Users' Perception of The Adequacy, Level of Satisfaction, Reliability and Safety of Sanitation Facilities in Selected Residential Zones of Ibadan, Nigeria

Samson Oluwatobi OYEBANJI[1]
Corresponding Author Email: soluwatobiloba@gmail.com
Phone Number: 08100057522
Morufu Afolabi ASANI[1]
and
Michael Adekola ADETUNJI[1]
[1]Department of Urban and Regional Planning,
Ladoke Akintola University of Technology, Ogbomoso, Nigeria
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Abstract

This study examines users' perception of sanitation facilities across selected residential zones in Ibadan, Nigeria, focusing on four key dimensions: adequacy, satisfaction, reliability, and safety of sanitation practices. A survey research design was employed, utilising structured questionnaire administered to 100 respondents across different residential zones in Ibadan. The sampling frame was drawn from three residential zones: low, medium, and high density residential areas, to capture a range of socioeconomic and infrastructural conditions. Respondents were selected using a systematic random sampling approach of every third household along randomly selected streets within each zone. The data was analysed using descriptive statistics. The results reveal widespread dissatisfaction with sanitation infrastructure. 67% of respondents disagreed that public sanitation facilities were sufficient, while an overwhelming 95% rated waste collection facilities as poor or very poor. Although 60% considered drainage system adequate, an equal proportion reported frequent blockages, highlighting the critical distinction between infrastructure provision and maintenance. Public toilets demonstrate significant unreliability, with 61% reporting they were out of service often or very often. Regarding safety, 26% of respondents felt it was unsafe to use sanitation facilities. Notably, 77% recognised the health risks associated with poor sanitation, indicating high awareness despite infrastructure deficiencies. The findings underscore the urgent need for integrated urban sanitation planning that prioritises maintenance alongside infrastructure provision, strengthens institutional capacity, and leverages community awareness for participatory interventions.

Keywords: Sanitation Facilities, Users' Perception, Waste Management, Drainage Systems, Public Toilets, Ibadan, Nigeria

1. Introduction

Urban sanitation remains one of the most pressing developmental challenges confronting Nigerian cities. As the country urbanises rapidly, with projections indicating that over 50% of the population will reside in urban areas by 2030 (United Nations, 2022), the demand for adequate sanitation infrastructure continues to outstrip supply. Ibadan, one of Nigeria's largest and most historically significant metropolitan areas, exemplifies this crisis. Having grown from its origin as a pre-colonial Yoruba kingdom into a sprawling urban agglomeration of over three million people, the city embodies the complex sanitation challenges that characterise contemporary Nigerian urbanism.

The consequences of inadequate sanitation are well documented in the literature. Poor sanitation contributes directly to the prevalence of preventable diseases, environmental degradation, and diminished quality of life (World Health Organisation & UNICEF, 2024). Diarrhoeal diseases, typhoid, and cholera remain leading causes of morbidity and mortality, particularly among children under five, with inadequate sanitation identified as a primary contributing factor. Furthermore, the economic costs are substantial, encompassing healthcare expenditures, productivity losses, and environmental remediation expenses.

Recent scholarship has drawn attention to the multifaceted nature of sanitation challenges in sub-Saharan African cities. Yusuf (2025) argues that sanitation infrastructure in Nigerian cities has failed to keep pace with urbanisation rates, resulting in widening service gaps that disproportionately affect low-income populations. Babalola *et al*. (2024) highlight the systemic deficiencies in waste management systems across south-

western Nigerian cities, noting that irregular collection schedules, insufficient infrastructure, and reliance on open dumping practices perpetuate environmental health risks. Adede *et al*. (2024) emphasise the connection between poor drainage maintenance and malaria prevalence, demonstrating how infrastructure neglect compounds disease burdens.

Despite this growing body of research, relatively few studies have examined sanitation challenges from the perspective of users themselves. Understanding how residents perceive the adequacy, reliability, and safety of available facilities is essential for designing interventions that respond to actual needs and priorities. Users' perceptions shape behaviour, influence willingness to utilise public facilities, and determine the effectiveness of sanitation investments. Moreover, as Ogunleye (2025) observes, service unreliability can undermine even the most conscientious individual efforts, creating a downward spiral in which infrastructure failures engender behavioural responses that further compound environmental problems.

This study addresses this gap by examining users' perception of sanitation facilities across selected residential zones in Ibadan. Specifically, it investigates four research questions:

1. How do residents perceive the adequacy of and satisfaction with public sanitation facilities?
2. How reliable do residents consider sanitation services, including waste collection and public toilets?
3. How safe do residents feel when using sanitation facilities?
4. What are the implications of the varying perception for urban sanitation policy and practice?

By answering these questions, the study aims to contribute empirical evidence from users' perspectives to inform policy development and intervention design in Ibadan and similar urban contexts across Nigeria.

2. Literature Review

2.1 Urban Sanitation Challenges in Sub-Saharan Africa

The sanitation crisis in sub-Saharan African cities has attracted considerable scholarly attention over recent decades (UN-Habitat, 2016). The region exhibits the lowest sanitation coverage globally, with approximately 230 million people practising open defecation and over 500 million lacking access to basic sanitation services (WHO/UNICEF, 2024). Rapid urbanisation, characterised by the proliferation of informal settlements, has outpaced infrastructure development, creating conditions in which population density compounds public health risks.

Several interconnected factors contribute to this situation. Weak governance structures, characterised by fragmented institutional responsibilities and inadequate enforcement capacity, undermine service delivery (Allen *et al*., 2023). Chronic underfunding at both national and local government levels limits investment in new infrastructure and maintenance of existing facilities. Rapid urban growth, much of it unplanned, creates settlements that are difficult to service with conventional sanitation approaches. Climate change exacerbates these challenges, with increased flooding overwhelming drainage systems and contaminating water sources (Howard *et al.,* 2016).

2.2 The Nigerian Context

Within this regional context, Nigeria presents particular challenges. As Africa's most populous nation, with over 200 million people, the country accounts for a substantial proportion of the region's sanitation deficit. The WHO/UNICEF Joint Monitoring Programme (2024) reports that Nigeria remains among the countries with the highest rates of inadequate sanitation coverage, particularly in urban informal settlements where population density intensifies health risks.

Research on Nigerian urban sanitation has identified recurring themes. Weak institutional capacity at state and local government levels hampers effective service delivery (Adewale *et al*., 2023). Fragmented responsibilities among multiple agencies create coordination challenges and accountability gaps. Inadequate funding for sanitation, both capital and recurrent, limits infrastructure development and maintenance. Low priority accorded to sanitation in urban planning processes results in piecemeal interventions rather than comprehensive approaches.

2.3 Dimensions of Sanitation Service Delivery

The literature identifies multiple dimensions of sanitation service delivery that shape users' experiences and outcomes. Adequacy refers to the sufficiency of facilities relative to population needs, encompassing both quantitative and qualitative aspects (Mara *et al*., 2022). Reliability concerns the consistency and predictability of service provision, including waste collection

schedules and functionality of public toilets. Safety encompasses both physical security from harassment or violence and health safety from exposure to pathogens and disease vectors.

These dimensions are interconnected in practice. Inadequate facilities may force users to travel longer distances, increasing exposure to safety risks. Unreliable services may discourage proper waste disposal practices, leading to environmental contamination. Poorly maintained facilities may pose health risks even where they exist in sufficient numbers.

2.4 Users' Perceptions and Sanitation Behaviour

Understanding users' perception is essential for predicting sanitation behaviour and designing effective interventions. Perception of risk, safety, and service quality influence whether individuals utilise available facilities, adopt recommended practices, and support community sanitation initiatives (Jenkins & Scott, 2023). Conversely, negative perception may lead to avoidance behaviours, including open defecation or indiscriminate dumping, that undermine public health outcomes.

Recent research has emphasised the importance of perceived safety, particularly for women and girls, in shaping sanitation behaviour (O'Reilly *et al*., 2024). Facilities perceived as unsafe, whether due to location, inadequate lighting, or risk of harassment, may remain unused regardless of their technical adequacy. This insight has important implications for facility siting, design, and management.

This research contributes empirical evidence from users' perspectives to the growing body of literature on urban sanitation challenges in Nigerian cities, offering insights for policymakers and urban planners.

3. Methodology

3.1 Study Area

Ibadan, the capital of Oyo State, is located in southwestern Nigeria, approximately 128 kilometres northeast of Lagos. The city experiences a tropical climate with distinct wet and dry seasons, mean annual rainfall of approximately 1,200 millimetres, and temperatures ranging from 21°C to 33°C. As one of Nigeria's largest cities, with an estimated population exceeding three million, Ibadan exhibits diverse residential characteristics, from high-density traditional core areas to medium- and low-density peripheral developments.

3.2 Research Design

This study employed a cross-sectional survey research design. This design was selected as appropriate for capturing users' perception at a single point in time and for generating quantitative data on multiple dimensions of sanitation experience.

3.3 Sampling Technique and Sample Size

The study population comprised adult residents of selected residential zones in Ibadan. A multistage sampling technique was employed. First, three residential zones were purposively selected to represent different density characteristics: a high-density traditional core area, a medium-density transition zone, and a low-density peripheral area. Second, within each zone, households were systematically selected using a sampling interval determined by the estimated population. Third, within each selected household, one adult respondent was randomly selected for interview. The sample size of 100 respondents was distributed proportionally across the three zones. This sample size was informed by established conventions in sanitation research in Nigerian urban contexts. Similar studies have used sample sizes ranging from 163 households in Ikaram Millennium Village, Nigeria (Olajuyigbe, Rotowa & Olusa, 2022) to 314 adults in Akure, Nigeria (Oni *et al*., 2024), and up to 1,716 residents in Metropolitan Kaduna (Habila & Sachi, 2025). A sample of 100 was deemed appropriate for this exploratory study, given the resource constraints typical of fieldwork in Ibadan, including limited time, budget, and challenges of door-to-door access in high-density areas. Moreover, this sample size aligns with the minimum recommended for descriptive surveys, where the primary aim is to identify broad patterns across different residential density zones rather than to test statistical hypotheses (Cochran, 1977).

3.4 Data Collection Instrument

Data were collected using a structured questionnaire developed based on a literature review and adapted to the local context. The questionnaire comprised four sections corresponding to the study's research questions: adequacy and satisfaction (Section A), reliability (Section B), safety (Section C), and respondents' socio-economic characteristics (Section D). Items employed Likert-type scales ranging from five-point (strongly disagree to strongly agree) to three-point (yes/no/not sure), depending on the nature of the question.

The questionnaire was pilot-tested with 15

respondents in a non-sample area to assess clarity, comprehensibility, and appropriateness. Necessary modifications were made based on pilot feedback. Final administration was conducted through face-to-face interviews by trained research assistants.

3.5 Data Analysis

Data were analysed using descriptive statistics. This approach was appropriate for addressing the research questions, which focused on describing patterns in users' perception across the study area. Results are presented in tabular format with accompanying interpretations.

3.6 Ethical Considerations

Respondents were informed of the study's purpose, assured of confidentiality, and advised of their right to withdraw without consequence. Verbal informed consent was obtained before each interview.

4. Results and Discussion

4.1 Respondents' Socio-Economic Characteristics

The sample comprised 100 respondents, with 52% male and 48% female. Age distribution reveals 30% were aged 18-30 years, 45% aged 31-50 years, and 25% above 50 years. Educational attainment varied, with 40% having completed secondary education, 35% holding tertiary qualifications, and 25% having primary or no formal education. Occupational categories included traders (35%), civil servants (20%), artisans (25%), and others (20%). This socio-economic profile is broadly representative of Ibadan's urban population (NPC & ICF International, 2019).

4.2 Adequacy of and Satisfaction with Sanitation Facilities

The findings reveal overwhelming perception of inadequacy. 67% of respondents disagreed or strongly disagreed that public sanitation facilities were sufficient, while only 10% expressed agreement. This finding aligns with Yusuf's (2025) observation that sanitation infrastructure in Nigerian cities has failed to keep pace with rapid urbanisation. The inadequacy of facilities has direct implications for public health, contributing to open defecation, water source contamination, and disease transmission.

The availability of waste collection facilities presents an even more striking picture of systemic failure. An astonishing 95% of respondents rated availability as poor or very poor, with only 4% offering positive assessments. This finding corroborates Babalola *et al*.'s (2024) characterisation of Ibadan's waste management system as featuring insufficient facilities placement, irregular collection schedules, and reliance on open dumping practices. The absence of adequate disposal facilities leads to indiscriminate dumping in drainage channels, vacant lots, and water bodies, exacerbating flooding and creating breeding grounds for disease vectors.

Drainage systems present a more complex picture. While 60% of respondents considered existing drainage systems adequate, further probing revealed that adequacy in terms of physical presence does not guarantee functionality. As discussed below, frequent blockages and overflows compromise the performance of these systems precisely when they are most needed. This finding highlights the critical distinction between infrastructure provision and maintenance that runs throughout the sanitation literature.

4.3 Reliability of Sanitation Facilities

The unreliability of waste collection services further compounds the sanitation crisis. With 69% of respondents rating services as unreliable or very unreliable, the data reflect systemic inefficiency in service delivery. This finding is consistent with Ogunleye's (2025) documentation of similar patterns in other southwestern Nigerian cities, where irregular collection leads to refuse accumulation in public spaces and contributes to environmental hazards.

Provision of public toilets demonstrates pervasive unreliability, with 61% of respondents reporting they are out of service often or very often. This finding reflects the absence of a maintenance culture that Yusuf (2025) identified as a recurring theme in sanitation studies across West Africa. The lack of functional public toilets has implications beyond sanitation, affecting health, dignity, safety, and gender equity, as women and children are disproportionately affected by inadequate facilities.

The frequency of drainage blockages, reported by 60% as occurring often or very often, confirms the paradox noted earlier. Although drainage systems exist physically, poor maintenance compromises their adequacy. Adede *et al*. (2024) emphasised that poor drainage maintenance contributes significantly to malaria prevalence, as stagnant water in blocked drains becomes mosquito breeding grounds. This finding underscores the necessity of distinguishing between infrastructure provision and maintenance in policy discourse.

Table 1: Perception of the Adequacy with Satisfaction Level of Sanitation Facilities

Public Sanitation Facilities are Sufficient	Frequency	Percentage %
Strongly Disagree	55	55.0
Disagree	12	12.0
Neutral / Undecided	23	23.0
Agree	5	5.0
Strongly Agree	5	5.0
Total	100	100
Rate The Availability Of Public Waste Collection Facilities	Frequency	Percentage%
Very Poor	75	75.0
Poor	20	20.0
Fair	1	1.0
Good	3	3.0
Very Good	1	1.0
Total	100	100
Existing Drainage Systems Are Adequate	Frequency	Percentage %
Yes	60	60.0
No	30	30.0
Not Sure	10.0	10.0
Total	100	100

Source: Authors' Fieldwork, 2026

4.4 Safety of Sanitation Facilities

Further results show that, 26% of respondents reported feeling unsafe or very unsafe, while 40% felt safe or very safe. The remainder (34%) occupied a neutral position, which itself reflects the complexity of safety as a lived experience. The perception encompasses both physical risks, such as harassment and poor lighting, and health risks associated with inadequate sanitation. Adede *et al*. (2024) argue that urban sanitation failures compound social vulnerabilities, particularly for women and children, who face heightened risks of harassment and assault in unsafe sanitation environments. This finding underscores the need for holistic approaches that address both infrastructural and social dimensions of sanitation.

The most encouraging finding is the strong public awareness of health risks associated with poor sanitation. 77% of respondents agreed or strongly agreed that poorly maintained facilities pose health risks, demonstrating widespread recognition of the sanitation-health nexus. This finding contradicts assumptions that lack of awareness is the primary barrier to improved sanitation practices and suggests readiness for community-driven interventions.

4.5 Discussion of Findings

The thematic synthesis of these findings reveals several critical insights. First, the distinction between infrastructure provision and maintenance emerges as crucial. Drainage systems considered adequate by the majority of residents are simultaneously reported as frequently blocked, demonstrating that physical presence does not guarantee functionality. This distinction has profound implications for sanitation investment, suggesting that maintenance must be considered from the onset rather than treated as an afterthought.

Second, governance failures are a recurring theme throughout the findings. The unreliability of waste collection services, poor maintenance of public toilets, and inability to enforce basic sanitation regula-

Table 2: Reliability Level of Sanitation Facilities

Reliability of the Waste Collection Service	Frequency	Percentage %
Very Unreliable	29	29.0
Unreliable	40	40.0
Neutral	10	10.0
Reliable	10	10.0
Very Reliable	5	5.0
Not Applicable	6	6.0
Total	100	100
Public Toilets Been Out Of Service	Frequency	Percentage %
Very Often	27	27.0
Often	34	34.0
Sometimes	20	20.0
Rarely	12	12.0
Never	7	7.0
Total	100	100
Blockages or Overflows From the Community Drainage System	Frequency	Percentage %
Very Often	30	30.0
Often	30	30.0
Sometimes	15	15.0
Rarely	5	5.0
Never	20	20.0
Total	100	100

Source: Author's Fieldwork, 2026

tions reflect weak institutional capacity, chronic underfunding, and lack of accountability mechanisms. These governance deficits undermine service delivery and erode public confidence in government's ability to address basic needs.

Third, public awareness of health risks is strong, suggesting potential for participatory sanitation initiatives that mobilise communities around shared concerns. However, institutional support is necessary to translate awareness into action, as communities cannot build infrastructure or establish services without resources, technical support, and enabling policies.

Fourth, the findings situate Ibadan within broader patterns observed in Nigerian cities. The near-total dissatisfaction with waste collection facilities and services, the unreliability of services, and the maintenance deficits documented here are consistent with research from Lagos, Abeokuta, and other urban centres (Babalola *et al*., 2024; Ogunleye, 2025). This comparative context suggests that solutions may have applicability beyond Ibadan.

5. Summary, Recommendations and Conclusion

5.1 Summary

This study examined users' perception of sanitation facilities across three residential zones (high-density, medium-density, and low-density) in Ibadan, Nigeria, focusing on four key dimensions: adequacy, satisfaction, reliability, and safety.

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Table 3: Safety Level of Sanitation Facilities

Safe From Physical Harm Or Harassment	Frequency	Percentage %
Very Unsafe	10	10.0
Unsafe	16	16.0
Neutral	34	34.0
Safe	25	25.0
Very Safe	15	15.0
Total	100	100
Poorly Maintained Sanitation Facilities Pose A Health Risk	Frequency	Percentage %
Strongly Disagree	8	8.0
Disagree	10	10.0
Neutral / Undecided	5	5.0
Agree	60	60.0
Strongly Agree	17	17.0
Total	100	100
How Concerned Are You About The Risk Of Diseases From The State Of Sanitation Facilities	Frequency	Percentage %
Not at all concerned		
Slightly concerned		
Moderately concerned		
Very concerned		
Extremely concerned		
Total	100	100

Source: Author's Fieldwork, 2026

The findings reveal widespread dissatisfaction with sanitation infrastructure. Most respondents disagreed that public sanitation facilities were sufficient and rated waste collection facilities as poor or very poor . Although majority considered drainage systems adequate, but most respondents equally reported frequent blockages, highlighting the critical gap between infrastructure provision and maintenance. Public toilets showed significant unreliability, with well over one out of two reporting they were out of service often or very often. Regarding safety, about a quarter felt unsafe using sanitation facilities. However, the bulk of the respondents, recognised the health risks associated with poor sanitation, indicating high awareness despite infrastructure deficiencies.

The study concludes that integrated urban sanitation planning is urgently needed, prioritising maintenance alongside infrastructure provision, strengthening institutional capacity, and leveraging community awareness for participatory interventions. The research contributes empirical evidence from users' perspectives to the literature on urban sanitation challenges in Nigerian cities.

5.2 Recommendations

Based on these findings, the following recommendations are offered for policymakers, urban planners, and development practitioners:

1. Prioritise maintenance alongside infrastructure provision. Sanitation investments should include dedicated resources for ongoing maintenance, with clear assignment of responsibilities and accountability mechanisms. Maintenance planning should be integrated into project design from the outset rather than treated as an afterthought.
2. Strengthen institutional capacity for sanitation service delivery. This includes adequate funding, trained personnel, clear mandates, and accountability mechanisms at state and local government levels. Institutional reform is imperative to address fragmentation and coordination challenges.
3. Develop community-based waste management initiatives. Given the strong public awareness of health risks, participatory approaches that mobilise communities around shared sanitation concerns should be explored. Such initiatives can improve collection efficiency, foster local ownership, and create employment opportunities.
4. Safety concerns in facility design and sitting. Sanitation facilities should be in well-trafficked areas, equipped with adequate lighting, and designed with attention to users' safety, particularly women and children. Separate facilities for women and men should be provided where feasible.
5. Explore public-private partnerships for delivery service. Private sector involvement in waste management, as developed in Lagos, may offer lessons for Ibadan. Such partnerships should be structured to leverage private sector efficiency while maintaining public accountability.
6. Strengthen regulatory enforcement. Clear sanitation regulations must be accompanied by capacity to monitor compliance and impose meaningful sanctions on violators. This includes enforcement against indiscriminate dumping and improper waste disposal.
7. Integrate sanitation into urban planning processes. Sanitation should not be treated as an afterthought but embedded within housing, transport, and broader urban development planning.

5.3 Conclusion

This study provides compelling evidence of the inadequacy, poor maintenance, and unreliability of sanitation facilities in selected residential zones of Ibadan, Nigeria, from users' perspectives. The findings reveal widespread dissatisfaction across multiple dimensions of service delivery, with direct consequences for public health, environmental quality, and urban safety. The overwhelming perception that facilities are insufficient, the near-total dissatisfaction with waste collection facilities, the unreliability of public toilets, and the frequency of drainage blockages collectively paint a picture of systemic failure requiring urgent attention.

However, the findings also offer grounds for hope. The strong public awareness of health risks associated with poor sanitation suggests that residents are not ignorant of the dangers they face and may be ready to participate in improvement efforts. This awareness, combined with the resilience and resourcefulness that characterise Ibadan's communities, creates potential for positive change.

This study contributes empirical evidence from users' perspectives to the growing body of literature on urban sanitation challenges in Nigerian cities. By examining multiple dimensions of sanitation experience, it provides a comprehensive picture of how residents perceive and navigate inadequate infrastructure. The findings offer insights for policymakers seeking to design interventions that respond to users' priorities and for scholars seeking to understand the lived reality of urban sanitation crises.

5.4 Limitations and Future Research

This study has limitations that should be acknowledged. The sample size of 100 respondents, while adequate for descriptive analysis, limits generalisability. The focus on selected residential zones may not capture the full diversity of sanitation experiences across Ibadan. The cross-sectional design provides a snapshot at a single point in time rather than tracking changes over time.

Future research should address these limitations through larger samples, broader geographic coverage, and longitudinal designs. Qualitative research exploring users' experiences in greater depth would complement the quantitative findings presented here. Research on the political economy of sanitation service delivery, including institutional dynamics and resource flows, would illuminate the governance challenges underlying infrastructure deficits.

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