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Assessment Urban Infrastructure and Users' Satisfaction in the Core Areas of Akure, Nigeria

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ABSTRACT
This study assesses the condition of urban infrastructure and the level of users' satisfaction in the traditional core of Akure, Nigeria, with the aim of informing strategies for sustainable infrastructure development and improved resident welfare. Data were collected from 420 residents across six core neighborhoods. The findings reveal that most infrastructure such as water supply, drainage, waste management, and roads are in poor condition and do not meet the basic needs of residents. A significant proportion of respondents expressed dissatisfaction with these infrastructure, particularly water supply and drainage. Despite these challenges, residents have developed informal coping strategies such as digging wells, using generators, and managing waste privately. Statistical analyses confirmed a strong relationship between infrastructure quality and user satisfaction. The study concludes that improving infrastructure in Akure's core areas requires participatory planning, institutional coordination, and public-private partnerships, especially for critical amenities like water and sanitation.
Keywords: Urban Infrastructure, User Satisfaction, Infrastructure Planning

I. INTRODUCTION

Infrastructure is vital to the economic and social wellbeing of urban communities, serving as the foundation for mobility, health, education, sanitation, and connectivity. Scholars such as Fidelis et al. (2014) and Chmielewski (2016) highlight its role not just as a facilitator of urban growth, but as a determinant of how residents experience and interact with their cities. However, in Nigeria, and particularly in Akure, infrastructure suffers from chronic underinvestment, mismanagement, and neglect. These issues are compounded by rapid urbanization, inconsistent policies, and systemic governance failures (Harpham & Mumssen, 2006).

Users' satisfaction with infrastructure is a critical lens through which to evaluate development. Research shows that user satisfaction is shaped not only by infrastructure availability but also by factors such as income, housing quality, and proximity to amenities (Hasenzahl & Wessler, 2011; Ogunbajo et al., 2016). In Akure, these socio-economic activities are deeply intertwined with infrastructure access and quality, affecting how residents perceive and interact with their environment. Furthermore, Nigeria's low global infrastructure rankings reflected in poor roads, erratic power, and unsafe water are clearly visible in Akure's core neighborhoods (World Economic Forum, 2016). Residents are forced to cope through risky or unsustainable practices, perpetuating a cycle of infrastructural decay and environmental degradation.

Despite these challenges, infrastructure remains a powerful tool for urban resilience, poverty reduction, and sustainable development. The World Bank (2008) emphasizes the need for integrated infrastructure planning that balances economic, social, and environmental goals. In line with this, the study justifies its focus on Akure's urban core, aiming to fill a gap in localized, empirical assessment of user experience in traditional city centers. Moreover, this research aligns with calls for more participatory approaches in infrastructure development. Engaging residents in planning helps ensure that participation reflects actual needs, not just bureaucratic assumptions (Akinbamijo & Aladetuyi, 2019).

Ultimately, this study aims to assess the quality of urban infrastructure and users' satisfaction in Akure's core areas, with the broader

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goal of improving resident welfare and supporting sustainable development. It will evaluate both the physical conditions of infrastructure and the socio-economic activities that shape user experiences. In doing so, it intends to offer actionable information for planners, policymakers, and community stakeholders committed to building an inclusive and functional urban environment.

II. LITERATURE REVIEW

Urban Infrastructure

Urban infrastructure is a multifaceted concept that refers to the physical and organizational structures needed for the operation of a city. According to Owoeye and Olasemojo (2013), infrastructure encompasses facilities such as roads, drainage, potable water supply, electricity, solid waste disposal, education, and healthcare that directly affect the health, safety, convenience, and welfare of the urban populace. It is the essential framework that enables a city to function and grow. Urban infrastructure supports both production and consumption and is therefore foundational to any urban planning and development process.

In Nigeria, the components of infrastructure have historically been categorized into physical (hard) and social (soft) infrastructure. Physical infrastructure includes roads, bridges, water and sewerage systems, energy supply, and telecommunication. Social infrastructure refers to schools, hospitals, recreational facilities, and government administrative buildings (Basorun & Daramola, 2012). These elements function collectively to create livable urban environments. The importance of this classification is further highlighted in the work of Olotuah and Bobadoye (2009), who stressed that infrastructure in core urban areas particularly in cities such as Akure must be understood both in physical and cultural terms, as such areas are often characterized by indigenous forms of infrastructure developed through community efforts before modern governance came into place.

The interdependence of infrastructure elements is central to the concept. As Olanrewaju and Akinbamijo (2002) noted, infrastructure is a system of interlinked networks, where the failure of one aspect (e.g., drainage) can trigger the dysfunction of others (e.g., roads or housing). In core urban areas, the infrastructure network is under strain due to aged facilities, poor maintenance culture, rapid population growth, and unregulated urban expansion. This complexity makes the assessment of infrastructure not only necessary but also urgent for sustainable urban management.

Infrastructure Quality and Standards

Assessing the quality of urban infrastructure goes beyond physical observation to include performance, adequacy, accessibility, safety, affordability, and durability. Adeoye and Durodola (2012) emphasized that in cities like Akure, infrastructure quality is largely determined by construction standards, maintenance regimes, and institutional oversight. The absence of these parameters leads to rapid deterioration, especially in flood-prone areas or places with intense human activity.

Infrastructure standards are often measured against national and international benchmarks. In Nigeria, standards are established through various agencies including the Federal Ministry of Works and Housing, the Nigerian Society of Engineers (NSE), and relevant state and local government bodies. However, compliance is often inconsistent, especially in informal or traditional urban cores where planning control mechanisms are weak or non-existent. Studies by Ogunleye (2013) and Omole and Owoeye (2011) found that much of the infrastructure in Akure's core areas fails to meet national standards due to limited government presence, unregulated private construction, and lack of community-based monitoring.

Physical conditions alone are not sufficient indicators of infrastructure quality. Daramola and Ibem (2010) suggested that functionality and user experience should be included in quality assessments. For instance, a road may appear well paved but may lack proper drainage, leading to seasonal flooding and eventual surface failure. Likewise, a health center may be structurally sound but inaccessible due to distance, inadequate staffing, or lack of equipment. Therefore, quality must be viewed through a multidimensional lens, integrating technical, functional, and social dimensions.

Additionally, the quality of infrastructure is often compromised during urban renewal projects due to poor planning and execution. For example, Basorun and Fadamiro (2007) pointed out that attempts to modernize traditional urban centers often lead to the demolition of existing functional infrastructure, only to be replaced with substandard alternatives that fail to serve the intended purpose. This is particularly prevalent in areas like Akure, where political considerations sometimes override professional planning principles.

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Users' Satisfaction in Urban Infrastructure

Understanding how residents perceive and interact with infrastructure is crucial to evaluating its success. Satisfaction, as a measure, captures the subjective experience of infrastructure users and provides insights into how well infrastructure meets needs and expectations. User satisfaction is influenced by both objective conditions (such as access and quality) and subjective factors (such as perceived fairness and reliability) (Owoeye & Olasemojo, 2013). Studies by Ogunleye (2013) revealed that residents' dissatisfaction with infrastructure in Akure's inner city stems largely from poor waste management, inadequate drainage, unreliable electricity, and the lack of safe drinking water. This dissatisfaction is often compounded by a lack of government responsiveness and poor communication between authorities and the people. For instance, many residents are unaware of their rights to demand better services or do not know which agencies are responsible for maintenance and repair. This knowledge gap contributes to a culture of neglect and resignation.

Moreover, satisfaction varies across infrastructure types. Owoeye and Olasemojo (2013) reported that residents expressed the highest dissatisfaction with solid waste management, followed by water supply and electricity. Roads and drainage systems received mixed ratings, depending on the specific neighborhood and its proximity to administrative or commercial centers.

Community participation also affects level of satisfaction. Where residents are involved in infrastructure maintenance such as communal clearing of drainage or voluntary waste collection, there tends to be higher satisfaction, even when facilities are not of high technical standard. This is supported by the work of Omole and Owoeye (2011), who noted that community-based infrastructure governance, in some cases, outperforms formal government efforts due to local ownership and adaptability.

Sustainable Urban Infrastructure

Sustainability in urban infrastructure refers to systems that are resilient, inclusive, resource-efficient, and capable of meeting present needs without compromising the ability of future generations to meet theirs. The sustainable infrastructure paradigm promotes long-term planning, environmental consciousness, and community involvement. In Nigeria, however, the implementation of sustainable infrastructure principles is hampered by short-term political agendas, insufficient funding, and poor maintenance culture (Basorun & Daramola, 2012).

Olanrewaju and Akinbamijo (2002) stressed that in order to achieve sustainability, infrastructure development must be integrated into broader urban planning frameworks that include land use zoning, housing policy, and environmental management. In Akure, this integration is weak. Many infrastructure projects are implemented in isolation, without consideration for their ecological or social impacts. For example, road expansions may be executed without corresponding improvements in drainage or pedestrian access, leading to environmental degradation and increased accident rates.

Furthermore, infrastructure sustainability is closely linked to institutional strength. A city's ability to plan, fund, build, and maintain infrastructure depends on the capacity of its institutions. As Owoeye and Olasemojo (2013) noted, the challenges of urban infrastructure in Akure are not only technical but also administrative. Weak governance institutions, overlapping responsibilities among agencies, and lack of transparency hinder the implementation of sustainable infrastructure practices.

Despite these contributions, a significant gap remains in the literature regarding the integrated assessment of both infrastructure quality and users' satisfaction using empirical data. Most studies focus on either the physical condition of infrastructure or on subjective user experiences but rarely combine both. This research aims to bridge that gap by offering a comprehensive assessment of infrastructure and satisfaction in Akure's core areas, thereby providing data for more responsive and sustainable urban planning.

III. METHODOLOGY

To assess urban infrastructure quality and users' satisfaction in the traditional core of Akure, Nigeria, this study adopted a **mixed-methods descriptive survey design**. This approach effectively combined quantitative and qualitative data collection techniques to capture both measurable infrastructure conditions and residents' subjective experiences. The study focused on six core neighborhoods; Oja-Oba, Araromi, Odopetu, Ijomu, Oke-Ijebu, and Ayedun known for their historical significance, dense populations, and pronounced infrastructure challenges.

Quantitative data were gathered through structured questionnaires administered to 420 households, selected using a systematic random sampling method. The sample size was calculated using Yamane's formula and increased to account for non-responses. Respondents rated infrastructure types (e.g., roads, water, drainage, electricity, waste

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management) using a 5-point Likert scale. **Qualitative data** were collected via field observations and interviews with community leaders and officials, providing contextual depth and validation for the research findings.

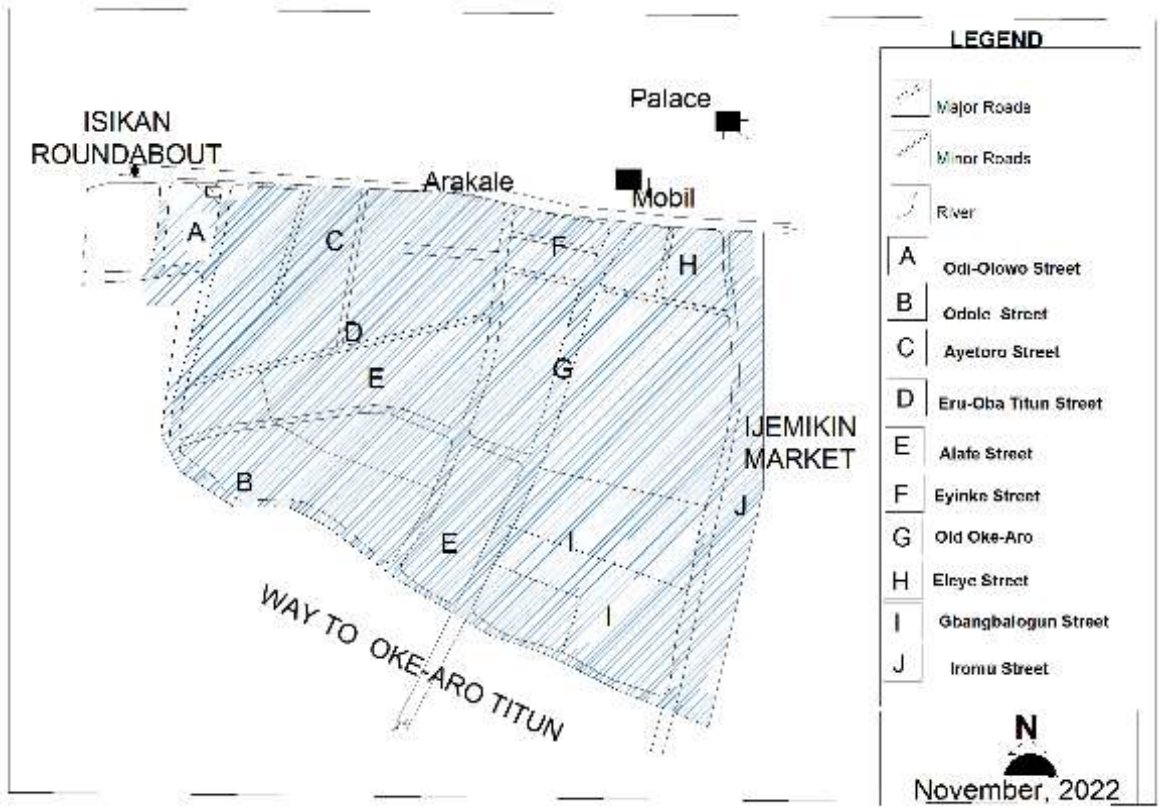

Figure 1: The Study Area Map

IV. RESULTS AND DISCUSSION

Socio-Demographic Characteristics of Respondents

The results show that a majority of respondents (67.1%) fall within the economically active age group (31–60 years), and nearly half of the households have 4–6 members. This demographic pattern reflects a densely populated, economically constrained community, consistent with earlier findings by Omole and Owoeye (2011) on core areas of Akure. Also notable is the relatively balanced gender distribution and the concentration of low- to middle-income earners, which influences both infrastructure usage and perceptions of satisfaction.

Availability and Condition of Urban Infrastructure

The infrastructure types assessed included road networks, drainage systems, water supply, electricity, waste disposal, educational and health facilities. Respondents were asked to rate the physical condition of each service. Water supply and drainage were perceived to be in the worst condition, with over 80% of respondents rating them as "Poor" or "Very Poor." Solid waste management and road infrastructure followed closely. These results corroborate previous studies by Ogunleye (2013), who observed widespread decay in water infrastructure and inadequate drainage in Akure's inner city.

Electricity received slightly better ratings, largely because many households had private generators to supplement public power supply. However, only 9.8% rated it as "Very Good," highlighting its unreliability. These findings echo the reports of Owoeye and Olasemojo (2013), who found that while electricity connections are widespread in Akure, supply is erratic and insufficient. The state of public schools and health facilities was relatively better, though still unsatisfactory. About 51.8% of respondents rated educational facilities as "Fair" to "Poor," while 45% rated health facilities in the same range. This

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implies that even critical social infrastructure remains below optimal standards in these core neighborhoods.

Users' Satisfaction with Infrastructure

Satisfaction levels, as measured on a 5-point Likert scale, provide insight into how infrastructure quality affects residents' perceptions and behavior.

Table 1: Users' Satisfaction with Urban Infrastructure

Infrastructure	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Road Network	6.7%	13.6%	15.5%	40.2%	24.0%
Drainage	4.5%	9.4%	12.1%	42.7%	31.3%
Water Supply	3.3%	8.8%	11.2%	46.0%	30.7%
Electricity Supply	9.3%	15.1%	18.0%	37.4%	20.2%
Waste Management	4.7%	11.6%	14.1%	45.0%	24.6%
School Facilities	7.0%	18.0%	21.5%	34.6%	18.9%
Health Facilities	8.1%	20.2%	22.0%	31.5%	18.2%

The trend in Table 1 closely mirrors respondents' physical assessment of the available infrastructure. Water supply, drainage, and waste management attracted the highest dissatisfaction levels, with over 75% of respondents expressing negative sentiments. This dissatisfaction is consistent with earlier findings in Olanrewaju and Akinbamijo (2002), who emphasized the consequences of infrastructural neglect on resident morale and urban productivity.

Interestingly, satisfaction ratings were slightly higher for electricity and social infrastructure, but still far from satisfactory. Respondents frequently attributed their dissatisfaction to poor maintenance, lack of governmental response, and the use of obsolete infrastructure equipment.

Relationship Between Infrastructure Condition and User Satisfaction

To investigate the statistical relationship between the condition of infrastructure and user satisfaction, Pearson's correlation analysis was conducted. The results showed a strong, positive correlation ($r = 0.72$, $p < 0.01$), indicating that better infrastructure conditions were significantly associated with higher satisfaction levels. Chi-square tests also revealed significant associations between satisfaction and variables such as household income, educational attainment, and proximity to urban amenities.

These findings lend empirical support to the idea that perceptions of urban infrastructure are deeply rooted in spatial and socio-economic inequalities. As Basorun and Daramola (2012) observed, residents with better access to quality infrastructure are more likely to support and participate in the urban development process.

Discussion

The findings of this study highlight both infrastructural and governance deficits in Akure's urban core. A recurring theme in the interviews with key informants was the lack of coordinated institutional responsibility. Several agencies claim jurisdiction over infrastructure, leading to jurisdiction overlap, inefficiency and unaccountability. Owoeye and Olasemojo (2013) recommended the establishment of a central infrastructure authority at the local government level to manage, monitor, and evaluate service delivery. Similarly, Daramola and Ibem (2010) emphasized the need for community participation in infrastructure planning and budgeting to enhance responsiveness and sustainability.

The results of this study reveal that urban infrastructure in Akure's core is characterized by poor conditions, low user satisfaction, and uneven spatial distribution. The infrastructural gaps are most pronounced in water supply, drainage, and waste management, which directly impact public health and environmental sustainability. Although residents have developed adaptive strategies, these are inadequate substitutes for coordinated, inclusive, and well-maintained infrastructure. Addressing these challenges requires not just capital investment but also institutional reforms and participatory planning frameworks that place users at the center of urban development.

V. CONCLUSION

The core areas of Akure face severe infrastructure deficits, including poor roads, unreliable power, and inadequate water and waste systems. Residents' dissatisfaction reflects deeper governance failures, not just a lack of resources. Some of the important issues include poor planning priorities, weak institutional coordination, neglect of maintenance, and limited public participation. These challenges disproportionately affect low-income residents, worsening inequality. While community resilience through informal solutions is commendable, such efforts are unsustainable in the long term. To improve urban quality of life and support sustainable development, Akure's infrastructure must be reimagined through inclusive planning, equitable investment, and stronger institutional support.

VI. RECOMMENDATIONS

To address the infrastructure challenges in Akure's core areas, this study recommends a shift toward inclusive, community-driven urban planning. Residents and local authorities should be actively involved in planning, budgeting, and maintaining infrastructure to foster ownership and sustainability. Establishing a centralized infrastructure authority would streamline responsibilities and enhance service delivery. Rather than prioritizing expansion, government efforts should focus on maintaining and upgrading existing infrastructure, especially water supply and drainage. Waste management reforms that integrate both formal and community-based strategies, along with recycling initiatives, are also crucial. Ensuring equitable infrastructure investment across all neighborhoods, guided by tools like GIS, will help reduce spatial inequalities. Additionally, human capital development, regular infrastructure audits, and public–private partnerships are necessary for long-term sustainability. Together, these strategies can transform Akure's urban core into a resilient, inclusive, and livable environment.

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