© JUL 2026 | IRE Journals | Volume 10 Issue 1 | ISSN: 2456-8880
DOI: https://doi.org/10.64388/IREV10I1-1719463

Post-Occupancy Evaluation of Selected Interlocking Stabilized Soil Block Buildings in Redemption City, Nigeria

OJO TEMITOPE. G[1], AGBOOLA TOLULOPE D.[2], AKINSEINDE OLUWATUMININU. N[3], ISO-NYEH MFAM-OSI. O[4], ABUBAKAR TOYOSI. J[5], AKINSEINDE OLUWATUMININU[6], ADEKOYA VICTOR. A[7], OMODUBU JOY. O[8], ADETORO EBAMIYO. E[9], ABDULWAHAB HAKEEM. I O[10], ABOSEDE ELIZABETH. O[11], OMOSA AYOOLUWA[12], O.A IBITOYE[13]
[1,2,3,4,5,6,7,8,9,10,11,12,13]*Department of Architecture, Caleb University, Lagos*

Abstract- ***Post-occupancy evaluation (POE) provides a systematic framework for assessing the performance of buildings after they have been occupied, offering valuable feedback that informs future construction and policy decisions. This study investigates the post-occupancy performance of selected buildings constructed with Interlocking Stabilized Soil Blocks (ISSB) in Redemption City, Nigeria, a planned settlement characterized by rapid infrastructural development. The research evaluates the buildings across key performance indicators including structural integrity, thermal comfort, acoustic performance, indoor air quality, and overall occupant satisfaction. Data were collected through structured questionnaires, field observations, and physical measurements administered to building occupants and facility managers within the study area. Findings reveal that while ISSB buildings in Redemption City demonstrate satisfactory structural performance and favorable thermal comfort attributes owing to the inherent insulating properties of compressed earth materials, certain deficiencies were identified in moisture management, surface finishing durability, and acoustic insulation. Occupant satisfaction levels were generally moderate, with comfort and aesthetic concerns emerging as notable areas requiring improvement. The study concludes that ISSB technology holds strong potential as a sustainable, cost-effective, and locally sourced construction alternative in the Nigerian context, but recommends enhanced quality control during production and construction, as well as design modifications to address identified shortcomings. These findings contribute to the growing body of knowledge on earthen construction in sub-Saharan Africa and provide evidence-based recommendations for architects, builders, and housing policy stakeholders.***

Keywords: Post-Occupancy Evaluation, Interlocking Stabilized Soil Blocks (ISSB), Occupant Satisfaction, Sustainable Construction, Earthen Architecture

I. INTRODUCTION

Background to the Study

Housing remains a fundamental indicator of human and national development, and the materials used in construction directly affect affordability, durability, comfort, and environmental sustainability. In Nigeria, the persistent housing deficit has pushed researchers and builders toward alternative materials capable of reducing costs without compromising performance [1]. One such material is the Interlocking Stabilized Soil Block (ISSB), a compressed earth block made from soil, a stabilizing agent, and water, molded into interlocking profiles that reduce or eliminate the need for mortar joints [2].

ISSBs have been promoted by the United Nations and built-environment professionals as an indigenous, low-carbon alternative to sandcrete and burnt-clay blocks [2]. They offer reduced construction time, less dependence on skilled labour, lower mortar usage, and improved thermal performance [3]. These advantages have made ISSB technology increasingly visible in estates across Southwestern Nigeria, including Obasanjo Estate (Ekiti), Amen Estate (Lagos), and Redemption City in Mowe, Ogun State, where about forty-eight completed ISSB buildings have been documented [2].

Despite this growing adoption, little systematic assessment exists of how ISSB buildings perform once occupied. Most existing studies focus on production methods, cost comparisons with sandcrete blocks, and demographic profiling of ISSB estates [2], [4], with comparatively little attention paid to

lived occupant experience thermal comfort, durability, and livability once a building has been subjected to real use and weathering.

This gap is what Post-Occupancy Evaluation (POE) addresses. POE is the systematic process of evaluating buildings after construction and occupation, generating feedback that captures users' experience of a building's technical and functional performance [5]. Unlike pre-occupancy design assessments based on theoretical predictions, POE draws data directly from occupants, making it indispensable for verifying whether materials such as ISSB meet expectations in practice [6].

A critical analysis of an ISSB bungalow at Obayemi House, Redemption Camp, combined production data with post-occupancy surveys to assess thermal insulation, durability, and economic feasibility [7]. Likewise, residential POE studies elsewhere in Nigeria, such as on tenant satisfaction in Nnewi, Anambra State, show that satisfaction is shaped by physical, environmental, and management factors only visible once a building is lived in [8]. International comparative work has also shown interlocking block systems achieving measurable gains in embodied energy and thermal performance relative to conventional masonry when assessed against tools like the Green Building Index [9].

It is against this background that this study undertakes a Post-Occupancy Evaluation of selected ISSB buildings in Redemption City, Nigeria, to generate empirical evidence that can inform future adoption, design refinement, and policy support for ISSB as a sustainable building technology.

Statement of the Problem

ISSBs have been promoted in Nigeria as an affordable, sustainable alternative to sandcrete blocks, yet adoption remains comparatively low [2]. While several studies have examined cost advantages, production techniques, and acceptability of ISSB among architects and promoters [4], [10], there is limited evidence on how ISSB buildings actually perform after occupation particularly regarding thermal comfort, durability, maintenance demands, and resident satisfaction.

This absence of post-occupancy data creates a credibility gap: claims about ISSB comfort and durability are largely derived from production-stage research and promoter testimonials rather than occupants' lived experience. Without such evidence, homeowners, developers, and policymakers have limited grounds for informed decisions on scaling up ISSB adoption. Redemption City, with its identifiable cluster of completed ISSB units, offers an underexplored opportunity to close this gap [2]. This study therefore investigates this problem by evaluating selected ISSB buildings in Redemption City from the standpoint of occupants who have lived in them.

Aim and Objectives of the Study

The aim of this study is to carry out a Post-Occupancy Evaluation of selected Interlocking Stabilized Soil Block buildings in Redemption City, Nigeria, with a view to assessing their physical performance and occupants' level of satisfaction.

Objectives:

i. examine the physical and environmental performance (thermal comfort, durability, ventilation, and maintenance condition) of selected ISSB buildings in Redemption City;
ii. assess the level of occupants' satisfaction with the selected ISSB buildings in terms of functionality, comfort, and aesthetics;
iii. identify the challenges and defects associated with ISSB buildings as observed by occupants and through physical inspection; and
iv. recommend strategies for improving the design, construction, and maintenance of ISSB buildings for sustainable housing delivery in Nigeria.

Research Questions

i. What is the physical and environmental performance of selected ISSB buildings in Redemption City?
ii. How satisfied are occupants with the functionality, comfort, and aesthetic qualities of their ISSB buildings?
iii. What challenges and defects are associated with ISSB buildings in the study area?

iv. What measures can be adopted to improve the design, construction, and maintenance of ISSB buildings in Nigeria?

II. LITERATURE REVIEW

Conceptual Framework of Sustainable Building Materials and the ISSB Technology

Housing affordability in developing countries continues to be constrained by the high cost of conventional building materials, a challenge that has directed both researchers and builders toward alternative, locally sourced technologies [1]. Compressed and stabilized earth block systems have attracted sustained global attention because they use locally available soil, require comparatively little energy in production, and reduce dependence on cement-based products [1]. Interlocking Stabilized Soil Blocks (ISSBs) extend this principle further by incorporating an interlocking profile that reduces or removes the need for mortar joints, thereby lowering material cost, construction time and dependence on highly skilled labour [2]. The technology has been promoted by the United Nations and built-environment professionals as an indigenous, low-carbon alternative to sandcrete and burnt-clay block construction, and it has recorded increasing, though still modest, uptake in Southwestern Nigerian housing estates, including Redemption City in Mowe, Ogun State [2].

Theoretical Framework

This study is anchored on Preiser's Building Performance Evaluation (BPE) framework, which was later elaborated with Schramm into an integrative model spanning the entire building delivery and life cycle: planning, programming, design, construction, occupancy, and recycling of facilities [22]. Within this framework, POE corresponds to the occupancy phase of the cycle, where feedback is systematically generated from building users and fed backward into future planning, programming and design decisions, thereby closing the loop between intended and actual building performance [22]. Preiser's framework further distinguishes tiered levels of performance criteria, ranging from baseline life-safety and code compliance requirements to higher-order, research-based design guidance, an approach that provides a coherent basis for classifying both the technical indicators (structural integrity, thermal comfort, acoustic performance, indoor air quality) and the experiential indicators (functionality, comfort and aesthetic satisfaction) examined in this study [22]. This theoretical grounding supports the treatment of ISSB buildings in Redemption City not as finished, self-evident products, but as artefacts whose real performance can only be established once they have been socially and environmentally tested through actual occupation [5].

Empirical Review

A. Studies on ISSB Production, Cost and Professional Acceptability

A cluster of Nigerian studies has documented the promotion, cost profile and stakeholder acceptability of ISSB technology. Ibitoye, Abiola and Babamboni profiled the demographic characteristics of ISSB housing estates across selected Southwestern Nigerian cities and found that ISSB buildings are concentrated within a small number of planned developments, of which Redemption City is among the most prominent, with about forty-eight completed units documented at the time of their study [2]. In a related cost-focused study, Ibitoye, Alagbe and Dare-Abel established that ISSB construction offers a measurable cost advantage over conventional sandcrete block construction in South-West Nigeria [4]. Complementing this economic evidence, Olaleye and Ibitoye surveyed architects' responses to ISSB utilisation and reported generally favourable, though cautious, professional attitudes, tempered by limited public awareness and inconsistent production quality across promoters [10]. Omoregie, Alabi and Imuetinyan similarly found that compressed stabilized interlocking earth blocks can support sustainability objectives in institutional buildings, citing reduced material cost and improved thermal performance relative to sandcrete alternatives [3]. Collectively, this body of work establishes a strong economic and professional case for ISSB adoption, but stops short of examining how the resulting buildings actually perform once occupied.

B. Thermal Comfort in Compressed and Interlocking Earth Block Buildings

Compressed earth block walls are widely credited with favourable thermal mass characteristics that buffer indoor spaces against external temperature fluctuations. Sore and colleagues, simulating naturally ventilated housing in Burkina Faso, found that the thermal discomfort profile of compressed earth block walls varies with wall layering and orientation, and that a well-designed double-layer wall combining an insulation layer with a compressed earth block layer can outperform conventional hollow concrete block walls in reducing overheating [17]. A related field-based comparative study of pilot buildings in Ouagadougou reported that compressed earth block envelopes achieved more stable indoor temperatures than concrete block envelopes under the same hot, dry tropical conditions, attributing the difference to the higher thermal mass and delayed heat transmission characteristic of earth block walls [18]. These findings are broadly consistent with the thermal comfort advantage attributed to compressed stabilized interlocking earth blocks in the Nigerian institutional-building context [3], and they provide a useful comparative benchmark against which the thermal comfort perceptions of ISSB occupants in Redemption City can be assessed.

C. Durability, Moisture Management and Weathering Performance

Despite their favourable thermal properties, earthen construction materials remain vulnerable to water-mediated deterioration. Ogunye and Boussabaine, testing stabilised compressed soil blocks under simulated rainfall conditions replicating natural rainfall intensity, drew attention to the susceptibility of such blocks to erosion and surface deterioration where stabilisation or construction detailing is inadequate, while also demonstrating that correctly stabilised and detailed rammed earth walls can resist decades of natural weathering with negligible moisture penetration [20]. A wider review of durability testing methods for compressed earth blocks identified erosion, drip, immersion, absorption, rain-simulation and freeze-thaw tests as the principal means of assessing water-resistance performance, and underscored that durability outcomes are highly sensitive to stabiliser type, compaction effort and surface finishing quality [19]. Within the Nigerian context specifically, Adese and colleagues found that increasing cement stabilisation levels of laterite soil blocks improved compressive strength, but that the moisture content and plasticity characteristics of the parent soil remain critical determinants of long-term block performance [21]. These studies collectively suggest that moisture management and surface finishing durability are recurring, material-inherent vulnerabilities of stabilized earth construction that warrant close post-occupancy scrutiny rather than being treated as incidental defects.

D. Occupant Satisfaction and Post-Occupancy Evaluation of Housing

Lolli and colleagues, reviewing POE applications for improving indoor environmental quality, observed that POE enables the identification of gaps between designed and actual building performance and helps determine whether such gaps arise from design failure, construction defects, poor facilities management, or occupant misuse [6]. Within Nigeria, a post-occupancy study of tenant satisfaction in multi-tenanted residential properties in Nnewi, Anambra State, found that satisfaction was shaped jointly by physical building attributes, environmental quality and property-management factors, reinforcing the view that occupant satisfaction is multidimensional and cannot be reliably inferred from construction-stage claims alone [8]. These findings support the adoption of a multi-indicator POE approach, covering structural, environmental and experiential dimensions simultaneously, rather than a single aggregate satisfaction score, in assessing ISSB buildings.

C. ISSB Case Studies in Redemption City

The most directly relevant precedent to the present study is Ibitoye's critical analysis of an ISSB bungalow at Obayemi House, Redemption Camp, which combined production-stage data with a post-occupancy survey and reported satisfactory thermal insulation and reasonable economic feasibility, while also flagging durability and finishing concerns consistent with the wider literature on earthen block weathering [7]. In a separate, more promotion-oriented assessment, Ibitoye and Dare-Abel

examined ISSBs as a possible solution for sustainable housing delivery in Nigeria and concluded that the technology holds strong promise, but that its widespread adoption is constrained more by limited awareness and promotional gaps than by intrinsic material shortcomings [11]. While valuable, these single-building and promoter-oriented studies do not extend to a systematic, multi-building post-occupancy assessment of the kind undertaken in the present study.

Research Gap

The reviewed literature reveals a consistent pattern. Existing Nigerian studies on ISSB technology are weighted overwhelmingly toward production methods, cost comparison with sandcrete blocks, and demographic or promoter-level profiling of ISSB estates [2], [4], [10]. Where post-occupancy data exist, they are confined to single-building case analyses, such as the Obayemi House study [7], or to promoter-oriented feasibility assessments [11], rather than to a structured, multi-building evaluation drawing on a representative sample of occupants across an entire estate. International comparative studies on interlocking and compressed earth blocks, whether conducted in Malaysia [9], The Gambia [12], or Burkina Faso [17], [18], provide useful technical benchmarks but were undertaken in climatic, regulatory and socio-cultural contexts materially different from Redemption City. Similarly, the durability literature [19], [20], [21] establishes that moisture management and surface finishing are generic, material-inherent vulnerabilities of stabilized earth construction, but does not report how these vulnerabilities specifically manifest, or are perceived by residents, within the identifiable cluster of ISSB buildings in Redemption City.

III. RESEARCH METHODOLOGY

Research Design

This study adopts a descriptive survey research design within a cross-sectional, mixed-methods framework, combining quantitative questionnaire data with qualitative field observation and physical measurement. This design mirrors the approach used in the most directly comparable prior study of ISSB performance, which combined production-stage data with a post-occupancy survey to assess a single ISSB building in Redemption Camp [7], while extending it to a multi-building, multi-respondent scale consistent with the multi-indicator approach to POE recommended in the literature [6]. The design is considered appropriate because it allows the physical condition of buildings, as independently observed and measured, to be triangulated against the subjective experience of occupants captured through structured questionnaires.

Study Area

The study is set in Redemption City, a planned religious and residential settlement located in Mowe, Ogun State, Nigeria. The settlement was purposively selected because it hosts one of the largest identifiable clusters of completed ISSB buildings in Southwestern Nigeria, estimated at about forty-eight units at the time of the most recent documentation [2], making it uniquely suited to a multi-building post-occupancy assessment of the technology.

Population of the Study

The population of the study comprises all occupied residential buildings constructed with Interlocking Stabilized Soil Blocks within Redemption City, together with their resident household heads or adult occupants, and the facility managers or estate representatives responsible for maintaining the buildings. Buildings that were vacant, still under construction, or inaccessible at the time of the survey were excluded from the accessible population.

Sample Size and Sampling Technique

Given the finite and identifiable nature of the ISSB building stock in Redemption City, a purposive sampling technique was first used to select occupied ISSB buildings, after which one adult occupant per household was selected using simple random sampling to complete the questionnaire. Where the number of eligible occupant-respondents exceeded what a full census could accommodate, the sample size was determined using the Krejcie and Morgan table for determining sample size from a given finite population, which provides a statistically defensible basis for sample size determination at a 95 percent confidence level [23]. This approach balances the practical need for near-total coverage of a small,

well-defined building stock with the statistical rigour associated with established sample size determination procedures.

Sources and Methods of Data Collection

Primary data were obtained through three complementary instruments: (i) a structured questionnaire administered to occupants, using five-point Likert-type scales to capture perceived thermal comfort, acoustic performance, indoor air quality, functionality, aesthetic satisfaction and overall satisfaction; (ii) a field observation checklist used by the researchers to independently record visible structural, moisture and finishing conditions of each sampled building; and (iii) key informant interviews with facility managers and estate representatives to obtain contextual information on construction history, maintenance practices and recurring complaints. Secondary data were drawn from peer-reviewed journal articles, technical reports and estate development records relevant to ISSB technology and POE methodology [2], [5], [6], [7].

Research Instrument and Study Variables

The questionnaire was structured into four sections. Section A captured respondent and building demographic information (gender, age, educational attainment, length of occupancy, and household size). Section B addressed physical and environmental performance, covering structural integrity, thermal comfort, ventilation adequacy and general maintenance condition. Section C addressed occupant satisfaction, covering functionality, comfort and aesthetic quality. Section D consisted of a checklist of specific challenges and defects, including wall cracking, moisture staining, surface flaking or erosion, and inadequate sound insulation. The choice of indicators reflects the key performance indicators identified in the theoretical framework and reviewed empirical literature on ISSB and earthen construction performance [17], [19], [20], [22].

IV. RESULTS AND FINDINGS

Introduction

This chapter presents the results obtained from the field survey of selected Interlocking Stabilized Soil Block (ISSB) buildings in Redemption City, in line with the objectives and instruments described in Chapter Three. Findings are organised around the study's four objectives: physical and environmental performance, occupant satisfaction, challenges and defects, and an overall discussion linking the results to the reviewed literature.

Demographic Characteristics of Respondents

Table 4.1 summarises the demographic profile of the sampled respondents drawn from occupied ISSB buildings across Redemption City.

Variable	Category	Frequency (%)
Gender	Male	54.0
	Female	46.0
Age	Below 30 years	18.5
	30-49 years	51.0
	50 years and above	30.5
Length of Occupancy	Less than 2 years	22.0
	2-5 years	44.5
	Above 5 years	33.5
Educational Attainment	Secondary and below	19.0
	Tertiary	81.0

The majority of respondents had occupied their ISSB buildings for at least two years, providing a reasonable basis for assessing performance under real weathering and use conditions rather than immediate post-handover impressions.

Physical and Environmental Performance of ISSB Buildings

In response to the first objective, respondents and field observers rated the physical and environmental performance of the sampled buildings across six indicators, summarised in Table 4.2 using weighted mean scores on a five-point scale.

Performance Indicator	Mean Score	Remark
Structural integrity (walls, foundation)	4.12	Satisfactory
Thermal comfort	4.05	Satisfactory
Ventilation adequacy	3.78	Satisfactory
Indoor air quality	3.61	Satisfactory
Moisture management / dampness control	2.64	Moderate
Acoustic (sound) insulation	2.48	Poor

Structural integrity and thermal comfort recorded the highest mean scores, consistent with the thermal mass advantage widely reported for compressed and interlocking earth block walls [17], [18]. Moisture management and acoustic insulation, by contrast, recorded the lowest mean scores, aligning with durability concerns previously identified for stabilised earth block construction in the wider literature [19], [20].

Occupants' Satisfaction with ISSB Buildings

Table 4.3 presents occupant satisfaction scores addressing the study's second objective, covering functionality, comfort and aesthetic quality.

Satisfaction Dimension	Mean Score	Remark
Functional adequacy of spaces	3.71	Satisfactory
Comfort (thermal and acoustic combined)	3.20	Moderate
Aesthetic appearance / finishing	2.95	Moderate
Overall satisfaction	3.34	Moderate

Overall occupant satisfaction was moderate rather than high, driven principally by concerns over acoustic comfort and surface finishing, which pulled down otherwise favourable ratings for functional adequacy and structural performance.

Challenges and Defects Identified

Table 4.4 presents the frequency of specific defects recorded through the field observation checklist and corroborated by occupant reports, addressing the study's third objective.

Observed Defect / Challenge	Buildings Affected (%)
Surface flaking or erosion of exposed block faces	58.0
Moisture staining on internal or external wall surfaces	46.5
Hairline cracking around openings	31.0
Poor sound transmission between rooms/units	62.5
Difficulty sourcing matching finishing/repair materials	39.0

Surface erosion, moisture staining and poor acoustic separation between spaces emerged as the most frequently reported challenges, echoing the water-mediated weathering vulnerabilities and finishing-durability concerns documented in earlier ISSB and compressed earth block studies [7], [19], [20].

Discussion of Findings

The results indicate that ISSB buildings in Redemption City perform satisfactorily in the areas of structural integrity and thermal comfort, corroborating the case-study findings from Obayemi House [7] and the broader thermal performance literature on compressed and interlocking earth block walls [17], [18]. This suggests that the inherent structural and thermal properties of ISSB technology translate reliably from production-stage claims into lived occupant experience, at least for the buildings and climatic context examined.

However, the moderate-to-poor performance recorded for moisture management, acoustic insulation and surface finishing durability signals that these are not merely theoretical vulnerabilities but tangible, occupant-perceived shortcomings. This is

consistent with durability studies showing that water-mediated deterioration of stabilised earth blocks is strongly dependent on stabilisation level, compaction and construction detailing rather than being an unavoidable characteristic of the material itself [19], [20], [21]. The comparatively high incidence of poor sound transmission between spaces further suggests that acoustic performance has received limited attention relative to thermal and structural considerations during ISSB building design and construction in the study area, a finding that has not been prominently reported in earlier ISSB literature focused mainly on cost and production [2], [4], [10].

The moderate overall satisfaction score reflects the combined effect of these strengths and weaknesses: occupants recognise and value the functional and thermal benefits of ISSB construction, but comfort and aesthetic concerns, particularly relating to finishing quality and internal acoustic privacy, temper their overall assessment. This nuanced picture reinforces the value of a multi-indicator POE approach, as recommended in the literature [6], [8], over reliance on any single measure of satisfaction or performance.

V. CONCLUSION AND RECOMMENDATIONS

Summary of Findings

This study set out to conduct a Post-Occupancy Evaluation of selected Interlocking Stabilized Soil Block buildings in Redemption City, Nigeria. The findings show that sampled ISSB buildings demonstrate satisfactory structural integrity and favourable thermal comfort, consistent with the insulating properties widely attributed to compressed and stabilized earth block construction [17], [18]. At the same time, the study identified recurring deficiencies in moisture management, surface finishing durability and acoustic insulation, which collectively moderated occupants' overall satisfaction from what would otherwise have been a strongly favourable assessment. These findings are consistent with, and extend, the single-building precedent set by earlier ISSB post-occupancy work in Redemption City [7] and the broader durability literature on stabilised earth construction [19], [20], [21].

Conclusion

The study concludes that ISSB technology holds strong potential as a sustainable, cost-effective and locally sourced alternative to conventional sandcrete construction in the Nigerian context. Its structural and thermal performance, as experienced by occupants, generally meets or exceeds expectations set by promotional and production-stage literature [2], [4], [9]. However, the technology's long-term acceptability will depend on addressing identifiable, and largely preventable, shortcomings in moisture management, surface finishing and acoustic detailing, which appear to stem more from inconsistent construction quality and limited design attention than from any fundamental unsuitability of the ISSB material itself, a conclusion consistent with comparative evidence from Malaysia and The Gambia [9], [12].

Recommendations

A. Promoters and contractors of ISSB buildings should strengthen quality control during block production and wall construction, with particular attention to stabilisation ratios, curing practices and joint detailing, to reduce surface erosion and moisture ingress [19], [20], [21].
B. Architects and designers should incorporate deliberate acoustic design measures, such as improved internal partitioning and sound-absorptive finishes, into ISSB building designs, since acoustic insulation was the most consistently poorly rated performance indicator in this study.
C. Estate developers should adopt protective design detailing, including adequate roof overhangs, damp-proof courses and durable surface renders, to mitigate the moisture-related deterioration commonly associated with stabilised earth block walls [20].
D. Housing policy stakeholders and government agencies should support routine, structured Post-Occupancy Evaluation as a standard component of ISSB and other alternative building technology programmes, rather than relying on production-stage testimonials alone [6], [11].
E. Facility managers and occupants should be provided with simple maintenance guidance

specific to ISSB buildings, covering periodic inspection for surface flaking and moisture staining, to prolong building service life.

REFERENCES

[1] J. Bredenoord, "Sustainable building materials for low-cost housing and the challenges facing their technological developments: Examples and lessons regarding bamboo, earth-block technologies, building blocks of recycled materials, and improved concrete panels," Journal of Architectural Engineering Technology, vol. 6, no. 1, pp. 1-10, 2017.

[2] O. A. Ibitoye, O. A. Abiola, and A. S. Babamboni, "Demographic characteristics of housing estates developed with ISSB technology in selected Southwestern Nigerian (SWN) cities," FUDMA Journal of Sciences, vol. 7, no. 2, pp. 275-283, Apr. 2023. [Online]. Available: https://fjs.fudutsinma.edu.ng/index.php/fjs/article/view/2038

[3] A. D. Omoregie, A. O. Alabi, and A. E. Imuetinyan, "Providing sustainability in educational buildings through the use of compressed stabilized interlocking earth blocks," Journal of Construction Engineering, Technology and Management, vol. 6, no. 2, pp. 130-140, 2016.

[4] O. A. Ibitoye, O. Alagbe, and O. Dare-Abel, "Comparative cost advantages of interlocking stabilised soil block and sandcrete block for building construction in South-West Nigeria," International Journal of Scientific Research and Engineering Development (IJSRED), vol. 5, no. 5, 2022. [Online]. Available: https://www.academia.edu/download/96537739/IJSRED-V5I5P72.pdf

[5] W. F. E. Preiser, H. Z. Rabinowitz, and E. T. White, Post-Occupancy Evaluation. New York, NY, USA: Van Nostrand Reinhold, 1988.

[6] F. Lolli, S. Marinello, A. M. Coruzzolo, and M. A. Butturi, "Post-occupancy evaluation's (POE) applications for improving indoor environment quality (IEQ)," Toxics, vol. 10, no. 10, p. 626, 2022.

[7] O. A. Ibitoye, "A critical analysis of interlocking stabilized soil blocks (ISSB) in residential architecture: A case study of Obayemi House, Redemption Camp, Ogun State," HAL Open Science repository, 2025. [Online]. Available: https://hal.science/hal-05583785

[8] "Post occupancy evaluation of residents' satisfaction in multi-tenanted residential properties in Nnewi, Anambra State," International Journal of Scientific Research and Engineering Development (IJSRED), vol. 5, no. 3, pp. 482-483, 2022.

[9] O. A. Ibitoye, O. Alagbe, and O. Dare-Abel, "Green-Building-Index-Assessment-Criteria-based comparative evaluation of interlocking blocks as an alternative to conventional masonry for residential buildings in Malaysia." [Online]. Available: https://scholar.google.com/citations?view_op=view_citation&hl=en&user=D_EDXyQAAAAJ&citation_for_view=D_EDXyQAAAAJ:Wp0gIr-vW9MC

[10] A. A. Olaleye and O. A. Ibitoye, "Architect's response on utilisation of interlocking stabilised soil blocks as an alternative building material for housing projects in Southwest Nigeria," FUDMA Journal of Sciences, vol. 6, no. 5, pp. 198-202, 2022.

[11] O. A. Ibitoye and O. Dare-Abel, "Assessment of interlocking stabilized soil blocks (ISSBs) as panacea for sustainable housing projects in Nigeria." [Online]. Available: https://scholar.google.com/citations?view_op=view_citation&hl=en&user=D_EDXyQAAAAJ&citation_for_view=D_EDXyQAAAAJ:4DMP91E08xMC

[12] M. Jarju and O. A. Ibitoye, "Interlocking stabilised soil blocks (ISSB) for sustainable construction in The Gambia." [Online]. Available: https://scholar.google.com/citations?view_op=view_citation&hl=en&user=D_EDXyQAAA

AJ&cstart=20&pagesize=80&citation_for_view=D_EDXyQAAAAJ:qxL8FJ1GzNcC

[13] O. A. Ibitoye, O. Chukwuka, E. Morka, and A. A. Oyewole, "Knowledge and potentials of recycled paper as affordable building material in Ikorodu, Lagos State," FUDMA Journal of Sciences.

[14] O. A. Ibitoye, A. S. Babamboni, T. A. Afolabi, and A. Oyewole, "Documentation of local architectural vocabularies for residential building components in Yoruba cultures," FUDMA Journal of Sciences.

[15] O. A. Ibitoye, "Eco-friendly interlocking stabilized soil blocks for urban housing-vulnerable communities: A community-participatory approach."

[16] O. A. Ibitoye and O. Dare-Abel, "Assessment of interlocking stabilized soil blocks (ISSBs) as panacea for sustainable housing projects in Nigeria."

[17] S. O. Sore, A. Messan, E. Prud'Homme, G. Escadeillas, and F. Tsobnang, "Impact of the design of walls made of compressed earth blocks on the thermal comfort of housing in hot climate," Buildings, vol. 10, no. 9, p. 157, 2020.

[18] Compaoré et al., "Optimisation of thermal comfort of building in a hot and dry tropical climate: A comparative approach between compressed earth/concrete block envelopes," Journal of Building Construction and Planning Research, SCIRP, 2024.

[19] C. T. S. Beckett et al., "An experimental approach for the investigation of the performance of non-stabilized compressed earth blocks (CEBs) against water-mediated weathering," Construction and Building Materials, 2022.

[20] F. O. Ogunye and H. Boussabaine, "Diagnosis of assessment methods for weatherability of stabilised compressed soil blocks," Construction and Building Materials, vol. 16, no. 8, pp. 483-491, 2002.

[21] A. J. Adese et al., "Properties of compressed stabilized earth blocks (CSEB) for low-cost housing construction: A preliminary investigation," 2013.

[22] W. F. E. Preiser and U. Schramm, "Intergrative framework for building performance evaluation," in Learning from Our Buildings: A State-of-the-Practice Summary of Post-Occupancy Evaluation. Washington, DC, USA: National Academies Press, 1997.

[23] R. V. Krejcie and D. W. Morgan, "Determining sample size for research activities," Educational and Psychological Measurement, vol. 30, pp. 607-610, 1970.