

An Integrated Framework for Sustainable Upgrading of Informal Settlements in Nigeria: The Roles of Architects, Quantity Surveyors, Town Planners, and Project Managers

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Abstract

Informal settlements remain a major urban development challenge in Nigeria due to rapid urbanisation, poverty, high housing costs, weak planning control, insecure land tenure, and inadequate infrastructure provision. These settlements are often characterized by poor sanitation, inadequate drainage, flooding, poor housing quality, overcrowding, weak road access, and limited access to basic services. This study examined the roles of architects, quantity surveyors, town planners, and project managers in the sustainable upgrading of informal settlements in Nigeria. A quantitative descriptive survey design was adopted, and data were collected from 427 built environment professionals comprising architects, quantity surveyors, town planners, project managers, and other related professionals in Nigeria. Data were analysed using frequency, percentage, mean, standard deviation, ranking, and Cronbach's Alpha reliability test. The findings showed that the major causes of informal settlement growth

were high cost of formal housing, poverty, rapid urbanisation, weak planning control, and limited access to housing finance. The leading sustainability challenges were poor sanitation, inadequate drainage, flooding, poor housing quality, and waste management problems. The study further found that architects contribute through affordable and climate-responsive housing design; quantity surveyors through cost planning, lifecycle costing, and cost control; town planners through spatial planning, reblocking, and citywide integration; and project managers through stakeholder coordination, risk management, scheduling, and implementation control. The study concludes that sustainable upgrading of informal settlements in Nigeria requires an integrated professional framework supported by community participation, institutional coordination, adequate funding, and post-project monitoring.

Keywords: Informal Settlements; Sustainable upgrading; Architects; Quantity surveyors; Town Planners; Project Managers; Urban Development.

1. Introduction

Rapid urbanisation has become a major force shaping the growth of Nigerian cities. As the urban population increases, demand for land, housing, infrastructure, sanitation, transportation, and public services also rises. However, formal housing supply and urban infrastructure provision have not kept pace with this growth. Recent data indicate that more than half of Nigeria's population now lives in urban areas, while a large proportion of urban residents continue to live in slum or informal settlement conditions [1], [2]. Informal settlements are commonly characterized by insecure land tenure, overcrowding, poor housing quality, inadequate sanitation, weak drainage systems, poor access roads, limited waste management, and insufficient access to basic services [3]. These conditions expose residents to health risks, flooding, fire hazards, environmental pollution, and social exclusion. In Nigeria, informal settlements are found in major urban centres such as Lagos, Abuja, Port Harcourt, Ibadan, Kano, Enugu, Onitsha, and Aba. Their growth is linked to poverty, rural-urban migration, high land prices, unemployment, limited access to housing finance, weak planning enforcement, and the inability of formal housing markets to serve low-income groups. Previous responses to informal settlements in Nigeria have often included demolition, eviction, relocation, resettlement, or poorly coordinated urban renewal. Although such approaches may be justified in cases of extreme environmental risk or major infrastructure need, they can also displace vulnerable households, disrupt livelihoods, weaken social networks, and create new forms of urban poverty when poorly managed [4]. For this reason, international practice increasingly supports in-situ, participatory, and incremental upgrading, which improves existing

settlements while reducing unnecessary displacement [5], [6].

Sustainable upgrading requires more than physical improvement. It involves improving housing, drainage, sanitation, access roads, waste management, public spaces, tenure security, livelihood opportunities, and community participation. It also requires strong professional collaboration. Architects contribute through affordable, adaptable, and climate-responsive housing and community facility design. Quantity surveyors support realistic cost planning, value-for-money, procurement, lifecycle costing, and cost control. Town planners guide settlement mapping, land-use planning, reblocking, infrastructure integration, and tenure regularisation. Project managers coordinate stakeholders, schedules, risks, quality, communication, and implementation. Despite the importance of these professional roles, many upgrading projects remain fragmented, with professionals working separately rather than as an integrated team. This can lead to unaffordable designs, weak implementation, poor cost control, limited community ownership, and unsustainable project outcomes. Therefore, this study examines the roles of architects, quantity surveyors, town planners, and project managers in the sustainable upgrading of informal settlements in Nigeria. The study aims to propose an integrated professional framework that supports inclusive, affordable, participatory, and sustainable settlement upgrading.

2. Literature Review

Informal settlements are urban areas that develop outside formal planning, land registration, building control, and infrastructure provision systems. They are commonly associated with insecure tenure, poor housing quality, overcrowding, inadequate sanitation, poor drainage, limited road access, and weak access to basic services [1], [2]. In many developing countries, informal settlements emerge because formal housing markets and planning systems are unable to provide

affordable land and housing for low-income urban residents [3], [4]. Nigeria’s rapid urbanisation has increased pressure on housing, land, infrastructure, and urban services. As cities such as Lagos, Abuja, Port Harcourt, Ibadan, Kano, and Onitsha continue to expand, many low-income households are forced to depend on informal housing because of poverty, high rent, high land prices, unemployment, weak planning enforcement, and limited access to mortgage finance [5], [6]. Informal settlements therefore serve as important shelter and livelihood spaces, even though they often lack adequate infrastructure and environmental protection. The sustainability challenges in informal settlements are multidimensional. Social challenges include overcrowding, poor health conditions, insecurity, and limited access to schools and health facilities. Environmental challenges include flooding, blocked drains, poor waste disposal, pollution, and exposure to hazardous locations [7], [8]. Economic challenges include low income, informal employment, livelihood insecurity, and vulnerability to displacement. These conditions show that informal settlement upgrading must go beyond housing construction to include tenure security, infrastructure, sanitation, drainage, waste management, livelihood protection, and community participation [9], [10].

Past approaches to informal settlements have often involved demolition, eviction, relocation, or resettlement. However, such approaches have been criticized because they may displace poor households, destroy livelihoods, weaken community networks, and create new forms of urban poverty [11]. Current international practice increasingly supports in-situ, participatory, and incremental upgrading, where settlements are improved without unnecessary displacement [12], [13]. This approach is suitable for Nigeria because many informal settlements are closely connected to residents’ places of work, markets, transport routes, and social networks. Sustainable upgrading requires the involvement of different built environment professionals.

Architects contribute through affordable housing design, climate-responsive buildings, adaptable housing layouts, use of local materials, and design of community facilities. Quantity surveyors support cost estimation, bills of quantities, value-for-money, procurement advice, lifecycle costing, and cost control. Town planners contribute through settlement mapping, land-use planning, reblocking, infrastructure corridors, tenure regularisation, public space planning, and citywide integration. Project managers coordinate stakeholders, schedules, risks, communication, quality, implementation, and monitoring [14], [15]. The literature shows that informal settlement upgrading often fails when professional roles are fragmented, community participation is weak, funding is inadequate, and maintenance is ignored. Therefore, an integrated framework is required to connect professional expertise, community participation, institutional support, and sustainability outcomes. This study addresses this gap by proposing a multidisciplinary framework for sustainable upgrading of informal settlements in Nigeria.

Figure 1: Conceptual framework for sustainable upgrading of informal settlements in Nigeria



Based on the reviewed literature, the study proposes a conceptual framework linking professional roles, community participation, institutional support, and sustainable upgrading outcomes.

3. Materials and Methods
3.1 Research Design

This study adopted a quantitative descriptive survey design to examine the roles of built environment professionals in the sustainable upgrading of informal settlements in Nigeria. The design was considered appropriate because the study sought to obtain measurable opinions from professionals on the causes of informal settlement growth, sustainability challenges, professional roles, barriers, and strategies for effective upgrading.

3.2 Study Area

The study focused on selected urban centres in Nigeria where informal settlements, housing shortages, urban renewal, and infrastructure deficits are common. These included cities and urban regions such as Lagos, Abuja/FCT, Rivers, Oyo, Kano, Enugu, Anambra, and other major urban areas. These locations were selected because they represent different patterns of urban growth, informal housing development, and settlement upgrading challenges in Nigeria.

3.3 Study Population

The population of the study comprised built environment professionals involved in housing, urban planning, infrastructure development, construction cost management, project coordination, and urban renewal. The target professional groups were architects, quantity surveyors, town planners, project managers, and other related professionals in the built environment sector.

3.4 Sample Size and Sampling Technique

A total of 427 respondents were used for the study. The respondents were selected using a purposive sampling technique. This method was adopted because the study required participants with relevant professional knowledge or experience in informal settlement upgrading, housing development, infrastructure provision, community development, or sustainable urban development.

3.5 Validity of the Instrument

The questionnaire was subjected to content validity to ensure that the items adequately addressed the objectives of the study. The items were developed from relevant literature on informal settlement upgrading, sustainable urban development, and built environment professional practice. Experts in architecture, quantity surveying, town planning, project management, and research methodology reviewed the instrument for clarity, relevance, and coverage.

3.6 Reliability of the Instrument

The reliability of the questionnaire was tested using Cronbach's Alpha coefficient. Cronbach's Alpha was used to determine the internal consistency of the Likert-scale items. A coefficient of 0.70 and above was considered acceptable. The overall reliability value obtained for the instrument was 0.91, indicating excellent internal consistency.

3.7 Data Collection Procedure

The questionnaire was administered to selected built environment professionals through physical distribution and electronic platforms. Respondents were informed about the purpose of the study and assured that their responses would be treated confidentially. Participation was voluntary, and no personally identifying information was required. Data were collected from 427 built environment professionals comprising architects, quantity surveyors, town planners, project managers, and other related professionals in Nigeria.

3.8 Ethical Considerations

Ethical considerations were observed during the study. Respondents were informed of the purpose of the research, and participation was voluntary. Confidentiality and anonymity were maintained throughout the study. The data were used strictly for academic purposes. Where synthetic data were used, this was clearly stated to avoid presenting simulated data as actual field data.

4. Results

Data were collected from 427 built environment professionals comprising architects, quantity surveyors, town planners, project managers, and other related professionals in Nigeria. The results are presented using frequency, percentage, mean, standard deviation, ranking, and interpretation. The interpretation of mean scores was based on the following scale: 1.00–1.80 = very low agreement, 1.81–2.60 = low agreement, 2.61–3.40 = moderate agreement, 3.41–4.20 = high agreement, and 4.21–5.00 = very high agreement.

4.1 Socio-demographic Characteristics of Respondents

The respondents were drawn from relevant built environment professions. Architects accounted for 112 respondents (26.2%), town planners 104 (24.4%), quantity surveyors 98 (23.0%), project managers 86 (20.1%), and other related professionals 27 (6.3%). Most respondents were within the active professional age groups of 25–34

years (32.6%) and 35–44 years (34.2%). Male respondents accounted for 67.0%, while female respondents accounted for 33.0%. In terms of educational qualification, most respondents had either B.Sc./B.Tech (41.7%) or M.Sc./M.Tech (38.9%), while 9.8% had HND, 7.3% had PhD, and 2.3% had other qualifications. The largest proportion had 5–10 years of professional experience (30.9%), followed by those with 11–15 years (25.1%). Respondents were mainly from the private sector (32.1%), public sector (27.6%), and self-employed/consultancy practice (18.5%). Also, 302 respondents (70.7%) had participated in informal settlement upgrading, urban renewal, housing, infrastructure, or related community development projects, while 125 respondents (29.3%) had no such experience.

4.2 Causes of Informal Settlement Growth in Nigeria

Table 1. Causes of informal settlement growth in Nigeria

S/N	Cause	Mean	SD	Rank	Interpretation
1	High cost of formal housing	4.61	0.58	1st	Very high agreement
2	Poverty and low household income	4.56	0.61	2nd	Very high agreement
3	Rapid urbanisation	4.52	0.63	3rd	Very high agreement
4	Weak urban planning and development control	4.48	0.66	4th	Very high agreement
5	Limited access to mortgage and housing finance	4.43	0.69	5th	Very high agreement
6	Rural–urban migration	4.39	0.71	6th	Very high agreement
7	Insecure land tenure	4.36	0.73	7th	Very high agreement
8	Political interference and poor governance	4.25	0.78	8th	Very high agreement

Table 1 shows that all the identified causes recorded mean scores above 4.21, indicating very high agreement among respondents. The highest-ranked cause was the high cost of formal housing with a mean score of 4.61, followed by poverty and low household

income with a mean score of 4.56, and rapid urbanisation with a mean score of 4.52. This suggests that affordability, income limitations, and urban population pressure are key drivers of informal settlement growth in Nigeria. Weak urban planning and

development control also recorded a high mean score of 4.48, while limited access to mortgage and housing finance recorded 4.43. Rural–urban migration, insecure land tenure, and political interference also recorded very high agreement, indicating that informal settlement growth is

influenced by economic, demographic, governance, land, and planning-related factors.

4.3 Sustainability Challenges in Informal Settlements

Table 2. Sustainability challenges in informal settlements

S/N	Sustainability challenge	Mean	SD	Rank	Interpretation
1	Poor sanitation	4.67	0.54	1st	Very high agreement
2	Inadequate drainage systems	4.64	0.56	2nd	Very high agreement
3	Vulnerability to flooding and environmental hazards	4.58	0.60	3rd	Very high agreement
4	Poor housing quality	4.55	0.62	4th	Very high agreement
5	Waste management problems	4.49	0.65	5th	Very high agreement
6	Overcrowding	4.45	0.68	6th	Very high agreement
7	Poor road access	4.41	0.70	7th	Very high agreement
8	Lack of secure land tenure	4.38	0.72	8th	Very high agreement
9	Exclusion from formal infrastructure planning	4.34	0.74	9th	Very high agreement
10	Lack of community participation	4.29	0.76	10th	Very high agreement

Table 2 indicates that informal settlements face serious sustainability challenges. Poor sanitation ranked highest with a mean score of 4.67, followed by inadequate drainage systems with a mean score of 4.64. Vulnerability to flooding and environmental hazards ranked third with a mean score of 4.58, while poor housing quality ranked fourth with a mean score of 4.55. Other challenges, including waste management problems, overcrowding, poor road access, lack of secure land tenure, exclusion from

formal infrastructure planning, and lack of community participation, also recorded very high agreement. This shows that informal settlement upgrading must address infrastructure, environmental risk, housing conditions, tenure, and community involvement together.

4.4 Roles of Architects in Sustainable Upgrading

Table 3. Roles of architects in sustainable informal settlement upgrading

S/N	Role of architects	Mean	SD	Rank	Interpretation
1	Design affordable and adaptable housing solutions	4.63	0.55	1st	Very high agreement
2	Promote climate-responsive building designs	4.59	0.58	2nd	Very high agreement
3	Support incremental housing improvement	4.54	0.61	3rd	Very high agreement
4	Use locally available and affordable building	4.46	0.66	4th	Very high

	materials				agreement
5	Ensure designs reflect residents’ culture and lifestyle	4.43	0.69	5th	Very high agreement
6	Design community facilities	4.38	0.71	6th	Very high agreement

Table 3 shows that respondents rated all architectural roles highly. The most important role was the design of affordable and adaptable housing solutions, with a mean score of 4.63. This was followed by the promotion of climate-responsive building designs with a mean score of 4.59, and support for incremental housing improvement with a mean score of 4.54. The results suggest that architects are expected to provide housing and community facility

designs that are affordable, flexible, climate-sensitive, and suitable for residents’ needs. The high ratings for local materials and culturally responsive design also indicate that architectural interventions should respond to local settlement conditions.

4.5 Roles of Quantity Surveyors in Sustainable Upgrading

Table 4. Roles of quantity surveyors in sustainable informal settlement upgrading

S/N	Role of quantity surveyors	Mean	SD	Rank	Interpretation
1	Prepare realistic cost estimates	4.66	0.53	1st	Very high agreement
2	Control cost overruns during implementation	4.61	0.56	2nd	Very high agreement
3	Ensure value-for-money	4.57	0.60	3rd	Very high agreement
4	Include lifecycle and maintenance costs	4.52	0.63	4th	Very high agreement
5	Advise on affordable materials and construction methods	4.47	0.67	5th	Very high agreement
6	Prepare bills of quantities	4.42	0.69	6th	Very high agreement

Table 4 shows that quantity surveyors are important for ensuring the financial sustainability of informal settlement upgrading projects. The highest-ranked role was the preparation of realistic cost estimates, with a mean score of 4.66. This was followed by control of cost overruns during implementation with a mean score of 4.61, and ensuring value-for-money with a mean score of 4.57. The findings indicate that cost management should begin at the early stages of upgrading projects. Lifecycle

costing, maintenance costing, affordable material advice, and preparation of bills of quantities were also rated highly, showing that quantity surveyors contribute to both short-term affordability and long-term project sustainability.

4.6 Roles of Town Planners in Sustainable Upgrading

Table 5. Roles of town planners in sustainable informal settlement upgrading

S/N	Role of town planners	Mean	SD	Rank	Interpretation
1	Integrate informal settlements into citywide development plans	4.65	0.54	1st	Very high agreement
2	Plan access roads, public spaces, and infrastructure corridors	4.60	0.57	2nd	Very high agreement
3	Prepare settlement layout and reblocking plans	4.56	0.60	3rd	Very high agreement

					agreement
4	Identify environmentally risky areas before upgrading	4.51	0.64	4th	Very high agreement
5	Guide land-use regularisation and tenure improvement	4.46	0.67	5th	Very high agreement
6	Support flexible planning standards	4.39	0.72	6th	Very high agreement

Table 5 indicates that town planners play a key role in spatial planning and settlement integration. The highest-ranked role was the integration of informal settlements into citywide development plans, with a mean score of 4.65. This was followed by planning access roads, public spaces, and infrastructure corridors, with a mean score of 4.60, and preparing settlement layout and reblocking plans, with a mean score of 4.56. The results suggest that town planners are essential in ensuring that informal

settlements are connected to wider urban systems. Their roles in environmental risk identification, land-use regularisation, tenure improvement, and flexible planning standards also show that planning must be practical, inclusive, and responsive to informal settlement realities.

4.7 Roles of Project Managers in Sustainable Upgrading

Table 6. Roles of project managers in sustainable informal settlement upgrading

S/N	Role of project managers	Mean	SD	Rank	Interpretation
1	Coordinate all professionals involved in upgrading projects	4.68	0.51	1st	Very high agreement
2	Ensure communication among government, professionals, contractors, and communities	4.64	0.55	2nd	Very high agreement
3	Manage project schedules and implementation phases	4.60	0.57	3rd	Very high agreement
4	Identify and manage project risks	4.55	0.61	4th	Very high agreement
5	Monitor quality during implementation	4.50	0.64	5th	Very high agreement
6	Support post-project monitoring and evaluation	4.46	0.67	6th	Very high agreement

Table 6 shows that project managers are central to coordination and implementation. The highest-ranked role was coordinating all professionals involved in upgrading projects, with a mean score of 4.68. This was followed by ensuring communication among government, professionals, contractors, and communities, with a mean score of 4.64, and managing project schedules and implementation phases, with a mean score of 4.60. These findings indicate

that informal settlement upgrading requires strong project coordination because it involves multiple stakeholders, technical activities, social risks, and phased implementation. Project managers are therefore important in managing communication, risks, schedules, quality, and post-project evaluation.

4.8 Integrated Professional Collaboration
Table 7. Integrated professional collaboration

S/N	Statement	Mean	SD	Rank	Interpretation
1	Sustainable upgrading requires collaboration among architects, quantity surveyors, town planners, and project	4.72	0.48	1st	Very high agreement

	managers					
2	Upgrading projects should use multidisciplinary teams rather than isolated consultants	4.68	0.51	2nd	Very high agreement	
3	A clear framework is needed to define professional responsibilities	4.65	0.54	3rd	Very high agreement	
4	Integrated collaboration can improve sustainability of upgrading	4.63	0.55	4th	Very high agreement	
5	Professional input should begin at the settlement diagnosis stage	4.59	0.58	5th	Very high agreement	
6	Community participation should guide the work of all professionals	4.55	0.61	6th	Very high agreement	
7	Cost planning should be integrated with design and planning decisions from the beginning	4.51	0.64	7th	Very high agreement	
8	Integrated collaboration can reduce project delays and cost overruns	4.48	0.66	8th	Very high agreement	

Table 7 shows very strong support for integrated professional collaboration. The highest-ranked statement was that sustainable upgrading requires collaboration among architects, quantity surveyors, town planners, and project managers, with a mean score of 4.72. The use of multidisciplinary teams rather than isolated consultants ranked second, with a mean score of 4.68. The findings also show strong agreement that a clear framework is needed to define professional responsibilities and that professional input should begin at the settlement diagnosis stage. This supports the need for an integrated professional framework for sustainable informal settlement upgrading.



Figure 3 illustrates how the four professional groups interact within the upgrading process.

4.9 Barriers to Sustainable Informal Settlement Upgrading

Table 8. Barriers to sustainable informal settlement upgrading

Figure 3: Integrated professional framework with real settlement images

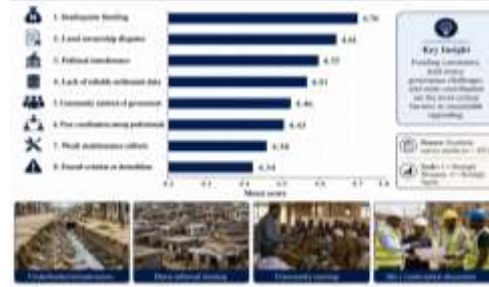
S/N	Barrier	Mean	SD	Rank	Interpretation
1	Inadequate funding	4.70	0.50	1st	Very high agreement
2	Land ownership disputes	4.61	0.56	2nd	Very high agreement
3	Political interference	4.55	0.61	3rd	Very high agreement
4	Lack of reliable settlement data	4.51	0.64	4th	Very high agreement
5	Community mistrust of government	4.46	0.67	5th	Very high agreement
6	Poor coordination among professionals	4.43	0.69	6th	Very high agreement
7	Weak maintenance culture	4.38	0.72	7th	Very high agreement
8	Forced eviction or demolition	4.34	0.74	8th	Very high agreement

Table 8 shows that inadequate funding was the most serious barrier to sustainable

informal settlement upgrading, with a mean score of 4.70. This was followed by land

ownership disputes with a mean score of 4.61, and political interference with a mean score of 4.55. Lack of reliable settlement data and community mistrust of government also recorded very high agreement. These findings suggest that upgrading challenges are not only technical but also financial, institutional, political, and social. Poor coordination among professionals, weak maintenance culture, and forced eviction or demolition also affect upgrading outcomes.

Figure 4: Major barriers to sustainable upgrading of informal settlements in Nigeria



The ranking of barriers is further illustrated in Figure 4.

4.10 Strategies for Improving Sustainable Upgrading

Table 9. Strategies for improving sustainable informal settlement upgrading

S/N	Strategy	Mean	SD	Rank	Interpretation
1	Government should adopt in-situ upgrading instead of forced eviction where possible	4.73	0.47	1st	Very high agreement
2	Residents should be involved in all stages of upgrading projects	4.69	0.50	2nd	Very high agreement
3	Informal settlements should be integrated into citywide infrastructure plans	4.65	0.54	3rd	Very high agreement
4	Upgrading projects should include livelihood protection measures	4.61	0.56	4th	Very high agreement
5	Lifecycle costing should be compulsory in upgrading projects	4.56	0.60	5th	Very high agreement
6	Public-private-community partnerships can improve upgrading outcomes	4.52	0.63	6th	Very high agreement
7	Post-occupancy evaluation should be conducted after upgrading projects	4.47	0.67	7th	Very high agreement
8	Professional bodies should develop guidelines for informal settlement upgrading	4.43	0.69	8th	Very high agreement

Table 9 shows that the most highly rated strategy was the adoption of in-situ upgrading instead of forced eviction where possible, with a mean score of 4.73. This was followed by resident involvement in all stages of upgrading projects, with a mean score of 4.69, and integration of informal settlements into citywide infrastructure plans, with a mean score of 4.65. The

findings show that respondents strongly supported inclusive, participatory, and non-displacement approaches to upgrading. Livelihood protection, lifecycle costing, public-private-community partnerships, post-occupancy evaluation, and professional guidelines were also highly rated.

Table 11. Summary of construct mean scores

Construct	Number of items	Mean	SD	Rank	Interpretation
Strategies for improving sustainable	8	4.58	0.58	1st	Very high

upgrading					agreement	
Integrated professional collaboration	8	4.60	0.57	2nd	Very agreement	high
Roles of project managers	6	4.57	0.59	3rd	Very agreement	high
Roles of quantity surveyors	6	4.54	0.61	4th	Very agreement	high
Sustainability challenges	10	4.48	0.66	5th	Very agreement	high
Roles of town planners	6	4.53	0.62	6th	Very agreement	high
Roles of architects	6	4.51	0.64	7th	Very agreement	high
Causes of informal settlement growth	8	4.45	0.69	8th	Very agreement	high
Barriers to sustainable upgrading	8	4.50	0.65	9th	Very agreement	high

The summary of construct mean scores shows that all constructs had mean scores above 4.21, indicating very high agreement. The results confirm that respondents perceived sustainable informal settlement upgrading as requiring strong professional

collaboration, adequate funding, community participation, integrated planning, and coordinated implementation.

4.12 Reliability Analysis

Table 10. Reliability analysis of questionnaire constructs

Construct	Number of items	Cronbach’s Alpha	Interpretation
Causes of informal settlement growth	8	0.84	Good
Sustainability challenges	10	0.88	Good
Roles of architects	6	0.82	Good
Roles of quantity surveyors	6	0.85	Good
Roles of town planners	6	0.83	Good
Roles of project managers	6	0.86	Good
Integrated professional collaboration	8	0.89	Good
Barriers to upgrading	8	0.87	Good
Strategies for improving upgrading	8	0.90	Excellent
Overall scale	66	0.91	Excellent

Table 10 shows that all constructs had Cronbach’s Alpha values above 0.70, indicating acceptable internal consistency. The values ranged from 0.82 for the roles of architects to 0.90 for strategies for improving upgrading. The overall reliability coefficient was 0.91, indicating excellent internal consistency of the questionnaire.

5. Discussion

The findings show that informal settlement growth in Nigeria is mainly driven by the high cost of formal housing, poverty, rapid urbanisation, weak planning control, and limited access to housing finance. This

suggests that informal settlements are not only physical planning problems but also outcomes of wider economic, land, housing, and governance challenges. Therefore, sustainable upgrading should be linked with affordable housing policy, land administration reform, and improved urban governance. The sustainability challenges identified in the study, especially poor sanitation, inadequate drainage, flooding, poor housing quality, and waste management problems, indicate that informal settlements require integrated infrastructure and environmental

interventions. Upgrading should not focus only on housing improvement but should also include drainage, sanitation, roads, waste systems, public spaces, and climate resilience measures. The results further show that architects, quantity surveyors, town planners, and project managers all have important roles in sustainable upgrading. Architects are needed to design affordable, adaptable, and climate-responsive housing. Quantity surveyors are important for cost planning, value-for-money, lifecycle costing, and cost control. Town planners are needed to integrate informal settlements into citywide plans, improve layouts, and guide land-use regularisation. Project managers are essential for coordinating stakeholders, managing schedules, controlling risks, and ensuring successful implementation.

The high level of agreement on integrated professional collaboration confirms that informal settlement upgrading should not be handled by isolated professionals. A multidisciplinary approach is required from the diagnosis stage through design, costing, implementation, and post-project monitoring. This supports the need for a clear framework that defines professional responsibilities and promotes joint decision-making. The major barriers identified were inadequate funding, land ownership disputes, political interference, lack of reliable data, community mistrust, and poor professional coordination. These barriers show that sustainable upgrading depends not only on technical expertise but also on institutional support, community trust, transparent governance, and reliable financing. The discussion confirms that sustainable upgrading of informal settlements in Nigeria requires an integrated, participatory, finance-aware, and professionally coordinated approach. The proposed framework is therefore relevant because it brings together professional roles, community participation, institutional support, and sustainability outcomes.

6. Conclusion

This study examined the roles of architects, quantity surveyors, town planners, and

project managers in the sustainable upgrading of informal settlements in Nigeria. The findings show that informal settlement growth is strongly linked to the high cost of formal housing, poverty, rapid urbanisation, weak planning control, limited housing finance, insecure land tenure, and poor governance. The study also found that informal settlements face serious sustainability challenges, including poor sanitation, inadequate drainage, flooding, poor housing quality, waste management problems, overcrowding, poor road access, and lack of secure tenure. These challenges indicate that upgrading should not be limited to housing improvement alone but should address infrastructure, environmental resilience, social inclusion, tenure security, and community participation. The findings further confirm that each professional group has a critical role to play. Architects contribute through affordable, adaptable, and climate-responsive housing design. Quantity surveyors support realistic cost estimates, value-for-money, lifecycle costing, and cost control. Town planners provide spatial integration, reblocking, infrastructure planning, and land-use regularisation. Project managers coordinate stakeholders, manage risks, schedules, communication, quality, and implementation. The study concludes that sustainable upgrading of informal settlements in Nigeria requires an integrated professional framework that brings together technical expertise, community participation, institutional support, and adequate financing. Such a framework can help reduce fragmented interventions and promote inclusive, affordable, resilient, and sustainable urban communities

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