups who bear disproportionate transport burdens. This aligns with empirical evidence from southwestern Nigeria, where improved road networks have been shown to correlate with economic multipliers, including job opportunities in transport-related sectors (Faiyetole & Adewumi, 2024) [4]. Enhanced market access and trade (mean = 4.18, 79.7% agreement; Table 3) would similarly benefit traders and business owners (36.2%; Table 1), facilitating the movement of goods and reducing logistical delays, as supported by studies demonstrating transport's role in stimulating intra-urban commerce (Adedotun, 2015) [1]. The attraction of businesses and investments (mean = 4.10, 76.5% agreement; Table 3) represents a longer-term economic benefit, with better infrastructure signaling reliability to external investors and supporting the growth of small and medium enterprises (mean = 4.09, 76.2% agreement; Table 3).

These inferences are corroborated by broader research in developing cities, where efficient transport infrastructure has been linked to increased foreign direct investment and economic resilience (World Bank, 2021) [9]. Notably, the interplay between social and economic benefits is evident: for instance, improved access to education (Table 2) could enhance human capital, thereby amplifying job creation (Table 3), creating synergistic effects that promote

sustainable urban development (United Nations, 2015) [8].

Demographic patterns in the sample (Table 1) further illuminate how benefits might vary across groups, with younger (18–30 years) and middle-aged (31–50 years) respondents comprising over 70% of the sample and potentially gaining the most from productivity boosts, while older adults (24.0% over 50 years) might prioritize safety and livability. The significant representation of low-income earners suggests that affordability-focused improvements could yield disproportionate economic returns by reducing poverty traps associated with high transport costs (Litman, 2020) [5]. Congestion data (Table 4) reinforces the urgency of these benefits, as occasional (31.7%) and frequent encounters exacerbate both social frustrations and economic losses through delayed deliveries and lost work hours, consistent with findings in comparable urban settings (Zhou & Gao, 2020) [10].

Overall, these results not only affirm the perceived value of transport efficiency in Akure but also highlight opportunities for policy interventions that leverage these benefits. By addressing the root causes of congestion and mode inefficiencies, Akure could realize gains similar to those observed in other African cities, where integrated transport systems have driven inclusive growth (UN-Habitat, 2016) [7].

5. Conclusion

An efficient transportation system in Akure Metropolis delivers substantial social benefits such as shorter commutes, better access to services, and reduced congestion and economic advantages, including enhanced productivity, job opportunities, and investment attraction. Survey results confirm strong resident support for these outcomes, particularly through reliable and affordable modes. Realizing these benefits requires addressing current inefficiencies to foster sustainable, resilient urban growth.

6. Recommendations

1. Invest in road infrastructure and public transport enhancements to improve reliability and coverage.
2. Promote integrated systems combining taxis and buses for affordability and reduced congestion.
3. Implement safety measures and peak-hour frequency increases.
4. Develop pedestrian/cycling infrastructure to encourage sustainable alternatives.
5. Collaborate with stakeholders for targeted interventions in high-congestion areas.
6. Regulate fuel prices and introduce incentives for eco-friendly practices to sustain long-term benefits.

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