

<https://doi.org/10.19184/geosi.v10i2.53700>**Research Article**

The Impact of Residents' Involvement in the Spatial Transformation of Inner-City Slums in Ibadan

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30 April 2024Revised :
10 July 2025Accepted :
21 July 2025Published :
30 July 2025**ABSTRACT**

Residents' active participation is crucial in influencing the transformation of inner-city slums, especially in fast-growing cities like Ibadan. Recognizing this role is crucial for developing inclusive planning strategies that effectively address the actual needs of the urban poor. This research examined the impact of community involvement on urban changes in Ibadan's core areas, Oyo State, Nigeria, from 1990 to 2020. A structured survey of 552 residents from selected slum communities measured their participation in city transformation efforts, focusing on social and environmental improvements, resource allocation, the effectiveness of interventions, and challenges to slum redevelopment. Analysis using the Social Sciences Statistical Package (SPSS) showed that residents' participation had limited influence on revitalizing Ibadan's inner-city slums. The primary participation methods were consultations (35.7%) and incentives, such as gifts (27.2%). Despite efforts to involve communities in planning, major obstacles persisted, including corruption, bureaucratic delays, political interference, mismanagement of funds, limited capacity, poor coordination, delays, and insufficient funding (30%) of urban renewal funds were reportedly misused. Persistent challenges such as degraded infrastructure, poor socio-environmental conditions, and ineffective transformative initiatives remain prevalent, with a Slum Deprivation Index (SDI) indicating high levels of residential and environmental deprivation (RED) and water, sanitation, and hygiene (WASH) deprivation across the study areas. The study concludes that comprehensive and inclusive participation is essential for sustainable urban development. It contributes to ongoing discourse on the effectiveness of spatially and politically driven participatory approaches in urban settings, advocating for policies that prioritize periodic urban renewal and robust community involvement)

Keywords: Urban transformation; Community Participation; Inner-city Slums; Sustainable Urbanism; Dilapidated infrastructure

INTRODUCTION

Urban centers in developing nations face significant challenges due to the proliferation of slums, which are typically concentrated in core city areas where residents endure extreme poverty and substandard living conditions [1]. These areas are marked by environmental degradation and economic decline, caused by rapid urban growth, poor governance, and a lack of proper planning and development strategies. Slums are informal, unplanned settlements characterized by unhealthy growth patterns, lacking basic services such as clean water, sanitation, and waste management [2, 3].

As marginalized communities, slum residents face poverty, residential decay, social exclusion, and significant socio-economic, political, and health challenges [1]. This study focuses on Ibadan's inner-city slums, addressing these issues within a specific Nigerian context and adding to the global discussion on urban poverty and transformation.

The socio-economic dynamics of inner-city slums often attract capitalist investment, which can displace low-income residents due to land value disparities [4]. In developed countries, urban renewal usually involves coalitions of developers, investors, and policymakers. Conversely, developing nations often pursue slum clearance to attract real estate investment [5, 4]. Slum dwellers endure poor living conditions, including inadequate water supply, poor sanitation, overcrowded housing, insecure land tenure, and increased health risks [6]. These problems, exacerbated by population growth and socio-economic shifts in city centers, underscore the need for transformative efforts to enhance residents' quality of life.

Urban transformation, an inevitable and complex process, reflects the changing nature of urban environments [7]. Spatial redevelopment involves creating or repurposing spaces to support new urban activities, often by constructing modern buildings in already developed inner-city areas [7]. This is crucial for managing rapid urbanization and adapting urban spaces to current needs. Unlike earlier studies that broadly explore city-wide spatial dynamics [7], this study uniquely focuses on the spatial redevelopment of Ibadan's inner-city slums. It examines how resident participation can influence these changes within a socio-cultural context.

To combat global slum growth, Target 11 of the Millennium Development Goals (MDGs) aimed to make cities inclusive, safe, resilient, and sustainable, seeking to improve the quality of life for 100 million slum residents by 2030 [8]. Although ambitious, this goal has been achieved by only about 12% of slum populations in developing countries, prompting revised strategies focused on preventing new slum formation through proactive planning and upgrading programs [9, 6]. The study's emphasis on resident-driven approaches in Ibadan aligns with these global objectives but introduces novelty by exploring how participatory frameworks can operationalize SDG Target 11 in a Nigerian context, where prior studies like [8, 3] focus on quantitative targets rather than community empowerment.

Traditional expert-driven planning approaches to slum transformation have yielded limited success, as they often fail to capture the nuanced challenges faced by residents [7]. Experts, as outsiders, struggle to understand slum dwellers' specific needs, hindering effective solutions. Involving residents fosters a sense of ownership, enhancing project implementation and sustainability [10]. This study builds on [10] by examining resident involvement in Ibadan, a city less studied than Lagos in Nigerian urban research, offering a novel perspective on participatory planning in a unique socio-cultural setting. Recent work by [11] highlights that Nigerian urban renewal projects, such as those in Enugu, often lack community participation, reinforcing the need for this study's focus on resident-driven transformation.

In Ibadan, Nigeria, rapid urbanization, population growth, and increasing demand for services have led to the expansion of slums in both core and peripheral areas [12]. The city's central business district (CBD), its oldest part, lacks a comprehensive master plan, resulting in haphazard growth and congestion. Traditional family compounds have been subdivided to accommodate growing populations, reflecting shifts in socioeconomic and cultural dynamics [1]. Unlike much of the existing literature that focuses on Lagos [1, 12], this study's novelty lies in its context-specific analysis of Ibadan, addressing its unique historical and cultural dynamics, as supported by recent research by [13], which calls for localized studies to tackle Ibadan's urban challenges.

The study's focus on resident involvement in Ibadan's slum transformation addresses a critical research gap by emphasizing participatory approaches over expert-led models. Recent studies, such as [14], demonstrate that public-private-community partnerships in Lagos enhance project ownership, yet such approaches remain underexplored in Ibadan. By centering resident participation, the study aligns with [15], who advocate experts as facilitators empowering communities to drive urban

transformation, but it extends this framework to Ibadan's inner-city slums, offering a novel application in a less-studied urban context.

The novelty of this study is further justified by its integration of spatial redevelopment and socio-political barriers, such as corruption and bureaucratic inefficiencies, which dilute participatory efforts. While prior studies like [1, 6] analyze socio-spatial deprivation, they focus on physical and economic aspects rather than the socio-political dynamics of resident involvement. Recent research by [16] underscores the importance of preserving cultural heritage in Ibadan's urban transformation, supporting this study's emphasis on context-specific participatory approaches that respect local socio-cultural dynamics while addressing spatial challenges.

This study evaluates the role of slum dwellers in the spatial redevelopment of Ibadan's inner-city slums, aiming to provide insights into the value of participatory approaches as a potential model for global urban development [1]. By integrating recent Nigerian research [11, 16, 14, 13] with existing literature, the study offers a fresh perspective on sustainable urbanism, positioning Ibadan's participatory frameworks as a replicable model for other developing-world cities. Its focus on resident-driven transformation, spatial redevelopment, and alignment with SDGs, within Ibadan's unique context, distinguishes it from prior and recent works, contributing significantly to both local and global urban development discourses.

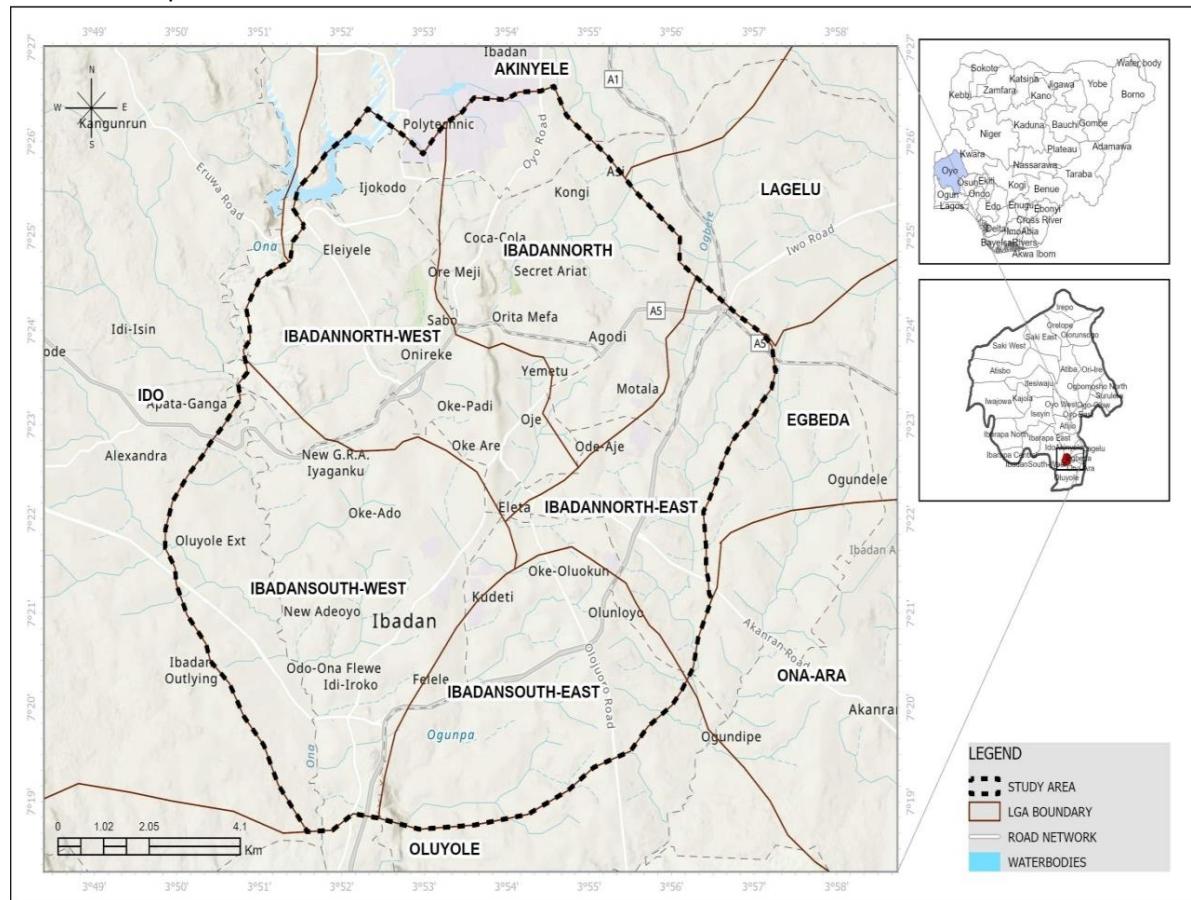


Figure 1. Map of Ibadan

Study Area

Ibadan, the capital of Oyo State, Nigeria which is located between the Greenwich meridian's longitudes of $3^{\circ}30'E$ and $4^{\circ}08'E$ and latitudes $7^{\circ}01'N$ and $7^{\circ}45'N$ of the equator (Figure 1). Ibadan metropolis consists of 11 local government areas (five in the core area and six in the peri-urban area). The study focused on the 5LGAs in the core (Ibadan North IBN, Ibadan North East IBNE, Ibadan North West IBNW, Ibadan South East IBSE and Ibadan South West IBSW). Ibadan is the largest traditional, urban center in the Southwest Sahara in Africa with an estimated population of appropriately five

million [12]. It is one of the most absorbers of migrants in Nigeria because of its centrality. The city is regarded as sub-Saharan Africa's largest ancient metropolis and has grown considerably from a moderate population of 70,000 residents in 1856 to a multicultural and thickly populated city [13]. The rapid growth and spatial expansion of Ibadan became more intense in the face of the 1970s oil boom in Nigeria. This period was marked by considerable immigration of a large population which led to the change of the mainly indigenous city to a cosmopolitan and multicultural urban center. According to the latest National Population Census conducted in 2006, the metropolitan area was estimated to have 1.34 million inhabitants while the total population of Ibadan in its entirety was estimated to be 2.55 million [13].

Community Participation

According to [18], a community is a group of individuals sharing common interests and residing within a defined geographic area, bound by social and spatial relationships. Beyond cohabitation, communities work collaboratively toward shared objectives, leveraging unity and collective strength to achieve goals more effectively than individuals alone. Community participation refers to the active involvement of residents in decision-making and planning processes that shape their future. In African contexts, the term is sometimes misused to describe manipulative practices where communities are controlled under the guise of involvement, rather than genuinely empowered to manage their affairs [19]. When implemented effectively, community participation fosters sustainable development by motivating residents to contribute meaningfully, rather than feeling imposed upon. This approach benefits both communities and planners, as residents' local knowledge provides critical insights that external experts may lack. This value-driven process empowers communities to take responsibility for their living conditions and long-term well-being [10].

By participating, communities can promote social development, improve access to essentials such as water, electricity, roads, and housing, and foster independence and empowerment. **Table 1** outlines the advantages and disadvantages of expert-led (from outside) and resident-driven (from inside) strategies for planning.

Table 1. Advantages and Disadvantages of Expert and Resident Planning Strategies

	Advantages	Disadvantages
Experts	<ul style="list-style-type: none"> - Decision-making simplicity (number of participants and time) - Predictability (both in terms of cost and duration) 	<ul style="list-style-type: none"> - Frequent Identification - Lack of the sense of Possession (Passive involvement)
Slum Dwellers	<ul style="list-style-type: none"> - Better identification of problems - Enables and empowers people of the community in terms of their abilities and talents. - High Sense of Possession. 	<ul style="list-style-type: none"> - Coordination Challenges (frequent conflicts amongst too many involved agents) - Consensual but potential suboptimal solution - Unpredictability (time and cost).

Source: Adopted from Czirjak, R. (2019).

Smart Urbanism

Smart urbanism is a sustainable development approach that leverages advanced technology and innovation to address urban challenges, optimize resource use, and enhance quality of life. It involves using information and communication technologies to improve urban management and efficiency in both public and private sectors. A smart city is characterized by innovation, digital infrastructure, creativity, and high efficiency [20].

Key components of a smart city include smart economy, transportation, citizens, environment, living, and governance (**Figure 2**). Analyzing these components spatially is critical to

understanding urban transformation and generalizing findings. Residents of inner-city slums play a central role in creating resilient, learning-based societies with improved living standards. Effective governance systems, supported by stakeholder collaboration, are essential for sustainable transformation. Rapid urbanization, if poorly managed, could threaten human health and sustainable urban development by 2030 [21].

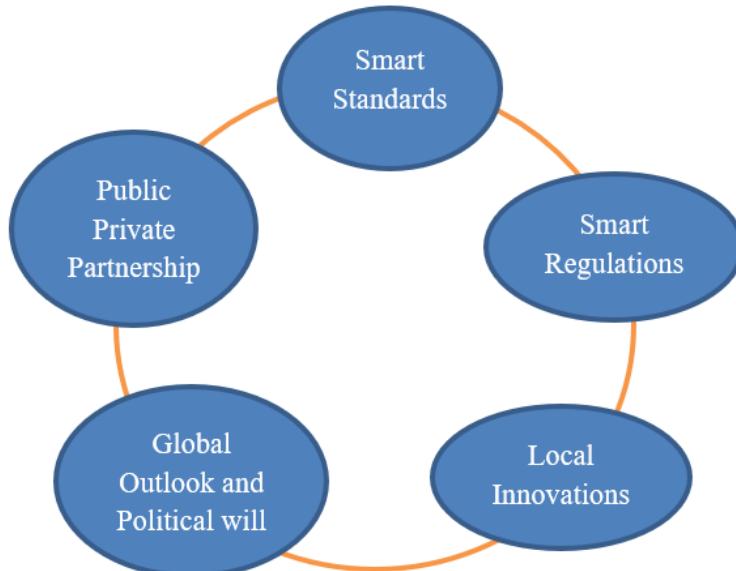


Figure 2. Factors Influencing Smart City Development

Government Interventions and Resident Participation in Slum Transformation

Nigerian cities face persistent challenges, including inadequate infrastructure and degraded urban environments. The Nigerian government has adopted various strategies for urban infrastructure development, including state-led, private, and stakeholder-driven models, with state-led approaches being the most common [22]. For example, Benin City, Edo State, pursued state-led urban development, but political interference and lack of continuity undermined its success, mirroring challenges in Ibadan.

The Sustainable Cities Programme, a collaboration between UN-HABITAT and the United Nations, promotes participatory environmental planning and management to enhance urban governance and human development [23]. It emphasizes well-planned cities as drivers of sustainable growth, advocating for continuity in governance despite political changes.

In Ibadan, the Sustainable Ibadan Programme (SIP) aimed to improve infrastructure through partnerships among communities, private sectors, and public authorities. The city faces severe environmental challenges, including water shortages and poor waste management, particularly in its core. SIP prioritized waste management, water supply, and environmental planning at Bodija Market, with limited focus on slum upgrading. Despite progress, such as regular pipe-borne water and borehole construction, gaps remain due to resistance from residents and authorities. UN-HABITAT recommends clearer cost-benefit analyses to bridge these gaps [23].

METHODS

This study assessed residents' participation in slum improvement policies and programs to understand spatial variations in the built environment and living conditions in Ibadan's inner-city slums, focusing on social differentiation and deprivation [1]. The methodology evaluated key variables, including socioeconomic factors (education, employment, income), residential and environmental conditions (housing type, density, waste management, stagnant water), and water, sanitation, and hygiene (WASH) factors (access to potable water, sanitation, and hygiene practices),

based on prior studies [1, 3, 8]. The approach is structured into the following subsections: Research Framework, Data Collection, Sampling Technique, Data Analysis, and Data Validation.

Research Framework

The research framework was designed to evaluate the impact of resident participation on the spatial transformation of Ibadan's inner-city slums, aligning with sustainable urban development principles [8]. This study employs socio-spatial analysis to identify deprivation patterns, based on the Slum Deprivation Index (SDI) framework introduced by [1]. The framework suggests that resident participation influences urban change through mechanisms such as consultations, dialogue projects, and self-mobilization, which are evaluated against socio-environmental and infrastructural improvements. Recent Nigerian research highlights the value of this approach in capturing the complex relationship between community involvement and urban redevelopment [11]. It also incorporates smart urbanism principles, leveraging technology and stakeholder collaboration to enhance urban governance and sustainability [14, 23].

Data Collection

Data were gathered via a structured survey of 552 residents from selected slum areas in Ibadan's five main LGAs: Ibadan North (IBN), Ibadan North East (IBNE), Ibadan North West (IBNW), Ibadan South East (IBSE), and Ibadan South West (IBSW). The survey focused on resident participation in slum upgrading, covering social and environmental progress, resource allocation, intervention adequacy, and obstacles to redevelopment. Questions addressed participation types (e.g., consultations, incentives, dialogue projects) and their effects on urban outcomes, following similar study methods [1, 2]. Observations of residential and environmental conditions, such as housing types, waste disposal, and access to WASH facilities, complemented survey data to provide a fuller picture of deprivation patterns [16].

Sampling Technique

The study used stratified random sampling to represent each LGA, selecting communities based on high population density, poor infrastructure, and inadequate WASH conditions, as defined by [3]. A total of 552 respondents were chosen, roughly 110–115 per LGA, ensuring balanced coverage. The sample size was calculated using Yamane's (1967) formula for finite populations, at a 95% confidence level and a 5% margin of error, which is the standard in urban research [24]. Households were randomly sampled within each stratum, with one adult surveyed per household to gather diverse perspectives. This method aligns with recent Nigerian studies on slum deprivation, emphasizing stratified sampling for spatial heterogeneity [11, 13].

Data Analysis

Data were analyzed via SPSS to assess the effect of resident participation on slum transformation. Indicators of deprivation included residential and environmental deprivation (RED) and WASH deprivation. RED indicators encompassed housing type, waste disposal methods, waste accumulation, and stagnant water, while WASH indicators included access to safe water, sanitation, and hygiene practices [1, 2].

A Slum Deprivation Index (SDI) was computed to measure deprivation levels, including calculations of the Absolute Variation in Deprivation (AVD) (Eq. 1):

$$AVD = \text{Highest } X_{ijk} - \text{Lowest } X_{ijk} \quad (1) [1]$$

where, AVD = absolute variation in deprivation; X_{ijk} = score on variable i , component j and location k ; Highest X_{ijk} = highest score on a variable in a location; and Lowest X_{ijk} = highest score on a variable in a location. Thus, Hence, 'X' represents the score on an indicator, 'i' represents variable of

consideration 1, 2, 3 ... I, 'j' represents component 1, 2, 3 ... J and 'K' represents slum location 1, 2, 3 ... K.

The Relative Variation in Deprivation (RVD) was calculated as (Eq. 2):

$$VD = \text{Observed } X_{ijk} - \text{Lowest } X_{ijk} \quad (2) [1]$$

where, RVD = Relative variation in deprivation; Observed X_{ijk} = score on a variable at a location; lowest X_{ijk} = lowest score on a variable.

Consequently, SDI_{ijk} was obtained by expressing the relative variation in deprivation as a ratio of the absolute variation in deprivation as shown in Eq. 3, while aggregated SDI Eq. 4 can be computed as in

$$\text{Component SDI}_{ijk} = RVD/AVD = \left(\frac{\text{Observed } X_{ijk} - \text{Lowest } X_{ijk}}{\text{Highest } X_{ijk} - \text{Lowest } X_{ijk}} \right) \quad (3) [1]$$

$$\text{Aggregate SDI} = \frac{\sum \text{SDI}_{ijk}}{\sum n_j} \quad (4) [1]$$

where, $\sum \text{SDI}_{ijk}$ = sum of SDI for each variable, component and location; n_j = the number of components j.

The components I, II, III ... J will depict component SDI values as obtained from the parameters or indicators.

RED elements included residences with a single room, inadequate garbage management, solid waste disposal piles, and stagnant water. WASH elements included lack of access to clean water, sanitary facilities, and better hygiene practices. Scores ranged from 0 (least disadvantaged) to 1 (most deprived) [1, 25]. Descriptive statistics, including percentages and means, were used to analyze participation types and deprivation levels, following methodologies in recent Nigerian urban studies [14, 13].

Data Validation

Data validation was conducted to ensure reliability and consistency of findings. The survey instrument was pre-tested with a pilot sample of 30 residents from a non-study slum in Ibadan to refine questions and ensure clarity. Cronbach's alpha was calculated to assess internal consistency, yielding a reliability coefficient of 0.89, indicating high reliability (Yamane, 1967). Cross-validation was performed by comparing survey responses with field observations of slum conditions, such as waste piles and water access, to confirm data accuracy. Triangulation was employed by integrating quantitative survey data with qualitative insights from community leaders to validate participation patterns, a method recommended in urban deprivation studies [16, 2]. Statistical tests, including mean deviation and variance, were used to ensure consistency across LGAs, aligning with approaches in recent Nigerian research [11].

RESULTS

The study examined the roles of slum dwellers in the spatial development of Ibadan' inner-city slums through various participation types, including online engagement, consultations, dialogue projects, self-mobilization, incentives (e.g., gifts), and passive participation. Table 2 summarizes participation forms across Ibadan's five local government areas (LGAs). Consultation (35.7%) and incentives as gifts (27.2%) were the dominant forms, followed by dialogue projects (18.7%) and self-mobilization (12.1%). Online (4.5%) and passive participation (2.2%) were the least common, indicating limited digital engagement in slum transformation.

Table 2. Forms of Participation in Slum Transformation

Type of Participation	IBN (%)	IBNE (%)	IBNW (%)	IBSE (%)	IBSW (%)
Online	9(8.3)	6(6.6)	7(6.1)	1(1.1)	---
Consultation	32(27.8)	55(49.2)	34(29.6)	39(35.1)	37(37.3)
Dialogue project	18(16.7)	14(15.4)	23(20.0)	26(29.9)	22(22.2)
Self-mobilization	21(19.5)	8(8.9)	17(14.8)	11(12.7)	10(10.1)
Incentives as gifts	32(27.9)	27(29.7)	30(26.1)	32(36.8)	29(29.3)
Passive individual	3(2.8)	2(2.2)	4(3.5)	2(2.3)	1(1.1)
Total	115(100)	112(100)	115(100)	111(100)	99(100)

Source: Author, 2024.

Level of Community Participatory Techniques

Six participatory techniques were assessed: community pluralism, grassroots mobilization, resource capitalization, inclusiveness and planning authority, place attachment, and gentrification. Respondents rated these on a Likert scale (1 = very low, 5 = very high), and the Relative Participatory Index (RPI) was calculated as the average weighted mean (Table 3). Statistical measures (mean deviation, variance, standard deviation, coefficient of variance) were computed for each LGA.

Table 3. Likert Scale Decision Table for RPI of Community Participation Technique

Likert Scale	Interval	Difference	Rating
1	1.00 to 1.79	0.79	Very Low
2	1.80 to 2.59	0.79	Low
3	2.60 to 3.39	0.79	Just High
4	3.40 to 4.19	0.79	High
5	4.20 to 5.00	0.79	Very High

Source: Author, 2024.

Table 4 presents the RPI results. Across Ibadan's LGAs, the average RPI was 3.55, indicating a high level of participation. Grassroots mobilization, gentrification, and inclusiveness were rated high, while community pluralism, resource capitalization, and place attachment were rated just high. Statistical analysis showed high reliability (89%) and consistency in responses.

Table 4. Community Participatory Techniques in Transformation

Community Participation Level	(IBN)			(IBNE)			(IBNW)			(IBSE)			(IBSW)		
	SWV	\bar{RPI}	MDs	SWV	\bar{RPI}	MDs	SWV	\bar{RPI}	MDs	SWV	\bar{RPI}	MDs	SWV	\bar{RPI}	MDs
Adoption of community pluralism	293	3.00	- 0.40	318	3.43	-0.11	405	3.47	- 0.07	207	2.57	- 0.93	451	3.50	-0.21
Bureaucracy	441	3.83	0.43	453	4.04	0.50	447	3.94	0.40	471	4.00	0.50	425	4.29	0.58
Increment in grassroots mobilization															
Community resources capitalization	358	3.18	-0.22	418	3.31	-0.23	438	3.16	-0.38	371	3.24	-0.10	319	3.21	-0.50
	-0.57														
	264														
	2.36														
	-0.16														
	244														
	3.71														
	0.58														
Inclusiveness and planning authority	441	3.43	0.30	444	3.56	0.02	419	3.60	0.06	449	4.05	0.55	409	4.10	0.39
Advancement of place attachment	363	3.03	-0.37	337	2.90	-0.64	350	3.07	-0.47	459	3.19	-0.31	408	3.12	-0.59
Adoption of gentrification	456	3.97	0.57	452	4.02	0.48	454	4.00	0.46	438	3.95	0.45	398	4.02	0.31
Total	20.44	0.87		21.26	0.96		21.24	0.75		21.00	1.73		22.24	1.23	

Source: Author, 2024

DISCUSSION

The findings indicate that while resident participation in Ibadan's slum transformation efforts was relatively high, as evidenced by the average RPI of 3.55, the impact on actual slum revitalization remained limited. However, the limited impact on actual slum revitalization underscores significant gaps in the effectiveness of these participatory approaches. The predominance of consultations (35.7%) and incentives as gifts (27.2%) as participation forms suggests a reliance on top-down approaches, where community input is sought but not necessarily integrated into decision-making processes. This aligns with [19], which notes that in African contexts, community participation can sometimes be superficial, serving as a tool for control rather than empowerment. Recent studies in Nigeria, such as [11], further highlight that superficial engagement in urban renewal projects in cities like Enugu often leads to limited project sustainability due to a lack of resident-driven decision-making. The low prevalence of online (4.5%) and passive participation (2.2%) highlights a digital divide and limited passive engagement, potentially due to inadequate access to technology or awareness among slum residents, a challenge also noted in Lagos by [1].

The high RPI ratings for grassroots mobilization (average 4.02), inclusiveness and planning authority (3.75), and gentrification (3.99) in [Table 4](#) reflect a strong community desire to engage actively in transformation processes. These findings suggest that residents are willing to contribute to urban redevelopment when given meaningful opportunities. However, the just-high ratings for community pluralism (3.28), resource capitalization (3.22), and place attachment (3.06) indicate challenges in achieving diverse representation, effectively utilizing local resources, and fostering emotional connections to the urban environment. According to [16], fostering place attachment in Nigerian slums requires culturally sensitive interventions that celebrate local heritage, such as community festivals or the preservation of traditional compounds, which are often absent in Ibadan's transformation initiatives. Similarly, [13] note that resource capitalization in Nigerian urban contexts is hindered by limited access to funding and technical expertise, which restricts communities' ability to drive their own development projects.

Significant barriers such as corruption, bureaucratic inefficiencies, political interference, and limited funding have likely reduced the effectiveness of participatory initiatives. These challenges mirror those seen in Benin City [22], where state-led efforts struggled due to similar issues. Recent research by [14] on Lagos slum upgrades highlights that corruption and mismanagement continue to be significant obstacles, with reports indicating that up to 30% of urban renewal funds are misused in Nigerian cities. Persistent poor infrastructure and socio-environmental conditions in Ibadan's slums, despite initiatives such as the Sustainable Ibadan Programme (SIP), underscore the need for stronger, more inclusive participatory approaches. UN-HABITAT's suggestion for more precise cost-benefit analyses [23] could help address these gaps, improving resource allocation and stakeholder cooperation. [26] note that community resistance often arises from distrust in government, worsened by historical experiences of forced evictions and broken promises in Nigerian urban renewal efforts.

The Slum Deprivation Index (SDI) highlights spatial differences in deprivation, especially in residential, environmental, and WASH issues, which remain critical. The focus on RED and WASH components provides detailed insights into slum conditions, supporting [1]'s point that socio-spatial analysis is essential for pinpointing deprivation hotspots. Nevertheless, the limited impact of resident participation indicates that engagement should go beyond consultations and incentives to include decision-making power and capacity-building. [27] argue that empowering slum communities with training in project management and advocacy can significantly improve the sustainability of urban interventions in Nigeria.

The reliance on consultations and incentives reflects a top-down approach that limits residents' sense of ownership, corroborating [10], who notes that expert-driven planning often fails to address nuanced community needs. In Nigeria, this issue is compounded by bureaucratic delays and political interference, as evidenced in Ibadan's SIP and similar programs in Port Harcourt [26]. The low level of online participation highlights the digital divide, a growing concern in Nigeria's urban slums, where only 15% of residents have reliable internet access [28]. Addressing this requires

targeted interventions, such as community-based digital hubs, as successfully implemented in Abuja's participatory planning initiatives [27].

Grassroots mobilization and inclusiveness, rated highly in the study, indicate potential for resident-driven transformation. However, the just-high scores for community pluralism and resource capitalization suggest that diverse representation and resource utilization remain weak. [29] argue that Nigerian slum communities often lack platforms for marginalized groups, such as women and youth, to participate meaningfully, leading to skewed representation in planning processes. Similarly, place attachment scores reflect a disconnect between residents and their urban environment, a challenge attributed to frequent displacement threats and inadequate community engagement [16]. Strengthening place attachment could involve participatory design projects that integrate residents' cultural and social values, as demonstrated in successful slum upgrading programs in Kaduna [28].

The persistence of degraded infrastructure and poor socio-environmental conditions in Ibadan's slums, despite programs like SIP, underscores the need for robust, inclusive frameworks. UN-HABITAT's (2008) recommendation for clearer cost-benefit analyses remains relevant, as inefficient resource allocation continues to hinder progress [3]. Recent research in Nigeria indicates that combining cost-benefit analyses with participatory budgeting can boost project transparency and foster greater community trust [14]. Furthermore, adopting smart urbanism principles, like IoT-based monitoring for waste and water systems, has the potential to improve efficiency, as demonstrated by Kaduna's smart city pilot initiatives [28].

The findings also underscore the importance of policies that promote regular urban renewal and encourage strong community participation. Nigeria's 2024 National Urban Development Policy (NUDP) emphasizes inclusive urban planning; however, its implementation in Ibadan faces challenges such as funding shortages and political issues [29]. Public-private-community partnerships (PPCPs), such as those in Lagos, serve as effective models for mobilizing resources and ensuring community involvement [14]. These partnerships should focus on capacity-building to overcome coordination challenges and empower communities to sustain progress.

Overall, although resident participation in Ibadan's slum redevelopment is relatively high, its influence is limited by top-down practices, systemic obstacles, and low digital engagement. For sustainable urban transformation, participatory approaches must enhance decision-making power, transparency, and the effective use of technology. Addressing these issues requires a comprehensive strategy that combines community empowerment, smart urban planning, and robust policy support to promote fair and sustainable development in Ibadan.

Specific Roles of The Slum Dwellers in The Spatial Transformation of Inner-City Slums

The findings indicate that slum dwellers played several distinct roles in the spatial development of Ibadan's inner-city slums, though their overall impact on slum revitalization remained limited due to systemic constraints. The roles of slum dwellers, as evidenced by the study's data, are detailed below:

- Consultative Contributors:** Slum dwellers primarily participated through consultations, which accounted for 35.7% of participation forms across the five LGAs (Table 2), with IBNE 49.2%, IBSW at 37.3%, IBSE at 35.1%, IBNW at 29.6%, IBN at 27.8%. Residents provided input during planning processes, sharing local knowledge about socio-environmental challenges such as inadequate waste management and water access. However, the predominance of consultations suggests a top-down approach, where residents' inputs were often not fully integrated into decision-making, limiting their influence on spatial redevelopment outcomes. This aligns with [19], who note that in African contexts, consultation can be superficial, serving as a tool for control rather than empowerment.
- Incentive-Driven Participants:** A significant portion of slum dwellers (27.2%) overall engaged in spatial development through incentives such as gifts with IBSE at 36.8%, IBSW at 29.3%, IBNE at 29.7%, IBN at 27.9%, IBNW at 26.1% (Table 2). This role involved

participating in government or NGO-led initiatives in exchange for material benefits, which motivated involvement but often lacked depth in fostering sustainable spatial change. This reliance on incentives highlights a transactional approach to participation, which, according to [11], undermines long-term project sustainability in Nigerian urban renewal efforts.

3. **Grassroots Mobilizers:** Slum dwellers played an active role in grassroots mobilization, rated highly with an average RPI of 4.02 (Table 4). Residents organized community efforts to advocate for infrastructure improvements, such as better roads and sanitation facilities, demonstrating a strong desire to drive spatial redevelopment. For example, in IBSW, grassroots mobilization scored 4.29, indicating robust community-led initiatives. This role reflects residents' potential to influence spatial transformation when given meaningful opportunities, as supported by [10], who emphasize that community-driven efforts enhance project ownership.
4. **Dialogue Facilitators:** Dialogue projects accounted for 18.7% of participation (Table 2), with slum dwellers engaging in discussions with planners and authorities to address spatial challenges. This role enabled residents to articulate community needs, such as improved housing and waste management, contributing to planning processes. However, the moderate prevalence of dialogue projects suggests limited platforms for sustained resident-planner collaboration, a gap also noted in Enugu's urban renewal projects [11].
5. **Self-Mobilized Advocates:** Self-mobilization, though less common at 12.1% (Table 2), highlighted slum dwellers' proactive role in initiating small-scale spatial improvements, such as community-led clean-up campaigns or informal housing upgrades. In IBN, self-mobilization reached 19.5%, indicating localized efforts to reshape the urban environment. This role underscores residents' agency in spatial development, though its limited scope reflects barriers like insufficient funding and coordination challenges, as noted by [13].
6. **Limited Digital Engagers:** Online participation was minimal at 4.5% (Table 2), indicating that slum dwellers had a restricted role in leveraging digital platforms for spatial development. This low engagement, particularly absent in IBSW, reflects the digital divide, with only 15% of Nigerian slum residents having reliable internet access [28]. This limited role hinders residents' ability to participate in technology-driven urban planning initiatives, such as smart urbanism projects, as seen in Kaduna [28].

Despite these roles, the average RPI of 3.55 indicates a high level of participation but limited impact on revitalizing Ibadan's inner-city slums. The high RPI ratings for grassroots mobilization (4.02), inclusiveness and planning authority (3.75), and gentrification (3.99) in Table 4 reflect slum dwellers' active roles in advocating for and contributing to spatial redevelopment. However, the just-high ratings for community pluralism (3.28), resource capitalization (3.22), and place attachment (3.06) indicate challenges in achieving diverse representation, effectively utilizing local resources, and fostering emotional connections to the urban environment. According to [16], fostering place attachment in Nigerian slums requires culturally sensitive interventions, such as community festivals or preserving traditional compounds, which are often absent in Ibadan's initiatives.

Significant barriers, including corruption, bureaucratic inefficiencies, political interference, and insufficient funding, diluted the effectiveness of slum dwellers' roles. Recent research by [14] notes that up to 30% of urban renewal funds in Nigerian cities are misallocated, undermining residents' contributions. The persistence of degraded infrastructure and poor socio-environmental conditions, as evidenced by the Slum Deprivation Index (SDI) results, underscores the limited impact of resident involvement. The SDI highlighted high levels of residential and environmental deprivation (RED) and WASH deprivation, aligning with [1], who emphasize the need for socio-spatial analysis to identify deprivation hotspots.

The reliance on consultations and incentives reflects a top-down approach that limits residents' sense of ownership, corroborating [10]. The low level of online participation highlights the digital divide, a growing concern in Nigeria's urban slums [28]. Addressing this requires targeted interventions, such as community-based digital hubs, as implemented in Abuja [27]. Grassroots mobilization and inclusiveness indicate potential for resident-driven transformation, but weak community pluralism and resource capitalization suggest that diverse representation and resource utilization remain challenges [29]. Strengthening place attachment could involve participatory design projects, as seen in Kaduna [28].

The persistence of degraded infrastructure and poor socio-environmental conditions, despite programs like the Sustainable Ibadan Programme (SIP), underscores the need for robust, inclusive frameworks that empower slum dwellers in decision-making roles. UN-HABITAT's recommendation for clearer cost-benefit analyses [23] and recent studies advocating participatory budgeting [14] could enhance the impact of residents' roles. Integrating smart urbanism principles, such as IoT-based monitoring, could further amplify residents' contributions to spatial development, as demonstrated in Kaduna [28].

In summary, slum dwellers in Ibadan's inner-city slums played critical roles as consultative contributors, incentive-driven participants, grassroots mobilizers, dialogue facilitators, self-mobilized advocates, and limited digital engagers. However, systemic barriers and top-down approaches constrained their impact on spatial redevelopment. To achieve sustainable urban transformation, participatory frameworks must empower residents with decision-making authority, enhance transparency, and leverage technology-driven solutions to maximize their roles in shaping Ibadan's urban landscape.

To address the limited effectiveness of resident participation in Ibadan's slum transformation, the following actionable recommendations are proposed to foster inclusive, sustainable, and community-driven urban redevelopment.

1. **Promote Place Attachment and Community Pluralism.** Strengthening residents' emotional connection to their environment through cultural and social initiatives, such as community festivals or green space development, to enhance place attachment. Simultaneously, promote community pluralism by ensuring diverse representation (e.g., women, youth, and marginalized groups) in planning processes. Recent studies in Ibadan highlight the importance of inclusive community identity in sustaining urban interventions [16].
2. **Leverage Technology for Inclusive Participation.** Bridge the digital divide by introducing mobile-based platforms for resident feedback and participation, given the low online engagement (4.5%) reported in the study. Community centers with free internet access and digital literacy training can facilitate broader participation, particularly among youth and women. Recent initiatives in Abuja, where mobile apps were used for participatory urban planning, show promise in enhancing inclusivity [27].
3. **Prioritize Infrastructure and WASH Improvements.** Focus on upgrading critical infrastructure, such as water supply, sanitation, and waste management, to address residential and environmental deprivation (RED) and WASH deprivation. Adopt cost-effective, community-managed solutions like decentralized waste recycling. Implement cost-effective, community-driven solutions like decentralized waste recycling and solar-powered boreholes, as seen in Port Harcourt [26]. These projects should involve residents in maintenance to foster ownership and ensure sustainability.
4. **Incorporate principles of Smart Urbanism:** Utilizing affordable technologies to enhance urban management. For instance, deploy IoT sensors for real-time monitoring of waste and water systems in slums, as demonstrated in Kaduna's smart city projects [28]. Involve residents in co-managing these technologies to improve efficiency and foster local capacity development.
5. **Improve transparency and accountability:** Deploying clear financial and project management systems. Digital tools, such as blockchain for tracking funds, as demonstrated in Lagos pilot

projects [30], can enhance accountability. Local authorities should issue regular progress reports and involve independent auditors to oversee funds for slum upgrading, minimizing bureaucratic delays and political interference.

6. **Integrate Smart Urbanism Principles:** Incorporate smart urbanism strategies by leveraging low-cost technologies to improve urban management. For example, deploy IoT-based sensors for real-time monitoring of waste and water systems in slum areas, as explored in Kaduna's smart city initiatives [28]. Engage residents in co-managing these technologies to enhance efficiency and build local capacity.

CONCLUSION

The study highlights the ongoing expansion of slums in Ibadan despite resident involvement in transformation efforts. The limited effectiveness of participation, primarily through consultations and incentives, suggests that sustainable development principles were not adequately integrated into planning processes. To address the limited effectiveness of resident participation in Ibadan's slum transformation, the following actionable recommendations are proposed to foster inclusive, sustainable, and community-driven urban redevelopment.

DECLARATIONS

Conflict of Interest

We declare no conflict of interest, financial, or otherwise.

Ethical Approval

On behalf of all authors, the corresponding author states that the paper satisfies Ethical Standards conditions, no human participants, or animals are involved in the research.

Informed Consent

On behalf of all authors, the corresponding author states that no human participants are involved in the research and, therefore, informed consent is not required by them.

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