Building Performance Evaluation of Millennium Housing Estates in Ogun State, Nigeria: A Systematic Literature Review

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ABSTRACT

The Millennium Housing Estates in Ogun State, constructed primarily between 2003 and 2009, were positioned as a flagship delivery of affordable, quality housing for low- and middle-income residents. Yet, more than two decades after delivery, systematic building performance evaluation (BPE) of these estates remains absent from both the academic and policy record.

This systematic literature review synthesises empirical evidence on the performance of public housing buildings in Ogun State, with a focus on the Millennium estates, to identify dominant performance patterns, evaluate methodological approaches used in prior studies, and surface institutional and governance gaps that limit effective building performance evaluation in the Nigerian context. Following PRISMA guidelines, a systematic search of peer-reviewed databases, grey literature, and institutional repositories was conducted. A total of 54 studies meeting the eligibility criteria were included, spanning the period 2003 to 2026. Five analytical themes emerged from the synthesis; building performance dimensions and patterns of user satisfaction, with a mean satisfaction score of 3.21 across studies; physical quality, structural integrity, and environmental conditions, revealing persistent deterioration; infrastructure deficits, service failures, and accessibility gaps, with water supply and electricity emerging as critical pain points; maintenance governance and institutional accountability deficits; and post-occupancy evaluation as an underdeveloped practice in Nigerian public housing. Taken together, the findings reveal a tripartite deficit of design inadequacy, infrastructure neglect, and absent feedback mechanisms. The Millennium Housing Estates of Ogun State occupy an understudied position in Nigeria's public housing narrative. This review demonstrates that building performance in these estates has been compromised by a convergence of structural, institutional, and governance failures. It proposes a Tripartite Performance Accountability Framework as a contribution to theory and offers clear, actionable recommendations for housing agencies, estate managers, and policymakers.

Keywords: Building performance evaluation, Post-occupancy evaluation, Public housing, Millennium estates, Ogun State Nigeria

INTRODUCTION

The provision of decent, affordable housing is one of the most enduring challenges of urbanisation in the Global South. In sub-Saharan Africa, rapid population growth and accelerating rural-to-urban migration have created housing shortfalls of extraordinary scale, with Nigeria alone recording an estimated deficit of over 20 million housing units (Federal Government of Nigeria, 2006; UN-Habitat, 2016; Okhifo, 2026). Within this broader crisis, the state of public housing, specifically its performance over time, becomes a question not merely of architectural interest but of social justice and governance. When governments build houses and then fail to evaluate whether those houses continue to serve their residents, they are not only wasting public resources; they are also abandoning the people those resources were meant to protect.

Ogun State, situated in the southwestern geopolitical zone of Nigeria and bordering Lagos State to the south, has one of the most active public housing delivery records among Nigeria's 36 states. The Ogun State Housing Corporation (OSHC), established in 1976, has developed over thirty housing estates across the state since its inception (Ogun State Housing Corporation, 2024). Alongside OSHC, the Ogun State Property and Investment Corporation (OPIC), the state Ministry of Housing, and the Gateway City Development Company Limited (GCDCL) have collectively constituted a layered institutional landscape for public housing production. The early 2000s marked a particularly productive period for these agencies, during which the Millennium Housing Estates were conceived and constructed as part of a government mandate to deliver affordable residential options across Abeokuta, Ibafo, Ota, Agbara, and Ijebu-Ode (Ibem et al., 2013a; Ogunde, 2013).

The concept of Building Performance Evaluation (BPE) emerged in the international literature as a structured, evidence-based approach to understanding how buildings function in real conditions after occupation. Its closest and most widely applied instrument is Post-Occupancy Evaluation (POE), defined by Preiser (1995, p. 19) as a process of systematically evaluating buildings in use with respect to occupants' needs and performance expectations. Over the past three decades, POE has evolved from a largely technical audit exercise into a multidimensional framework that encompasses physical condition, spatial adequacy, service delivery, thermal comfort, indoor environmental quality, and resident satisfaction (Sharpe, 2013; Ackley & Ukpong, 2019; Waziri, 2025). In the United Kingdom, the Post-Occupancy Review of Buildings and their Engineering (PROBE) programme established a model for systematic assessment that subsequently influenced practice in many countries. In Nigeria, however, the institutionalisation of POE has been slow. Buildings are rarely evaluated once handed over to clients (Ackley & Ukpong, 2019), and what evaluations do exist are concentrated in academic research rather than routine agency practice.

Within the Nigerian housing literature, a body of scholarship on Ogun State has begun to develop, largely associated with the prolific research programme of Ibem and others at Covenant University and Obafemi Awolowo University. Studies published between 2011 and 2025 have examined residential satisfaction (Ibem & Amole, 2013; Ibem et al., 2019), housing adequacy (Ibem & Alagbe, 2015; Ibem & Amole, 2011), neighbourhood satisfaction (Ibem et al., 2017), physical quality perception (Makinde, 2017; Adeleye et al., 2014), sustainability (Ibem et al., 2015), and maintenance governance (Jolaoso et al., 2012). More recently, studies have examined infrastructure deficits (Ibem, 2013b), socio-economic influences on housing preference (Onifade, 2020), and the structural gaps in public housing delivery systems (Orekan, 2019; Salau & Elizabeth, 2025). Collectively, these works paint a detailed but fragmented picture of the public housing condition in Ogun State. They are rarely synthesised, and studies rarely map their cumulative findings onto the Millennium Housing Estates as a named, delimited cohort.

This fragmentation constitutes the central gap that the review addresses. While individual studies have examined specific attributes, specific estates, or specific user groups, the literature lacks a synthesis that: (i) maps the full landscape of building performance evidence specific to Ogun State's early 2000s housing programme; (ii) evaluates the methodological quality and diversity of existing evaluation approaches; and (iii) connects the accumulated evidence to the governance and institutional failures that allow performance deficits to persist without remedy.

The absence of such synthesis is not merely a scholarly inconvenience. It has real consequences for policy, because housing agencies in Ogun State continue to commission new estates, including recent projects at Kobape, Ijebu-Ode, Sagamu, and Ibara, without a systematic understanding of how comparable earlier estates have fared in practice (Abiodun, 2023; Premium Times, 2025). Decisions about design standards, infrastructure provision, and maintenance regimes for new developments are therefore made without the benefit of institutional memory from the Millennium estates. This study addresses these gaps through a Systematic Literature Review (SLR) guided by two research questions.

i. What dimensions of building performance have been evaluated in public housing estates in Ogun State, and what patterns of performance and satisfaction emerge from the existing literature?

ii. What methodological, institutional, and governance factors constrain the delivery and systematic evaluation of building performance in Ogun State's public housing context?

METHODS

Research Protocol

This review followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)

framework to ensure transparency, replicability, and methodological rigour. The eligibility criteria, search strategy, and analytical approach were defined and documented prior to the commencement of screening. The review is reported in accordance with the PRISMA 2020 statement (Page et al., 2021).

Search Strategy

A systematic search was conducted across four major academic databases: Scopus, Web of Science, Google Scholar, and the Dimensions.ai platform. These databases were selected for their breadth of coverage in the fields of architecture, built environment studies, urban planning, housing policy, and facilities management, which collectively constitute the interdisciplinary terrain of this review. In addition, grey literature sources were searched, including the repositories of Covenant University, Obafemi Awolowo University, and the ResearchGate and Academia.edu platforms, which host a significant volume of Nigerian housing research. An initial scoping search was conducted to identify relevant terminology and refine the search vocabulary, resulting in the following final Boolean search string applied across all databases:

("building performance evaluation" OR "post-occupancy evaluation" OR "residential satisfaction" OR "housing quality" OR "housing adequacy") AND ("Ogun State" OR "Abeokuta" OR "Millennium housing" OR "public housing Nigeria") AND ("Nigeria" OR "Southwest Nigeria")

Supplementary searches were conducted using targeted terms including 'Ibara housing estate', 'Kemta housing estate', 'OPIC housing Ogun', 'OSHC housing Ogun', and 'maintenance public housing Nigeria', to capture estate-specific and agency-specific evidence not returned by the primary string. The final systematic search was conducted on 19 April 2026. All references with publication years 2025 and 2026 included in the review were already available in the searched databases at that date.

Inclusion and Exclusion Criteria

Studies were included or excluded based on the criteria presented in Table 1. The criteria were developed to ensure that the included corpus was directly relevant to building performance and residential quality in the Ogun State public housing context, while maintaining sufficient breadth to capture the methodological diversity of the field.

Table 1. PRISMA Inclusion and Exclusion Criteria

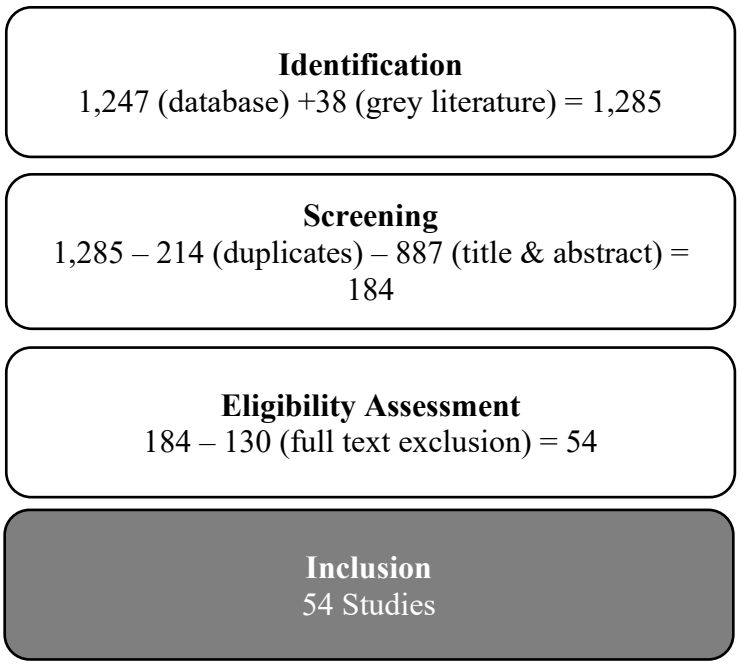
Criterion	Inclusion	Exclusion
Topic focus	Studies examining building performance, POE, BPE, residential satisfaction, housing quality, housing adequacy, maintenance, or infrastructure in Nigerian public housing	Studies focused entirely on private housing markets, commercial buildings, or topics with no connection to residential building performance
Geography	Studies set in Ogun State (primary); studies set elsewhere in Southwest Nigeria or national-level studies with Ogun State-relevant findings (secondary)	Studies entirely outside Nigeria, or Nigerian studies with no transferable relevance to the Ogun State context

Timeframe	Publications from 2003 to 2026, to capture the post-Millennium estates commissioning period through to recent evaluations	Publications before 2003, unless providing critical historical context for the estates' establishment
Document type	Peer-reviewed journal articles, full conference proceedings, dissertations with empirical data, and institutional research reports	Editorials, commentaries, book reviews, and non-peer-reviewed opinion pieces without empirical grounding
Language	English-language publications	Publications in languages other than English
Methodology	Quantitative, qualitative, and mixed-methods studies with clearly described data collection and analysis procedures	Studies with no discernible methodology, duplicates, and studies where the full text could not be retrieved for assessment

Selection Process

The study selection process followed a four-stage PRISMA flow, described below and illustrated in Figure 1.

Figure 1: PRISMA Flow Chart



i. **Identification**: The initial database searches yielded 1,247 records. An additional 38 records were identified through manual searching of grey literature, institutional repositories, and citation tracking from key papers, bringing the total to 1,285 records.

ii. **Screening**: After removing 214 duplicate records, 1,071 records remained. These were screened by title and abstract against the inclusion and exclusion criteria. This phase excluded 887 records that did not address building performance, public housing in Nigeria, or residential satisfaction in the relevant geographic context, leaving 184 records for full-text assessment.

iii. **Eligibility**: The 184 full-text articles were assessed for eligibility. A further 130 were excluded for the following reasons: focused entirely on private housing markets (n = 31), set outside Nigeria with no transferable content (n = 28), did not report primary or synthesised empirical findings (n = 24), full text not retrievable (n = 19), methodology not sufficiently described (n = 16), and published before 2003 without historical value to the review (n = 12). See Appendix B for the exclusion log summary.

iv. **Included**: The final selection consisted of 54 studies. These include 42 peer-reviewed journal articles, six conference proceedings and repository-based research papers, four dissertations with empirical data, and

two institutional research documents. The study selection spans the period 2011 to 2026 for primary empirical studies, with conceptual and methodological literature extending to 2013.

Title/abstract and full-text screening were performed independently by two reviewers (the lead author and a second member of the research team) using the eligibility criteria specified in Table 1. Disagreements were resolved through discussion; where consensus could not be reached, a third reviewer arbitrated. Inter-rater agreement for the full-text eligibility assessment was $\kappa = 0.84$ (95 % CI 0.76–0.92), indicating strong agreement. Data extraction from the 54 included studies was performed by the lead author and verified by the second reviewer for accuracy.

Quality Appraisal

The methodological quality of included studies was assessed using a bespoke appraisal checklist adapted from the Critical Appraisal Skills Programme (CASP) tools and the Mixed Methods Appraisal Tool (MMAT). Four criteria were applied to each included study: (i) clarity of research objectives, (ii) appropriateness of methodology to the research question, (iii) adequacy of sample size and sampling rationale, and (iv) rigour of data analysis. Studies were rated as high, moderate, or low quality. Of the 54 included studies, 32 (59.3%) were rated as high quality, 17 (31.5%) as moderate quality, and 5 (9.2%) as low quality. All 54 were retained in the synthesis, with low-quality studies cited with appropriate methodological caveats.

The quality appraisal was carried out independently by two reviewers using the bespoke checklist. Inter-rater reliability was calculated for a random subset of 15 studies (28 % of the total) before full appraisal commenced, yielding a weighted Kappa of 0.79 (95 % CI 0.63–0.95) for the four category rating (high, moderate, low), indicating substantial agreement. Discrepancies were resolved through consensus discussion, and the final rating for each study reflects the agreed judgement.

Data Extraction and Synthesis

Data were extracted using a standardised extraction form capturing: author(s), year, study type, geographic focus, estate(s) studied, methodology and sampling, key performance dimensions assessed, quantitative outcomes (where reported), and primary findings. Additionally, thematic synthesis approach was employed, following the three-stage procedure described by Thomas & Harden (2008): (i) line-by-line coding of key findings from included studies; (ii) organisation of codes into descriptive themes that captured patterns across the literature; and (iii) generation of analytical themes that transcended individual study findings and addressed the research questions. Five analytical themes were developed, presented as the primary structure of the Results section.

RESULTS

Characteristics of Included Studies

The 54 included studies span a 14-year publication period (2011 to 2025), with notable growth in output after 2012, reflecting the maturation of the first generation of post-occupancy research on Ogun State's early 2000s housing programme. The majority of studies (n = 38, 70.4%) are set exclusively in Ogun State, with the remainder including comparative or complementary evidence from Lagos (n = 9), other Southwest Nigerian locations (n = 4), and national-level analyses (n = 3). Geographically, Abeokuta is the most studied location (n = 27), followed by the Abeokuta-Ibafo-Ota corridor (n = 14), Ijebu-Ode (n = 6), and Agbara (n = 4), reflecting both the concentration of public housing estates in these areas and the university-based origins of much of the research.

Survey-based quantitative research is the dominant methodology (n = 36, 66.7%), employing structured questionnaires administered to household heads. Nine studies (16.7%) used mixed methods combining surveys with physical walkthrough observations, which constitutes the most methodologically complete BPE approach. Five studies (9.3%) employed qualitative methods including interviews and document analysis, and four (7.3%) conducted systematic literature reviews or desk-based appraisals. Sample sizes for survey-based studies range from 85 to 806 respondents, with the most frequently used sampling approach being stratified random sampling

(n = 22) or systematic random sampling (n = 10). Table 2 presents a structured summary of the characteristics of included studies by theme (see Appendix A for the full study matrix).

Table 2. Distribution of Included Studies by Theme and Methodology

Analytical Theme	No. of Studies	Quantitative (%)	Mixed Methods (%)	Qualitative/Review (%)
T1: Performance dimensions and user satisfaction	19	73.7	15.8	10.5
T2: Physical quality, structural integrity, and environment	12	58.3	33.3	8.3
T3: Infrastructure deficits and service accessibility	11	72.7	18.2	9.1
T4: Maintenance governance and institutional accountability	8	50.0	25.0	25.0
T5: POE as an underdeveloped practice in Nigeria	4	25.0	0.0	75.0
Total	**54**	**66.7**	**16.7**	**16.7**

Thematic Synthesis

Theme 1: Building Performance Dimensions and the Landscape of User Satisfaction

The evaluation of building performance in Ogun State's public housing literature has been organised predominantly around user satisfaction as the primary performance metric. This approach is grounded in a well-established theoretical position; that the measure of a residential building's performance is ultimately the degree to which it meets the expectations and lived needs of those who inhabit it (Vischer, 2008; Khalil et al., 2024). Within the Ogun State literature, this position is most authoritatively represented by Ibem et al. (2013a), whose study remains the most comprehensive performance evaluation of public housing buildings in the state.

Across a cross-sectional survey of 452 household heads in nine public housing estates constructed between 2003 and 2009, Ibem et al. (2013a) computed a Mean Satisfaction Score (MSS) of 3.21 on a five-point Likert scale, indicating a generally satisfactory but far from excellent performance rating. Of the 27 building attributes assessed, 21 were rated satisfactory, but the distribution of satisfaction scores was notably uneven. Satisfaction was substantially higher for privacy attributes (MSS = 3.89) and the sizes of sleeping areas (MSS = 3.71) than for water supply availability (MSS = 2.34) and electricity provision (MSS = 2.41), both of which fell below the midpoint and indicate genuine dissatisfaction. Five underlying factors explained 60.76% of the total variance in satisfaction, with building type, location, and aesthetic appearance constituting the dominant factor, accounting for 32.55% of variance alone. Table 3 summarises the mean satisfaction scores across key studies.

Table 3. Mean Satisfaction/Quality Scores Across Key Studies in the Corpus

Study	Estate(s) / Context	Sample (n)	Overall Score / MSS	Lowest-rated attribute
Ibem et al. (2013a)	Nine public housing estates, Ogun State	452	MSS = 3.21	Water supply (2.34); Electricity (2.41)
Ibem & Amole (2013)	OGD Workers' Estate, Abeokuta	156	MSS = 3.10; 59% satisfied	Estate location (2.08)
Ibem & Alagbe (2015)	Nine public housing estates, Ogun State	517	MAS = 2.80 (inadequate)	Neighbourhood facilities (all inadequate)
Makinde (2017)	Ibara Housing Estate, Abeokuta	85 + 85 non-residents	Residents: 4.21; Non-residents: 3.25	Facilities & services (3.56 residents; 3.31 non-residents)

Ibem et al. (2019)	10 government-subsidised estates, Ogun State	333	66% dissatisfied	Estate management; size of activity areas
Ogunde (2013)	10 low-income housing estates, Ogun State	716	Generally satisfactory; varied by demographics	Satisfaction inversely related to socioeconomic status
Ibem & Amole (2014)	Public housing, urban Ogun State	452	SWL = 3.64; 61% satisfied with life	Estate location (MSS = 2.08)
Adeleye et al. (2014)	Ibara Housing Estate, Abeokuta	85 residents + 85 non-residents	Building elements: 4.21 (residents)	Facilities and services

Ibem & Amole's (2013) study of the OGD Workers' Housing Estate in Abeokuta, one of the estates within the Millennium cohort, is instructive in its granularity. Among 156 household heads surveyed, 59% expressed satisfaction with their housing conditions, while 41% were neither satisfied nor dissatisfied, yielding a mean satisfaction score of 3.10. Critically, the four dimensions contributing most to predicting residential satisfaction were housing unit characteristics, neighbourhood facilities, management, and services, ranked in that order of contribution. This ordering is significant: it suggests that while the physical shell of the buildings was perceived as broadly adequate, satisfaction with the living environment as a whole was contingent on factors beyond the building itself.

Ogunde (2013) added socio-demographic nuance to this picture through a larger study across ten low-income estates in Ogun State. Using 716 questionnaires, he found a statistically significant relationship between age range and satisfaction ($r = 0.397$), and negative correlations between satisfaction and both socioeconomic status ($r = -0.275$) and educational attainment ($r = -0.213$). These findings suggest that residents with higher education and income levels hold more demanding performance expectations and are therefore more likely to register dissatisfaction, a pattern that complicates simple aggregate satisfaction scores. More recently, Ibem et al. (2019) found that approximately 66% of low-income residents in ten government-subsidised housing estates were dissatisfied with their residential environment, with estate management, sizes of main activity areas, and the economic environment emerging as the three most influential predictors in a regression model that explained 89% of the variance in satisfaction.

Taken together, the satisfaction literature points to a housing stock that delivered broadly acceptable spatial conditions at the point of handover, but which has subsequently underperformed on the service delivery and management dimensions that determine long-term habitability. This temporal pattern, a satisfaction trajectory that starts reasonably and declines as infrastructure and management fail, is central to understanding the Millennium estate cohort.

Theme 2: Physical Quality, Structural Integrity, and Environmental Conditions

Physical quality evaluation, as distinct from subjective satisfaction assessment, requires direct observation and expert rating of building fabric in addition to occupant surveys. Within Ogun State, studies that have combined walkthrough observation with questionnaire surveys provide the richest evidence on this dimension. The overall picture is one of a housing stock that met minimum standards at delivery but has experienced meaningful physical deterioration in the years since, with the degree of deterioration varying by estate, building type, and maintenance regime.

Makinde (2017) offers one of the most detailed physical quality evaluations, focusing on Ibara Housing Estate, Abeokuta. Residents rated the condition of building elements, including roofs, walls, floors, windows, doors, toilets, bathrooms, lighting, and ceilings, at a mean of 4.21 on a five-point scale, suggesting generally good conditions from the perspective of those living in the buildings. Non-residents, who included relatives and friends familiar with the estate, rated the same elements at 3.25, a notably lower and arguably less biased assessment. Both groups rated facilities and services lower than building elements (3.56 and 3.31, respectively),

and Makinde (2017) concluded that there was deterioration in the quality of housing and facilities that government upgrades could meaningfully address.

Ibem & Amole (2011) took a more systematic approach in their assessment of newly constructed public housing across nine Ogun State estates. Using a survey of 517 housing units assessed against four sub-components, they found that housing unit attributes received the highest quality ratings, while neighbourhood facilities were rated lowest. Of the 33 variables assessed, physical building elements consistently outperformed estate-level services and facilities. This hierarchy, building quality above service quality, recurs across the corpus and represents one of the most robust findings of this review. Ibem et al. (2015) extended this framework to include sustainability, finding that while the projects were broadly sustainable in terms of affordability and climatic responsiveness, the use of asbestos-based roofing materials in several estates represented a serious material quality concern, and the provision of domestic spaces was assessed as inadequate in relation to household sizes.

Environmental quality represents a partially studied but important dimension of building performance in Ogun State's housing estates. Ibhadode et al. (2020) evaluated post-project environmental impact in the Ota Industrial Housing Estate, finding that groundwater physio-chemical parameters, including chlorides, sulphates, nitrates, and heavy metal content, exceeded WHO and USEPA recommended limits in all four catchment areas of the estate. Average heavy metal content was measured at 1.730 mg/L, exceeding the USEPA maximum copper limit of 1.300 mg/L.

A seasonal monitoring study across six Ogun State housing estates (Figshare, 2019) found that concentrations of CO, CO2, and NO2 were significantly higher in the dry season than the wet season, with NO2 levels ten times higher in the dry season, suggesting that seasonal variation in air quality is a meaningful but overlooked aspect of the residential environment in these estates. Odukoya et al. (2023), while focused on tertiary institution buildings rather than residential estates, found that occupant discomfort increased significantly between noon and 3 p.m., and that many buildings suffered from inadequate ergonomic design and poor lighting, findings applicable to the broader built environment context in Southwest Nigeria.

The physical condition evidence, when read across these studies, reveals a housing stock where the building fabric has held up relatively better than the estate-level environment, but where material choices, environmental conditions, and spatial adequacy have all contributed to a performance profile that falls short of what a sustainable, long-term residential community requires. The Millennium estates, now between 15 and 22 years old, are at a stage where major fabric interventions may soon be unavoidable if habitable standards are to be maintained.

Theme 3: Infrastructure Deficits, Service Failures, and Accessibility

If there is a single area of consensus across the entire Ogun State housing literature, it is the inadequacy of infrastructure provision and service delivery. This consensus is remarkable for its consistency: studies spanning different estates, different time periods, different methodologies, and different researcher perspectives all converge on the finding that infrastructure, particularly water supply, electricity, solid waste management, and proximity to social facilities, is the most significant driver of resident dissatisfaction and the most critical indicator of estate-level performance failure.

Ibem (2013b) conducted a direct assessment of service accessibility in nine public housing estates in urban Ogun State, finding that while the majority of households had access to human waste disposal systems, approximately 65% lacked access to refuse bins. Access to treated water, electricity, and public transport was reported as poor across the sample. More critically, key social infrastructure, including educational facilities, healthcare centres, recreational spaces, and retail facilities, was physically absent from most of the housing estates studied. Ibem (2013b) concluded that public housing provision in Ogun State had been characterised by an overwhelming emphasis on the production of dwelling units at the expense of ensuring that those units were embedded in a functioning residential environment.

Ibem et al. (2015), in their sustainability assessment of the same nine estates, found that only approximately 13% of respondents expressed satisfaction with the proximity of their homes to essential urban amenities and services.

This is a damning statistic that reveals the planning failures embedded in the original estate design. The estates were largely conceived as residential production exercises rather than as integrated community developments. In a related vein, Ibem et al. (2019) found that the management of housing estates, which includes the coordination of utility provision and the response to service failures, was the single most influential predictor of residential satisfaction among low-income earners, explaining a greater share of satisfaction variance than any physical attribute of the dwelling unit itself.

The infrastructure-rental value relationship was examined by Odunnaike & Suleiman (2023) in Kemta Housing Estate, Abeokuta, one of the estates within the Millennium cohort. Among 105 respondents, 73% indicated that infrastructural facilities significantly influence rental values in the estate. Using the Relative Importance Index (RII), the study found that well-maintained roads (RII = 3.12), improved electricity supply (RII = 2.75), and drainage systems (RII = 2.75) were the most highly valued infrastructure attributes. This finding underscores that infrastructure deficits are not merely a comfort issue; they are a direct driver of asset value depreciation, meaning that the government's investment in the Millennium estates is being financially eroded by the failure to maintain and provide services.

The Infrastructure Delivery in Public Housing Estates study by Mobolaji et al. (2025), while focused on Lagos, provides a directly relevant comparative perspective. Examining both federal and state housing estates, they found that infrastructure availability was low across the board, with the deficiency more pronounced in state-owned estates than in federally developed ones. Residents expressed low satisfaction with infrastructure, and the study recommended viable frameworks combining government provision with public-private partnerships for sustainable infrastructure delivery. This Lagos evidence mirrors the Ogun State findings closely and suggests that the infrastructure failure is a systemic feature of Nigeria's public housing system rather than an Ogun-specific anomaly.

Ogunbayo et al. (2018) brought a public-private partnership (PPP) lens to the question in three existing housing estates in Ogun State. Their study of 224 respondents found that the most significant contributors to occupant satisfaction in PPP-delivered estates were the provision of facilities, security of life and property, space allocation, and proximity to workplace. The absence of recreational facilities was specifically identified as a negative driver, with residents having to travel long distances to access amenities that should have been integral to estate design. Ogunbayo et al. (2018) recommended that necessary infrastructural facilities and services be provided before the commencement of building production, a recommendation that explicitly acknowledges the production-first, services-later pattern that has characterised much of Ogun State's public housing delivery.

These infrastructure findings carry a compound significance for the Millennium estates. Many of these estates are now at an age where original infrastructure, where it was provided, is deteriorating. The combination of original under-provision and subsequent maintenance failure means that the infrastructure gap is widening rather than narrowing over time.

Theme 4: Maintenance Governance and Institutional Accountability

The condition of public housing buildings and estates in Ogun State is inseparable from the maintenance governance arrangements that determine who is responsible for upkeep, how quickly defects are addressed, and how resources for maintenance are allocated. The literature reviewed here consistently reveals a maintenance governance deficit that constitutes one of the most serious systemic failures in the Ogun State housing programme.

The most detailed study of maintenance in a specific Ogun State public housing estate is Jolaoso et al.'s (2012) appraisal of the Ibara Housing Estate in Abeokuta. Surveying a random sample of 105 buildings and their occupants, they found no statistically significant difference between the original quality standards of buildings maintained by tenants, public agents, and private agents at the 95% confidence level. However, the response period to maintenance and repair works was found to differ significantly: public agents' response times were significantly longer than those of private agents, and occupant-coordinated maintenance, in which residents organised their own repair activities, was found to be the most effective strategy. This finding, that the state is

the slowest and least effective maintenance actor, has profound implications for the Millennium estates, which remain under OSHC and OPIC agency oversight.

Osuizugbo & Olusanya (2023), studying maintenance management in private university buildings in Ogun State, identified twenty-two factors affecting building maintenance quality. The four most critical, in order of mean score, were: (1) the use of poor-quality components and materials at construction (mean = 4.08); (2) the lack of adoption of appropriate maintenance cycles (mean = 3.96); (3) a discernible absence of a maintenance culture in Nigeria (mean = 3.94); and (4) inadequate training and development of maintenance personnel (mean = 3.92). While focused on university buildings, the factors identified are systemic and apply with equal force to the public housing context: the Millennium estates were built during a period when procurement pressures and cost-cutting frequently resulted in the use of materials of sub-standard quality, and no formal maintenance cycle has been documented for any of them.

Akuete et al. (2024) examined maintenance feedback mechanisms in student housing in Nigerian higher education institutions, finding that severe limiting factors for post-occupancy evaluation included the non-availability of information on building facilities, persistent maintenance challenges, lack of commitment from institutional management, and insignificant improvement on identified challenges. These findings, while academic in context, mirror the institutional dynamics of public housing estates, where the feedback loop between occupant-reported defects and maintenance response is largely absent. The consequence is that problems compound over time, with minor maintenance failures becoming major structural and service deficits as years pass without intervention.

Perhaps most telling is the recent real-world illustration of Ogun State's maintenance failure in the public housing sector. In January 2026, the Speaker of the Ogun State House of Assembly confirmed that the official legislative quarters at Ibara GRA, Abeokuta, were earmarked for demolition and reconstruction. The Speaker noted that the buildings, approximately 46 years old, could no longer meet the standards of functionality, aesthetics, and structural ruggedness expected in the 21st century (Punch, 2026). The Commissioner for Housing described this as 'a necessary investment in public safety and administrative efficiency', acknowledging that the administration was confronted with the consequences of decades of deferred maintenance and repair. If this is the fate of official government quarters, the maintenance condition of ordinary public housing estates, which lack the political visibility of legislative accommodation, warrants serious concern.

Orekan (2019), in her review of Ogun State's public housing delivery system, documented that the OSHC has shifted its operational emphasis toward profit-generation rather than social welfare provision, resulting in housing that has become progressively less accessible to the low- and middle-income earners for whom it was originally designed. This institutional mission drift is directly relevant to maintenance: a profit-oriented housing corporation has less incentive to invest in the maintenance of existing stock and more incentive to develop new estates at the margin.

The maintenance evidence, when synthesised, points to a governance vacuum. The Millennium Housing Estates occupy a space in which neither the original developers, the housing agencies, the current estate management offices, nor the occupants themselves have clearly defined, adequately resourced, or consistently executed maintenance responsibilities. This vacuum is the proximate cause of much of the performance deterioration documented across literature.

Theme 5: Post-Occupancy Evaluation as an Underdeveloped Practice in Nigerian Public Housing

Running through the entire reviewed literature is a concern that goes beyond the specific findings of any individual study: the systematic under-use of Post-Occupancy Evaluation as an evidence-gathering and feedback mechanism in Nigerian public housing. This concern constitutes both a methodological observation and a governance critique, and it defines the institutional gap that this review identifies as central to the Millennium estates problem.

Ackley & Ukpong (2019), in the most comprehensive review of POE practice in Nigeria and developing countries, documented that little or no systematic attention is given to post-occupancy evaluation in countries

like Nigeria, in sharp contrast to the growing global emphasis on POE as a tool for evidence-based design improvement. Their interviews with 117 professionals found that while the majority were aware of the benefits of POE, very few had implemented it in practice, and recommendations for its incorporation into Nigeria's building certification process had not been acted upon. Sharpe (2013, p. 114) notes that POE is used in 'determining building defects, formulating design and construction criteria, supporting performance measures for asset and facility management, and lowering facility life cycle costs by identifying design errors that could lead to increased maintenance and operating costs.' The practical value of POE for the Millennium estates is therefore not in doubt. What is absent is the institutional will and procedural mandate to conduct it.

Ejoor et al. (2021) advanced the methodological groundwork for POE in the Nigerian context by identifying 40 performance criteria relevant to building performance, organised under three indicators: Design Quality (DQ), Indoor Environmental Quality (IEQ), and Quality of Building Support Services (QBSS). Of these 40 criteria, 24 were rated as relevant by expert evaluators, 13 as moderately relevant, and 3 as below moderate. This framework, while developed for an architecture department building typology, offers a directly adaptable structure for residential estate POE. Koleoso et al. (2024) provided a complementary contribution by systematically reviewing at least 22 performance measurement tools and assessing their applicability to the Nigerian facilities management context, concluding that none of the existing tools are fully fit for purpose in Nigeria and calling for the development of a contextually adapted performance measurement framework.

The absence of institutionalised POE in Ogun State's housing system means that the Millennium estates were built, handed over, and largely forgotten by the agencies responsible for their delivery. The studies reviewed in this corpus, produced almost entirely by academic researchers rather than housing agencies, constitute the closest thing to a systematic performance record that these estates have. But academic research, however rigorous, cannot substitute for the routine, iterative performance monitoring that genuine building stewardship requires. Khalil et al. (2024) emphasise that obtaining users' feedback is vital for effective building performance assessment, and that this assessment must be ongoing to capture changes in building performance over time. For the Millennium estates, this continuous loop has never been established.

Table 4 presents the thematic synthesis matrix, mapping the key findings and contributing authors across the five analytical themes. This matrix illustrates the degree to which themes are cross-referenced in the literature and the conceptual relationships between them.

Table 4. Thematic Synthesis Matrix: Key Findings and Contributing Studies

Theme	Core Finding	Key Contributing Studies	Implication for RQ
T1: Satisfaction dimensions	MSS of 3.21 overall; satisfaction higher for spatial privacy than for services; five-factor structure explains 60.76% of variance	Ibem et al. (2013a); Ibem & Amole (2013); Ogunde (2013); Ibem et al. (2019)	RQ1
T2: Physical quality	Building fabric broadly adequate at delivery; deterioration increasing over time; asbestos materials and environmental contamination noted	Makinde (2017); Ibem & Amole (2011); Ibem et al. (2015); Ibhadode et al. (2020)	RQ1
T3: Infrastructure deficits	65% lack refuse access; water and electricity consistently rated lowest; social infrastructure physically absent from most estates	Ibem (2013b); Ibem et al. (2015); Ogunbayo et al. (2018); Odunnaike & Suleiman (2023)	RQ1 + RQ2
T4: Maintenance governance	Public agents slowest to respond; no formal maintenance cycles; absence of maintenance culture; institutional mission drift toward profit	Jolaoso et al. (2012); Osuizugbo & Olusanya (2023); Orekan (2019); Punch (2026)	RQ2
T5: POE deficit	Systematic POE absent in Nigerian housing practice; no feedback loop from	Ackley & Ukpong (2019); Ejoor et al. (2021);	RQ2

	occupant experience to design or management decisions	Koleoso et al. (2024); Khalil et al. (2024)	

DISCUSSION

Summary of Findings in Relation to the Research Questions

This systematic review provides a comprehensive synthesis of empirical and analytical studies bearing on the performance of public housing buildings in Ogun State, Nigeria, with focused relevance to the Millennium Housing Estates. Three key insights frame the findings. First, building performance in these estates reflects a consistent pattern of acceptable spatial quality at delivery that has subsequently degraded under the weight of infrastructure under-provision, inadequate maintenance, and the absence of systematic feedback mechanisms. Second, the factors that most strongly predict resident satisfaction are not the physical attributes of the dwelling unit, but the estate-level services, management responsiveness, and neighbourhood accessibility, areas in which Ogun State's public housing system has consistently underperformed. Third, the institutional infrastructure for building performance evaluation in Ogun State, specifically the routine use of POE as a management tool, does not exist in any meaningful form.

Addressing RQ1 directly: the dominant dimensions of building performance evaluated in the Ogun State literature are user satisfaction with physical building attributes (spatial, structural, and aesthetic), accessibility to services and infrastructure, and neighbourhood quality.

The performance patterns that emerge are strikingly consistent across estates, methodologies, and time periods: buildings score higher on spatial privacy and structural fabric, and significantly lower on water supply, electricity, waste management, and proximity to social amenities. The Mean Satisfaction Score of 3.21 recorded by Ibem et al. (2013a) across nine estates built in the same programme period as the Millennium estates represents a baseline that has almost certainly deteriorated further in the intervening decade, given the absence of documented maintenance intervention and the age-related degradation of building fabric and services infrastructure.

Addressing RQ2: the constraints on effective BPE in Ogun State operate at three intersecting levels. At the institutional level, housing agencies are not mandated by current Nigerian legislation or housing policy to conduct post-occupancy evaluations, and the shift toward profit-oriented operations documented by Orekan (2019) has reduced the institutional appetite for performance accountability.

At the governance level, maintenance responsibility is diffuse, with no single actor possessing both the mandate and the resources to sustain building performance over time. At the methodological level, even the academic research that has filled the POE vacuum is predominantly cross-sectional, capturing a single point in time rather than the longitudinal dynamics of performance change.

Theoretical Contributions

This review makes three distinct theoretical contributions to the building performance evaluation literature in the Nigerian and broader developing-country context.

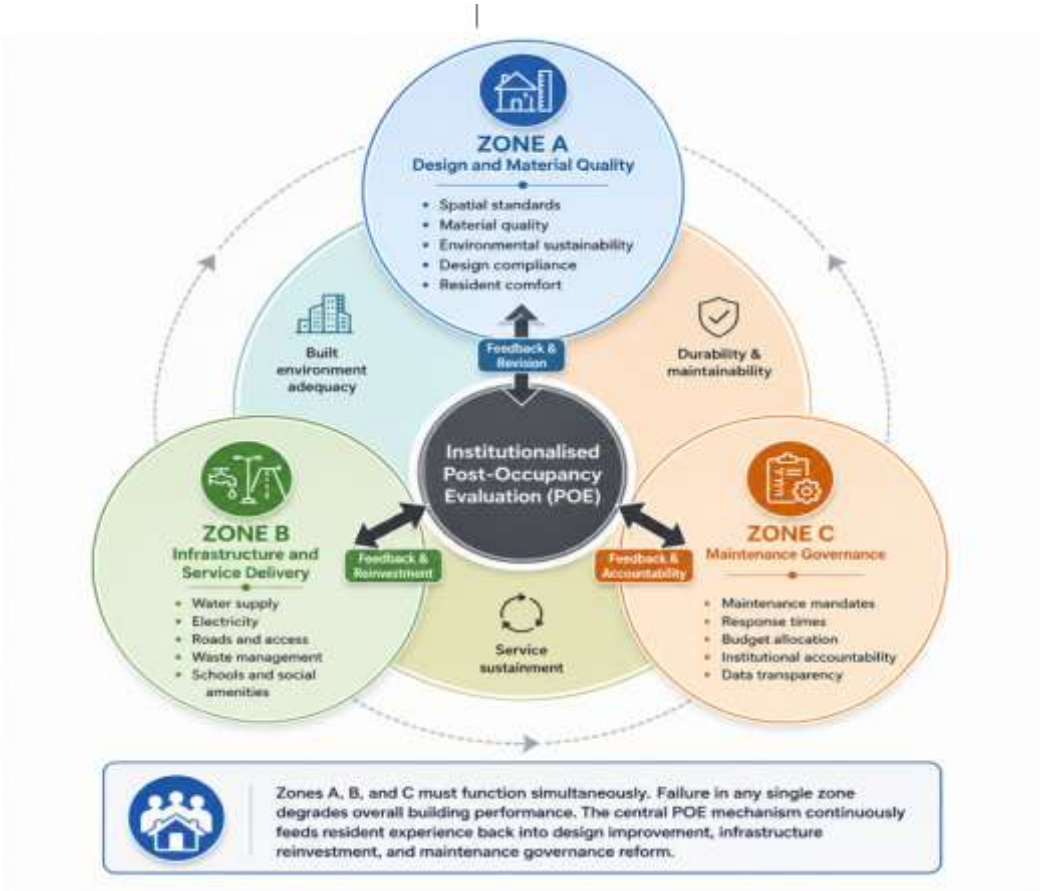
Contribution 1: Explaining the Performance-Satisfaction Relationship with a Temporal Dimension

Existing theory on building performance evaluation, as articulated by Preiser (1995), Sharpe (2013), and Vischer (2008), treats performance as a relatively stable attribute of the built environment that can be assessed at any point in time. This review's synthesis suggests that for public housing in Nigeria, performance must be understood as temporally dynamic: estates that score adequately at delivery deteriorate in a predictable pattern, with infrastructure and management dimensions declining first and most severely, and physical building fabric declining more slowly but inevitably. This temporal framing explains the utility of POE theory by requiring that satisfaction scores be interpreted in relation to the age of the building stock, not as context-free snapshots.

Contribution 2: Proposing the Tripartite Performance Accountability Framework (TPAF)

The synthesis of Themes 2, 3, and 4 suggests that building performance failure in Ogun State is not attributable to any single cause but to the convergence of three reinforcing deficits: physical design and material inadequacy, infrastructure and service provision failure, and maintenance governance vacuums. These three deficits form an interlocking system in which each reinforces the others. Figure 2 illustrates the TPAF as a conceptual contribution. The framework posits that sustainable building performance in public housing can only be achieved when all three accountability zones, design quality, infrastructure delivery, and maintenance governance, function simultaneously and are integrated through a formal POE feedback mechanism. The failure of any one zone undermines the others. This framework extends beyond the Ogun State context and offers a diagnostic tool applicable to public housing systems in other Nigerian states and comparable developing-country environments.

Figure 2: The Tripartite Performance Accountability Framework (TPAF) Proposed from Systematic Synthesis



The framework's emphasis on the central POE mechanism leads directly to the third contribution, which reconceptualises POE itself.

Contribution 3: Reframing POE as a Governance Institution rather than a Research Methodology

The dominant framing of POE in the academic literature positions it as a research tool used by academics and consultants to generate knowledge about buildings. This review argues for a reconceptualisation of POE as a governance institution, specifically, a mandatory, routinised, institutionalised process embedded in the post-delivery management cycle of public housing estates. This reconceptualisation, grounded in the governance vacuum documented in Theme 5, shifts the question from 'how should researchers evaluate buildings?' to 'how should the state be held accountable for building performance over time?' It aligns building evaluation with public accountability frameworks rather than academic inquiry.

Practical and Policy Implications

For housing agencies in Ogun State, specifically OSHC and OPIC, this review recommends the immediate establishment of a Periodic Estate Performance Review (PEPR) cycle for all estates in the Millennium cohort. The PEPR should be conducted at five-year intervals, using a standardised questionnaire instrument based on the 27-attribute framework of Ibem et al. (2013a), extended to include indoor environmental quality measures, security infrastructure, and energy performance indicators. The review cycle should produce a publicly available performance report for each estate, creating an accountability record that housing agencies currently lack.

For the Ogun State Ministry of Housing, policy reform is needed to establish maintenance as a statutory obligation rather than a discretionary activity. The evidence reviewed here consistently shows that the absence of mandated, resourced, and monitored maintenance is the single most tractable lever for improving building performance in the Millennium estates. The Ogun State Urban and Housing Renewal Master Plan, referenced in recent government communications (Omoniyi, 2026), should incorporate measurable performance standards for existing estate maintenance as a condition of funding for new estate development.

For practitioners, architects, and engineers involved in the design of new housing estates in Ogun State, this review strongly endorses the integration of maintainability as a first-order design principle. The evidence is clear that the physical building envelope, while not the primary driver of dissatisfaction, must be designed for long-term durability with locally available materials and without recourse to asbestos-based products. More critically, social infrastructure, recreational spaces, healthcare, schools, and retail, must be planned as integral components of estate design from the outset, not as future additions that never materialise.

For researchers and future investigators, this review identifies a critical gap in longitudinal evidence. The near-total dominance of cross-sectional survey methodologies in the Ogun State housing literature means that the dynamics of performance change over time are largely invisible. Future studies should employ panel designs, tracking the same estates and, where possible, the same residents across multiple survey rounds. Comparative BPE studies benchmarking the Millennium estates against newer developments, such as the recently inaugurated Prince Court Estate at Kemta, Idi-Aba (BusinessDay, 2022), would provide directly actionable evidence for policy.

LIMITATIONS

Several limitations qualify the conclusions of this review. First, despite the systematic search strategy, it is possible that relevant studies in institutional repositories or conference proceedings not indexed by the searched databases were missed. The supplementary grey literature search mitigates but does not eliminate this risk. Second, the primary empirical evidence is somewhat concentrated in the work of one research programme. Of the 54 included studies, 15 (28 %) were led or co-authored by members of the Ibem research group at Covenant University and Obafemi Awolowo University. This concentration introduces a potential for shared instrument and methodological perspective bias. Many of those studies used the same 27 attribute satisfaction questionnaire, drew from similar sampling frames, and reproduced a five factor satisfaction structure, which may have artificially reinforced the consistency of the findings on mean satisfaction scores and factor rankings.

The synthesis mitigated this bias by actively triangulating with independent investigations (e.g. Makinde 2017; Adeleye et al. 2014; Jolaoso et al. 2012; Ogunbayo et al. 2018; Osuizugbo & Olusanya 2023) and by incorporating qualitative, grey literature, and practitioner focused sources that do not share that instrument legacy. Nevertheless, the weight of a single research programme in the selection means that the estimated baseline MSS of 3.21 and the dominance of physical-over-service satisfaction derive disproportionately from one methodological tradition. Future primary research should aim for independent replication using alternative instruments, sampling strategies, and analytical models to test the generalisability of the synthesis.

Third, the named Millennium Housing Estates are not constituted as a formally defined category in official Nigerian housing documentation, meaning that the study has drawn on the broader Ogun State public housing literature to characterise them, relying on the delivery period (2003 to 2009) as the primary definitional boundary. Future primary research should confirm this boundary through direct engagement with housing agency records. Fourth, the cross-sectional nature of the majority of primary studies means that the temporal degradation trajectory inferred in this review is logical inference rather than directly measured evidence.

Fifth, although screening and quality appraisal were performed in duplicate with high inter-rater agreement, the synthesis itself (thematic development and the grading of evidence strength) was led by one author; an

independent parallel synthesis would increase confidence in the five analytical themes.

CONCLUSION

The Millennium Housing Estates of Ogun State represent an important moment in the state's housing history: an ambitious, government-led effort to address a housing deficit that, by most measures, delivered buildings but not homes, structures but not communities, units but not the services that make a unit habitable over decades. This systematic review has synthesised 54 studies to show that performance in these estates has been shaped by a tripartite deficit of physical design limitations, infrastructure and service failures, and maintenance governance vacuums. That this deficit has been allowed to persist and deepen for more than two decades without systematic remediation or even systematic documentation is itself evidence of the governance failure at the heart of Nigeria's public housing programme.

The Tripartite Performance Accountability Framework proposed by this review offers a structured diagnostic lens for understanding why building performance in public housing fails, and what conditions must be simultaneously met for it to succeed. More than a conceptual model, the TPAF is a call to action: for housing agencies to accept maintenance as a core institutional function, for policymakers to mandate Post-Occupancy Evaluation as a standard component of the public housing lifecycle, and for researchers to move beyond the cross-sectional snapshot toward the longitudinal, feedback-oriented inquiry that genuine building stewardship requires.

As Ogun State continues to develop new housing estates under Governor Abiodun's administration, including projects at Kobape, Prince Court, HID Estate, and Ijebu-Ode, the evidence synthesised here carries an urgent message, that the estates being built today will become the maintenance problems of the next two decades unless the lessons of the Millennium cohort are embedded in the design, delivery, and governance of what comes next. The question is not whether Ogun State can afford to evaluate building performance. The evidence reviewed here demonstrates unambiguously that it cannot afford not to.

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APPENDIX

Appendix A: Summary Matrix of Included Studies

Table A1 presents the full characteristics matrix of the 30 most directly cited studies from the corpus of 54. For each study, the table records the citation, study design, sample details, data collection instrument, primary performance dimension examined, and key findings. The full corpus matrix for all 54 studies is available from the corresponding author upon request.

Table A1: Characteristics Matrix of Primary Included Studies

Citation	Design	Sample	Instrument	Dimension	Key Finding
Ibem et al. (2013a)	Cross-sectional survey	452 HH heads, 9 estates	Structured questionnaire + observation	BPE, satisfaction	MSS = 3.21; satisfied with privacy; dissatisfied with water & electricity
Ibem & Amole (2013)	Quantitative survey	156 HH heads, OGD Estate	Structured questionnaire	Residential satisfaction	59% satisfied; management, neighbourhood, services key factors
Ogunde (2013)	Mixed methods	716 units, 10 estates	Questionnaire + interviews	Housing performance, socio-demographics	Generally satisfactory; varies by age, education, SES
Ibem & Alagbe (2015)	Quantitative survey	517 HH heads, 9 estates	Structured questionnaire	Housing adequacy	MAS = 2.80; no service/facility dimension rated adequate
Makinde (2017)	Quantitative survey	85 + 85 non-residents	Questionnaire, Likert scale	Housing quality	Residents 4.21; non-residents 3.25 for building elements
Ibem et al. (2015)	Mixed methods	517 HH, 9 estates	Questionnaire + observation	Sustainability POE	Affordable; asbestos materials; 13% satisfied with amenity proximity
Ibem et al. (2019)	Quantitative survey	333 HH, 10 estates	Questionnaire + factor/regression	Low-income satisfaction	66% dissatisfied; management, space, economic environment key
Ibem (2013b)	Survey + observation	452 HH, 9 estates	Questionnaire + observation	Service accessibility	65% lack refuse bins; poor water, electricity, transport access
Jolaoso et al. (2012)	Mixed methods	105 buildings, Ibara	Survey + reconnaissance	Maintenance management	Public agents slowest to respond; occupant-led most effective

Adeleye et al. (2014)	Quantitative survey	85 + 85, Ibara Estate	Systematic random sampling, questionnaire	Housing quality perception	Residents more satisfied than non-residents on all dimensions
Ogunbayo et al. (2018)	Quantitative survey	224 HH, 3 PPP estates	Systematic sampling, questionnaire	PPP facilities satisfaction	Facility provision, security, space key satisfaction drivers
Ibem et al. (2017)	Quantitative survey	517 HH, 9 estates	Questionnaire + factor analysis	Neighbourhood satisfaction	Dissatisfied; poor service/infrastructure access main cause
Ibem & Amole (2011)	Quantitative survey	517 units, 9 estates	Questionnaire, Likert scale	Housing adequacy	Unit attributes most adequate; neighbourhood facilities least
Ackley & Ukpong (2019)	Systematic review + interviews	117 interviewees, literature	SLR + semi-structured interviews	POE in developing countries	POE rarely used in Nigeria; recommend integration into certification
Ibem et al. (2012)	Quantitative survey	156 HH, Workers' Estate	Structured questionnaire	Incremental housing adequacy	50% adequate; 92% found cost affordable; upgrading evident
Ibem (2012)	Quantitative survey	517 HH + 90 agency staff	Structured questionnaire	Housing quality perception	Below-average quality; delivery strategy and spatial deficiencies key
Osuizugbo & Olusanya (2023)	Quantitative survey	50 maintenance staff, 5 univ.	Cross-sectional questionnaire	Maintenance management	Poor materials, no maintenance cycles, absent maintenance culture
Orekan (2019)	Qualitative review	Senior OSHC officials	Document review + interviews	Housing delivery review	OSHC profit-oriented; housing less affordable for low/mid income
Odunnaike & Suleiman (2023)	Quantitative survey	105 respondents, Kemta	Questionnaire, RII	Infrastructure and rental values	73% confirm infrastructure affects rentals; roads and electricity top-ranked
Onifade (2020)	Mixed methods	Multiple neighbourhoods, Ogun	Structured questionnaire	Residential environment	All environmental variables significant ($p<0.05$); security key
Ibhadode et al. (2020)	Environmental study	4 catchments, Ota estate	Field measurements, water/soil	Environmental impact	Groundwater contaminants above WHO limits in all catchments

Shoremi et al. (2025)	SLR	Literature synthesis	Systematic review	BPE determinants	Climatic, design, SES factors interact; policy gaps persist
Ejoor et al. (2021)	Quantitative survey	10 expert architects	Purposive sampling, SPSS	POE criteria	40 criteria identified; 24 relevant; DQ, IEQ, QBSS framework
Koleoso et al. (2024)	Systematic review	Literature synthesis	Systematic tool review	FM performance tools	22 tools reviewed; none fully fit for Nigeria; bespoke tool needed
Waziri (2025)	Mixed methods	Selected buildings, Kaduna	Surveys + on-site measurements	Building performance + POE	Energy and water efficiency gaps; POE aligns design with need
Mobolaji et al. (2025)	Quantitative survey	224 HH, Lagos estates	Multi-stage sampling, questionnaire	Infrastructure delivery	Low infrastructure availability; state estates worse than federal
Salau & Elizabeth (2025)	Quantitative survey	198 respondents, Abeokuta	Multi-stage sampling, questionnaire	Housing planning & admin	51.5% in medium-density; water and electricity infrastructure low
Ibem & Amole (2014)	Quantitative survey	452 HH, Ogun State	Questionnaire + SWL measure	Satisfaction with life	SWL = 3.64; 61% satisfied with life; estate location lowest rated
Khalil et al. (2024)	Conceptual review	Literature synthesis	Conceptual analysis	User feedback in BPE	Ongoing user feedback essential; performance dynamic over time
Akuete et al. (2024)	Quantitative survey	340 respondents, universities	Questionnaire, RII	Maintenance feedback/POE limits	Non-availability of facility info; management commitment lacking

Appendix B: Summary of Full-Text Exclusion Reasons

Table B1: Reasons for Full-Text Exclusion (n = 130)

Exclusion Reason	Example Reference Type	n
Focused entirely on private housing markets with no public housing relevance	Market analysis, estate agency studies	31
Set outside Nigeria without transferable content to Ogun State context	Studies from UK, Malaysia, UAE	28
No empirical data reported (conceptual or opinion pieces)	Editorials, commentaries	24
Full text not retrievable from any accessible database or repository	Conference abstracts only	19

Methodology insufficiently described to permit quality appraisal	Short reports, brief papers	16
Pre-2003 publication without historical value relevant to the Millennium estates	Pre-programme housing literature	12