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ASSESSMENT OF THE IMPACT OF LOCALLY SOURCED BUILDING MATERIALS ON RESIDENTIAL PROPERTY DEVELOPMENT IN OWERRI, IMO STATE, NIGERIA

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Abstract

This research explores how locally sourced building materials (LSBMs) influence residential property development in Owerri, Imo State, Nigeria. Rising construction costs, lack of affordable housing, and environmental degradation stem largely from a dependence on imported, industrial materials. Through a survey of construction experts and skilled artisans in Owerri, the study gathers substantial data. It evaluates these materials based on three main criteria: their local availability, their affordability, and the resulting impact on construction expenses. Additionally, the investigation highlights common hurdles blocking LSBM utilization. These include limited policy support, negative assumptions about quality, technical skill gaps, and lack of standardisation. Encouragingly, the study finds that laterite, stone, bamboo, timber, and clay are abundantly present and inexpensive. These materials offer developers a meaningful cost reduction alternative. Although the benefits are considerable, prejudice and infrastructure gaps prevent widespread acceptance. The study urges policy, educational, and technical strategies to help close existing supply and application gaps. For lasting improvements in sustainable construction and cost efficiency, this study recommends strengthening regulatory frameworks, standardising material quality, and running education campaigns for residents and developers alike.

Keywords: Locally sourced materials, residential development, housing affordability, sustainability.

1.0 Introduction

To begin with, construction activities actively shape economies—but they also add heavily to environmental damage and steep construction costs, particularly within developing countries (UNEP, 2019). In Nigeria, these costs often represent over 60 percent of construction expenses for residential projects. As a result, affordable home ownership stays far from reach for many lower-income households.

Continuing reliance on foreign materials such as cement, aluminium, and steel magnifies the situation with materials linked to currency rate changes and unpredictable inflation (Taiwo & Adeboye, 2013). In contrast, Owerri has accessible natural resources like bamboo, clay, stone, timber, and laterite—all useful, low-price, and climate-appropriate materials.

Despite those evident benefits, landlords and developers rarely use LSBMs in present-day construction. Doubts about looks and longevity, generalised perceptions of inferiority, as well as inadequate QC mechanisms result in poor adoption of these available resources. Compounding this are ongoing gaps in skills-based training and unreliable regulation (Ihuah & Benebo, 2014; NBRRI, 2020).

The minimal use of LSBMs sustains higher housing project costs and faults long-term sustainability. Thus, this research assesses how effectively LSBMs can help reduce such enduring issues. Centered on Owerri, it concentrates not just on economic viability and local material supply, but also examines the obstacles to large-scale usage of these resources.

1.1 Statement of the Problem

Residential property development in Owerri, Imo State, is increasingly constrained by high construction costs, rapid urbanization, and overdependence on imported building materials. Despite the abundance of local materials such as laterite, clay, timber, and bamboo, their utilization remains minimal. The dominance of industrial materials has widened the housing affordability gap, especially for low- and middle-income earners. Concerns relating to durability, quality assurance, social acceptance, and lack of supportive policies further limit the adoption of locally

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sourced alternatives. This situation has resulted in unsustainable construction practices and increased environmental impact.

1.2 Research Questions

i. How available are locally sourced building materials for residential property development in Owerri?
ii. How affordable are locally sourced building materials in Owerri?
iii. What impact do locally sourced building materials have on the cost of residential property development?
iv. What challenges affect the use of locally sourced building materials?

1.3 Research Hypothesis

H_0: The use of LSBMs has no significant impact on the cost of residential property development in Owerri, Imo State.

H_1: The use of LSBMs has a significant impact on the cost of residential property development in Owerri, Imo State.

2.0 LITERATURE REVIEW

2.1 Concept of Locally Sourced Building Materials

Locally sourced building materials are any construction materials gathered, refined, and applied near or at the location of building works. Familiar examples include earth-based resources like clay and mud, natural materials like bamboo and stone, and traditional items like timber and raffia. Their strength lies in simplicity.

Indeed, such approaches harness traditional skills and eco-sensitive processes to meet local needs efficiently. Communities have used laterite and wattle in rhythm with their surroundings, integrating deeply rooted techniques with modest cost and sustainable performance. Work undertaken by researchers such as Berge (2017) and Omole and Bako (2013) supports this notion with practical examples.

Before concrete buildings and skyscrapers emerged through industrialised development, common housing globally relied on the immediate availability of land-based materials. Noteworthy practices such as adobe usage in Mexico and rammed soils in China validate these techniques. Many of these climates required resilient, passive-building techniques appropriate for tested, region-specific issues (Minke, 2012).

In today's environmental efforts, LSBMs appear heavily in conservation design and resource-limited projects. Reduced heavy-machinery involvement results in smaller carbon footprints, and transport links shrink as materials go from quarries or forests to the plot directly. Comparative studies indicate LSBMs often outperform imported options in eco-assessments (Gómez et al., 2018; UNEP, 2019).

In Sub-Saharan Africa particularly, local materials continue playing notable roles in vernacular residential building. Laterite, bamboo, thatch, clay, and timber hold firm ground in both rural shelters and informal city housing. But socio-cultural shifts, along with market dreams for 'modern' finishes, steadily discouraged widespread public and institutional acceptance.

In recent decades across southern and northern Nigerian housing schemes, the role of natural local resources continues shrinking. Yet, fieldwork by housing researchers such as Olanrewaju and Ogunsemi (2019) documents construction cost reductions between 10 to 40% when rooted in appropriate use of local soil, timber, and stone. Adoption, however, struggles to follow exhaustively nationwide.

Neighbourhood markets and nearby communities already house the materials needed to fulfill builders' and residents' expectations. Within South Eastern towns like Owerri, laterite bricks and clay moulds provide a sensible opportunity. Still, prevailing issues concerning skill development, governing support, and citizens' preference all confront the mainstream integration of LSBM usage practices.

2.2 Types and Uses of Locally Sourced Building Materials

To begin with, local materials have always played a central role in Nigerian building practices. Builders traditionally rely on supplies available nearby, particularly before modern construction

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materials became widely accessible. Local materials continue to serve many construction needs today, mainly thanks to their affordability, environmental benefits, and ease of access.

Additionally, these resources suit diverse climatic zones across Nigeria, making them practical options for sustainable development projects. Their steady demand reflects strong cultural and architectural relevance. According to Ofori (2015), their importance remains evident in both rural and urban construction efforts that integrate traditional design elements with functional advancements.

Mud and Clay: In many rural and semi-urban parts of the country, mud and clay continue to serve as reliable choices for building materials. Builders frequently prefer adobe construction methods and add fibres like straw or raffia. This improves wall integrity and minimises cracks.

Good thermal insulation makes clay and mud structures ideal for warm regions, keeping indoor spaces cooler. Moreover, Akinwale and Adegboye (2018) highlight that these walls preserve natural airflow, enhancing personal comfort for residents during hotter seasons. Houses built this way often reflect local heritage and architectural styles.

Timber (Wood): Timber becomes available in large quantities throughout southern and forested areas. Most builders use it in making roofing frames, window panels, doors, and aesthetic interior features. Appropriate treatment helps prevent decay, termite damage, and water absorption.

With high flexibility and moderate strength, it easily adapts to varying building types. As a result, timber remains in high demand for both modern and traditional building in commercial or residential spaces. Because forests offer continuous supply, timber's role in the industry remains strong across Nigeria.

Bamboo: Bamboo grows swiftly and thrives in the moist zones of southern Nigeria. Builders often select bamboo for practical roles such as scaffolding, partitions, frames, ceilings, and even formwork. When treated and well-anchored, bamboo serves as an efficient replacement for construction timber.

Especially in housing for low-income communities, bamboo offers a lightweight and affordable solution to structural demands. Its flexibility and strength enable practical, temporary or permanent designs. These characteristics encourage trial among environmentally conscious developers seeking cost-efficient building methods across local settlements.

Thatch and Straw: Thatching materials come largely from dry vegetation like grasses and leftover crops. They fit rural roofing purposes by offering natural airflow and light thermal insulation. Most yoruba houses use straw coatings for both warmth retention and natural ventilation during hot evenings.

In remote towns, thatch maintains its importance for tradition and comfort. However, this solution requires scheduled replacement cycles. Despite that, it still appeals to builders who favour simplicity and authentic material responses to nature's climate patterns rather than altering house temperature artificially.

Stone and Rocks: People continue using stone for heavy-duty applications involving land surfaces, borders, or drain systems. Among all options, stone ranks high for foundation stability and soil erosion control. In Nigeria, several regions naturally provide different types suitable for significant ground support works.

Due to its dense structure, stone exhibits exceptional compression tolerance. Consequently, it suits large supportive parts of both public and private projects. Builders often mix it with cement to create solid basements and outer defences for houses especially where erosion disrupts construction durability.

Periwinkle Shells: Sourced near river beds and sea banks, periwinkle shells offer an alternative aggregate for light-concrete flooring. By integrating these shells in concrete mix, builders reduce waste while managing costs realistically on modest-scale projects. It reflects efforts to reuse abundant organic discards productively.

Not only do they bring environmental benefits, but they also offer complementary aesthetics when exposed in surface finishing. Applications now grow slowly in small construction duties across

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marketplaces and farm homes. These shells bridge ecological concerns with durable budget-friendly architectural options.

Compressed Earth Blocks (CEBs): These compacted blocks emerge from combined earthy materials like clay or laterite, usually mixed with limited cement. Pressing makes them uniform and sturdy. Builders continually turn to CEBs over traditional clay bricks because of their precision, strength, and water resistance in all weather.

UN-Habitat (2014) supports this as an eco-aware alternative that still achieves low-cost beauty and uniformity in form. Many community builders and local governments promote these blocks in long-term school and home projects aimed at boosting environmental care and affordability.

Laterite: One of Nigeria's most dependable materials for stability and price fame remains laterite. People widely apply it during groundwork and road implementation. They often select it not just for load resilience but because it exists nearly everywhere in abundance.

Most importantly, laterite adapts quickly for block production before completing state builds or laying stable rural roads. Its natural shaping ability adds to smoother processing, and machines now assist to raise the block's form complexity without reducing its hardened composition during use.

Sand: Construction across Nigerian states heavily relies on sand for finishing needs like mortars and plaster application. Mixed with cement and water, sand also helps bind bricks in foundation-levels of housing and marketplaces. Sand suppliers stretch across various regions to meet persistent construction demands daily.

As sand enters different commands of new hauling trends managed by small vendors or sandminers, its role scales with growth in town setups and upgrades. Modern projects use fine or coarse types, modifying design preferences or matching local functional goals to suit rural and city centres.

Raffia Palm and Mangrove Wood: Users mostly access these items in deltas vulnerable to rainfall and flooding. Raffia palm offers roofing panels while mangrove delivers wall and base

styling suitable on elevated frame supports crafted for wet settings. Traditional builders often stick with ancestral techniques in adapting these house parts.

Because they grow near floodplains, raffia and mangrove offer validity when chosen for houses impacted by regular high waters. Lightweight and flexible margins allow re-use or seasons programming adjustments as part of broader storm preparations before damages become destructive over periods.

Palm Kernel Shells: When redirected from oil processing leftovers, dry palm kernel shells serve residential developers with affordable additives for garden walks or flat concrete finishes. These hollow crushed chunks reduce volume weight and assist thermal garden layering beneath concrete bases effectively during dry seasons.

Granite and Gravel: Many commercial teams introduce crushed gravel and granite during intense support parts of their public service roads or municipal basement setups. Every time engineers draw foundation lines for structural base care, they prioritise strength stones across graded deployments on urban borders or interior landmark projects.

While concrete enhancement counts strong among upper concrete beams and surfaces, project handlers routinely import scattered gravel forms, choosing stockpile density before mix release occurs. Both materials still remain core contributors to sustainable building in heavily trafficked regions improving Nigerian construction economics yearly.

Table 2.1: Common Locally Sourced Building Materials in Different Regions of Nigeria and Their Applications

Region of Nigeria	**Common Locally Sourced Materials**	**Primary Applications in Construction**
Northern Nigeria	Laterite, adobe (mud), clay, stone, straw	Construction of load-bearing walls, mud bricks, compound walls, traditional housing units, insulation for thermal comfort in hot climates

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North-Central Nigeria	Laterite, clay, granite, timber	Walling materials (laterite blocks), foundations, flooring, roofing support structures, rural and peri-urban residential buildings
South-West Nigeria	Laterite, clay bricks, timber, bamboo	Residential walling, roofing frameworks, flooring, scaffolding, low- and medium-income housing projects
South-East Nigeria	Laterite, clay, timber, stone	Wall construction, foundation works, roofing frameworks, fencing, residential buildings in urban and semi-urban areas
South-South Nigeria	Timber, bamboo, raffia palm, sand, clay	Roofing structures, wall panels, stilt housing, flooring, coastal and flood-prone residential developments
Riverine/Coastal Areas	Timber, bamboo, raffia, mangrove wood	Pile foundations, stilt houses, roofing, bridges, walkways, flood-resilient residential structures
Rural Communities (Nationwide)	Mud, laterite, timber, thatch, stone	Traditional housing, boundary walls, storage structures, affordable housing solutions
Urban Areas (Nationwide)	Laterite blocks, timber, clay bricks, stone	Residential property development, boundary walls, low-cost and medium-income housing

2.3 Advantages of Using Locally Sourced Building Materials

In tropical regions, many people believe that traditional housing offers better comfort and suits the climate effectively. Earth-based structures, for example, maintain stable indoor temperatures irrespective of outdoor solar intensity. Because of the increase in greenhouse gas emissions, climate conditions continue to worsen globally.

The construction and use of buildings significantly impact the environment. According to Mensah (2020), construction activities consume about 15 percent of the world's clean water, use 40 percent

of global energy, and are responsible for approximately 23 to 40 percent of greenhouse gas emissions generated worldwide.

Sustainable architecture revolves around designing and managing buildings to be energy efficient and cost-effective across their life cycles. In effect, it combines construction design with environmental awareness to reduce damage to surrounding ecosystems (Olotuah and Bobadoye, 2009). The core aim of green architecture lies in ensuring structural quality while limiting resource consumption and avoiding extensive pollution.

A balanced design should actively respond to environmental challenges while protecting lifeless matter, living organisms, and human needs. Ideally, sustainable development creates buildings that coexist harmoniously with nature without damaging critical biospheres.

Economic Implication: Affordability improves significantly when local materials and indigenous techniques reduce construction costs, as highlighted by Ogunsemi (2019). In practical terms, adopting green innovations in the building sector often results in significant cost efficiencies. These savings bring about an increase in family income since monthly expenses shrink.

Likewise, lower bills and maintenance costs allow families to save more while enhancing the chances of homeownership. Domestic economic output improves when construction follows economical and energy-conscious paths. Ultimately, employment increases, entrepreneurs prosper, and national productivity strengthens—all contributing towards mitigating poverty.

Socio-cultural Implication: Integrating green technologies into building designs across Africa helps raise living standards and boosts social satisfaction. Residents appreciate homes made with eco-conscious local materials like mud, which promote life amid healthy, organic conditions. Societies valuing sustainable buildings typically gain reliable access to basic resources such as clean water and renewable electricity from solar power.

Moreover, these initiatives instil pride in cultural heritage. The visible promotion of indigenous construction practices changes social attitudes. It allows communal traditions to gain attention, celebration, and renewed usefulness in contemporary homes. Community engagement grows,

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creativity flourishes, and honour is restored to native techniques, which in turn triggers social growth (Adebayo, 2017).

Environmental Implication: Builders rely on environmental measures to reduce the energy used during construction activities. Green architecture incorporates climate-adaptive elements and natural defences to decrease negative impacts from building processes. By improving air quality and providing temperature control, green solutions contribute to the protection of occupants' well-being.

Through elements such as green roofs and sturdy insulation, the resulting structures offer longevity and reduce ozone-related harm. Introducing recycled components preserves key environmental functions while edging closer to ecosystem balance. Waste from construction is handled more efficiently, achieving energy conservation on multiple levels.

Cost-Effectiveness: Purchasing imported materials often involves high expenditure. In contrast, locally sourced building materials (LSBMs) drastically reduce overall costs since they cut down logistical and maritime fees. Projects favour these accessible resources, such as laterite or timber, due to their impact on making housing development cheaper (Ajayi et al., 2017).

From excavation to finishing, regionally acquired supplies help manage pocket expenses in the building industry. Contractors focus on price-effective choices as local availability streamlines site logistics. Construction thus moves faster and services more affordable home units without quality compromises.

Environmental Sustainability: Opting for environment-friendly building approaches makes construction more sustainable. Specifically, the low-carbon footprint linked with LSBMs benefits ecosystems by limiting emissions created from transport and manufacturing processes. Less refinement preserves energy. Biomaterials such as mud bricks, adobe, and bamboo naturally require minimal processing, aiding in carbon control (UNEP, 2019).

Furthermore, structures built with LSBMs reduce the need for manufacturing fossil-fuel-dependent alternatives. While reducing pollution, this practice establishes a gentler relationship between built spaces and nature. Architects create scalable impact simply by sourcing from nearby, instead of transporting vast materials halfway around the world.

Support for Local Economy and Job Creation: Producing and using regional materials inspires economic activities at the grassroots. Employing this strategy generates jobs in crafts such as timber work, harvesting, preparation of blocks or thatching materials. This, in turn, lifts livelihoods and reinvigorates small businesses (Agyekum et al., 2019).

As sourcing becomes more localised, the benefits become directly evident in community development. Manufactured in surrounding regions, these materials promote market growth across processing and supply-based industries alike. Reliance on outside products diminishes while economic self-reliance becomes strengthened.

Preservation of Traditional and Indigenous Architectural Practices: Building with local resources reinforces the longevity of inherited knowledge systems. Original methods such as constructing with straw, island stone, or bamboo fits neatly into regional fabric and nature itself. Passed through generations, these traditions still successfully meet today's construction objectives (Wang et al., 2020).

Builders honour cultural identity by selecting locally popular options that achieve strength, compatibility, and charm. Green development projects led by indigenous models strengthen communities amid economic and architectural training pathways, deepening people's appreciation of location-suited housing designs.

Adaptability to Local Climate and Environment: Native materials emerge naturally from the local environment and continue to respond well to climate specificities. Regions that experience hot temperatures, particularly around the equator, opt for compact earth bricks, which release heat slowly and help regulate internal comfort. Where intense moisture persists, residents might utilise durable materials such as precisely treated bamboo. Intuitively, builders cater technologies to match the thermal and climatic conditions present in their surroundings, which enhances overall structural stability.

Availability and Ease of Access: Areas equipped with plentiful LSBMs quicken building schedules owing to decreased delivery and logistic hurdles. Local sourcing allows immediate material access during necessity, cutting lead times that foreign-import developers cannot rival—with consistent availability improving planning assurance.

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Thus, building no longer waits on container shipments or complex customs screening, but advances seamlessly from beginning to brick. Speed and ease energise many practitioners to favour agricultural waste and earth blocks as productive, on-time choices.

2.4 Challenges in the use of Local Building Materials in Nigeria

Negative Perception and Low Acceptance: Many project managers, landlords, and developers in Nigeria unfortunately regard LSBMs as lacking the fine image of high-grade industrial inputs. Historically, those unfamiliar with green variations show doubts about appearance and ability. Long-held opinions combined with poor information affect contemporary opinions concerning indigenous options' strength (Ihuah and Benebo, 2014).

Although many architects forecast long-term benefits of eco choices, reputational bias encourages core reliance on once-favoured imports. Modern investors avoid LSBMs in pursuit of conventional polished alternatives, despite their affordability and green advantages.

Lack of Standardisation and Quality Control: Often, local goods remain unregulated compared to manufactured brands. Achieving reliable measurement, expected testing, or building code accreditation for these resources proves difficult. Unfortunately, this undetermined assessment criteria reduce interest in adopting substitutes for concrete towers (NBRRI, 2020).

Developers feel unsure of the lifespan and effectiveness linked to non-industrial mixes. As expected, national guidance regarding earth walling or stabilised ashes still lacks progress. Practical rules empowering equivalence barely spare engineers certainty around design safety today.

Limited Processing and Treatment Technologies: Still today, extra efforts are essential to enhance driving strength, fire security, or damp resistance if creators engage LSBMs. Most processes demand technological progression, currently inaccessible due to weak finance inputs or development support. Bamboo treated professionally resists pests alas, but unguarded, degrades easily (Mwangi and Kimani, 2020).

Laterite faces erosion risk unless efforts undergo post-excavation intensification towards more protective direction. Accordingly, poor industrial methods leave green options performing below modern tolerance levels laid down within large-sector housing requests.

Inconsistent Supply and Availability: Sourcing quality materials continues to pose difficulties in certain Nigerian districts. Material options like soft clay regions may exist extensive in east basins, whereas others showcase scarcity. Consequently, building sites experience noticeable inconsistency when relying on earthen blocks for continuous supply channels (Okeke and Nnaji, 2018).

Naturally, such shortages shift budgets and delay schedules vital in major schemes. Because uneven storage disturbs stream success, builders awaiting significant portions fallback upon popular familiar foreign commodities, redeploying phases or eliminating eco steps momentarily.

Government Policy and Regulatory Barriers: Though discussed at seminars, national systems supporting indigenous investing lag. Hosts of formal housing initiatives place harder emphasis on reinforced styles using steel rods or developed PVC. Bigger resource movement aims always support globally typical material providers like factories using heavy deposition crushers (FMWH, 2019).

What suffers haphazard pace rests upon laws omitting ecologically founded fuelling quotas. Despite predictable reduction in public emissions following green protocol reform bills, far too few parcel permits Interstate mention rewards low-carbon designs in actual permit paperwork.

Durability and Maintenance Concerns: Safety persists as a recurring concern. Earth-made houses face water impact and termites when not routinely treated. Local methods like mud walls demand upkeep from societies not previously engaged in construction precision. Additionally, visual weight sometimes decline from mildew spots during wet seasons (Ezeokoli and Okafor, 2021).

Cement-roofed compounds manage humidity anguish of boards more pow-erfully. Users thereby align personal priorities toward upkeep certainty rather than grooming knowledge of grass-secondary products or resistant detailing unknown to steel-first artists.

Limited Skilled Labour and Training: Construction sites feature newcomers wielding modern rigs, better trained but mostly in steel welding or carton framing. Most youth rising through building trades work with today's machinery. Hence, refined artisanry linked to handmade rafter

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settings, brick smoothing, and patch-adjustment falters as vocational members forget history-based guidelines (Agyekum et al., 2019).

Without champions defending classical brick codes, such slow fade eats at upward spiritual ownership levels sparked from origin-directed learning limbs. Adult teachings about symmetry responses slip further out as conveyor assembly replacement overrides skillmax factor.

Resistance to Change in the Construction Industry: Habitual comfort in specific formats leads architects and client instructions firmly onto trademark installations from big brands. Their faith rests primarily in measurable efficiency owing daily convenience trials. Hence reluctance echoes from hall to chain retail storerooms, where few agree on ditching standard composites like plaster-whites overnight (Wang et al., 2020).

Innovation fails where project mentality paralyses. Discussions drift around awareness bounds rather than ingraining merit dissemination among coordinators, lever controllers and wall assignment hierarchies. Alternative ideas pause unless same peers guide substitution systems trust-driven innovations move into fieldwork alignment tracks.

2.5 Impacts of Locally Sourced Building Materials on Residential Property Development

The use of locally sourced building materials (LSBMs) strongly influences how residential property development unfolds, especially when considering expenses, long-term value, community economics, and heritage retention. These materials not only lower costs but also support environmentally conscious practices, encouraging affordable construction in countries such as Nigeria and many other developing economies.

i. Cost Reduction and Housing Affordability: LSBMs significantly lower construction costs, making homes more reachable for a wider population. Builders save money by choosing materials like timber, laterite, bamboo, and clay bricks, which are typically sourced nearby and involve minimal transport and tariff fees (Ajayi et al., 2017).

Moreover, local sourcing eliminates many logistics and import barriers traditionally linked with foreign materials. Reduced import duties and fuel consumption lead to significant savings in property development, giving lower and middle-class families better access to homeownership opportunities across urban and rural regions.

ii. Environmental Sustainability and Reduced Carbon Footprint: The integration of LSBMs in construction supports eco-friendly building techniques and reduces dependence on heavy industrial resources like steel and cement. Options like rammed earth, compressed earth blocks (CEBs), and reclaimed timber generate fewer carbon emissions, positioning developers to meet climate goals (UNEP, 2019).

In addition, developers find benefits in bamboo and native thatch, which naturally decompose and replenish, unlike synthetic options that remain long after use. These resources require less processing yet offer durability, which improves the overall sustainability of residential properties over time.

iii. Support for Local Economy and Job Creation: Residential projects that use LSBMs create valuable job openings at various phases of development. Local miners, processors, labourers, and craftspeople such as bamboo weavers and block moulders benefit from increased hiring and income opportunities (Agyekum et al., 2019).

This surge in employment contributes to family earnings and helps small and medium-sized local businesses gain from bulk orders for homes, units, and estates. Consequently, the entire regional construction industry advances through more inclusive economic participation and stronger local networks.

iv. Preservation of Indigenous Architecture and Cultural Heritage: Investing in LSBMs makes it easier to maintain and adapt heritage-based building styles. Developers can combine modern systems with time-tested local techniques, using stonework, thatched designs, and baked-earth walls to retain both efficiency and visual identity (Okeke and Nnaji, 2018).

In particular, regions benefit when traditional forms meet present-day needs. Housing stays credible to community history while adapting necessary updates, delivering a result that honours both creativity and rooted culture construction practices refined over centuries.

v. Improved Energy Efficiency in Residential Buildings: Homes built with LSBMs generally use less artificial temperature control. These materials, including thatch roofing and mud blocks,

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insulate against both heat and cold naturally, reducing dependency on air conditioning systems and electric heaters (Ajibola et al., 2018).

Because of these natural benefits, buildings stay livable and energy-efficient, especially useful in areas with inconsistent power supplies. Ultimately, this cuts electricity bills considerably, ensuring comfort while promoting energy consciousness within the framework of economically viable house-building approaches.

vi. Reduction in Construction Waste and Resource Conservation: By incorporating reused materials like salvaged brick, repurposed timber, and recycled stone, developers reduce dumping and make use of items that would otherwise require disposal space. This minimizes the load on the environment and construction landfills (Gonçalves et al., 2020).

Notably, builders who rely on well-processed LSBMs avoid excessive leftovers. Also, maintaining raw material cycles supports site cleanliness and decreases long-term pollution risks, making modern property development more efficient without raising project expenses significantly.

vii. Enhanced Structural Adaptability to Local Climate and Environmental Conditions: Materials such as stone, laterite, and bamboo adjust naturally to local environmental situations, tolerating conditions specific to a region without weakening too quickly. Buildings utilise local strengths to fight frequent wear, particularly from heat, rainfall, and minor earth tremors (Wang et al., 2020).

Consequently, LSBMs improve durability and structural longevity, helping homes in such conditions stand firm for longer periods than their factory-made counterparts. High resilience paired with reduced maintenance spells long-term value for developers and homeowners alike.

3.0 Methodology

This study adopted a descriptive survey research design to examine the effects of locally sourced building materials (LSBMs) on residential property development in Owerri, Imo State. A mixed-method approach was employed to generate comprehensive quantitative and qualitative data from key stakeholders, including property developers, architects, engineers, contractors, material suppliers, government officials, and property buyers, with an estimated population of 2,200. A

sample size of 338 respondents was determined using the Taro Yamane formula at a 95% confidence level, and a multi-stage sampling technique involving stratified, proportionate, and simple random sampling was applied to ensure adequate representation and minimize bias. Primary data were collected using structured questionnaires with closed-ended and Likert-scale items, complemented by key informant interviews and field observations, while secondary data were sourced from relevant journals, books, and government reports. Instrument validity was ensured through expert review and a pilot test involving twenty respondents. Data collection was carried out physically and electronically over a four-week period, and the data were analyzed using mean scores on a four-point Likert scale, with mean values of 2.80 and above considered significant.

4.1 Data Presentation

A total of 372 questionnaires were distributed to respondents drawn from the various professional groups involved in residential property development in Owerri, Imo State. Out of this number, 338 questionnaires were duly completed and returned, resulting in a high response rate of 90.9%. The remaining 34 questionnaires, representing 9.1%, were not returned.

RESEACRH QUESTION ONE

How available are locally sourced building materials for residential property development in Owerri, Imo State?

Table 4.1: Mean Analysis of the Availability of LSBMs

S/N	Statement	SA	A	D	SD	Mean	Decision
1	LSBMs are readily available	127	150	40	21	3.13	S
2	Sufficient suppliers exist	106	155	50	27	3.03	S
3	Supply is consistent all year	85	125	78	50	2.66	NS

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4	LSBMs can be transported easily	120	145	53	20	3.09	S
5	Availability meets construction demand	95	135	60	48	2.84	S

The findings show that respondents generally perceive locally sourced building materials as readily available for residential property development in Owerri. High mean scores for material availability (3.13) and the existence of sufficient suppliers (3.03) indicate ease of access within the local market. Transportation was also not considered a major challenge, with a mean score of 3.09. However, the relatively lower mean for year-round supply (2.66) suggests irregular availability, likely due to seasonal variations. The mean score of 2.84 further indicates that while availability is fairly adequate, it does not always fully meet construction demand.

RESEARCH QUESTION TWO

How affordable are LSBMs compared to industrial materials?

Table 4.2: Mean Analysis of Affordability of LSBMs

S/N	Statement	SA	A	D	SD	Mean	Decision
6	LSBMs are cheaper	147	140	35	16	3.24	S
7	LSBMs reduce construction cost	142	135	40	21	3.18	S
8	Maintenance cost is affordable	115	140	60	23	3.01	S
9	LSBMs are economically viable	127	130	50	31	3.03	S
10	Affordability increases development	127	135	45	31	3.06	S

The findings indicate that respondents perceive locally sourced building materials (LSBMs) as economically beneficial. High mean scores for cost advantage (3.24) and construction cost reduction (3.18) show strong agreement that LSBMs lower project expenses. Maintenance affordability also received a positive rating (3.01), suggesting manageable long-term costs. Overall, the mean scores for economic viability (3.03) and affordability supporting development (3.06) confirm that LSBMs enhance residential development by reducing financial barriers.

RESEARCH QUESTION 3

What impact does the use of LSBMs have on the overall cost of residential property development in Owerri?

Table 4.3: Mean Analysis of Cost Impact of LSBMs

S/N	Statement	SA	A	D	SD	Mean	Decision
11	LSBMs significantly reduce total construction cost	137	140	42	19	3.19	S
12	Transportation/logistics costs are minimized	147	125	42	24	3.15	S
13	Local availability contributes to faster project completion	122	140	55	21	3.03	S
14	Reduces dependence on expensive imported materials	157	115	46	20	3.22	S
15	Developers using LSBMs achieve better profit margins	127	130	56	25	3.03	S

The findings show that respondents perceive significant cost benefits in the use of locally sourced building materials. High mean scores for reduced construction cost (3.19) and savings in transportation and logistics (3.15) indicate strong agreement on their economic advantage. Local availability was also seen to support faster project completion (3.03) and reduce reliance on expensive imported materials, which recorded the highest mean (3.22). Additionally, a mean score of 3.03 suggests that developers associate the use of LSBMs with improved profit margins.

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RESEARCH QUESTION FOUR

What are the major challenges associated with using LSBMs in Owerri?

Table 4.4: Mean Analysis of Challenges of LSBMs

S/N	Statement	SA	A	D	SD	Mean	Decision
16	LSBMs are perceived as inferior to industrial materials	147	125	45	21	3.15	S
17	Absence of standards and quality control mechanisms	160	115	38	25	3.25	S
18	Technical knowledge for using LSBMs is inadequate	140	135	43	20	3.21	S
19	Government policies do not strongly support LSBM usage	130	135	48	25	3.08	S
20	Cultural preferences discourage use of LSBMs	100	135	63	40	2.83	S

The findings indicate that several factors hinder the effective adoption of locally sourced building materials in Owerri. High mean scores show strong perceptions of inferior quality (3.15) and the absence of standards and quality control, which recorded the highest mean (3.25), undermining developers' confidence. Technical knowledge limitations (3.21) further restrict proper application, while weak government support (3.08) reflects inadequate policy and regulatory backing. Cultural preferences, though less pronounced, also influence material choice, with a mean score of 2.83.

Testing of Hypothesis

H_0: The use of locally sourced building materials has no significant impact on the cost of residential property development in Owerri, Imo State.

Table 4.3 was used to determine whether the use of LSBMs significantly influences the cost of residential property development in the study area.

4.2 Observed Frequency Table (Fo)

Table 4.8	**Table 4.8**	**Total**
137	147	284
140	125	265
42	42	84
19	24	43
338	**338**	**676**

Computation of the expected frequency table

Expected frequency = $\frac{R_t \times C_t}{G_t}$ where R_t=row total

C_t=column total

G_t= grand total

$$fe1 = \frac{338x284}{676} = 142$$

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$$fe2 = \frac{338x265}{676} = 132.5$$

$$fe3 = \frac{338x84}{676} = 42$$

$$fe4 = \frac{338x43}{676} = 21.5$$

$$fe5 = \frac{338x284}{676} = 142$$

$$fe6 = \frac{338x265}{676} = 132.5$$

$$fe7 = \frac{338x84}{676} = 42$$

$$fe8 = \frac{338x43}{676} = 21.5$$

Contingency Table

Fo	Fe	Fo-fe	$(Fo-fe)^2$	$\frac{(Fo-fe)^2}{Fe}$
137	142	-5	25	0.2
147	132.5	14.5	210.25	1.6
140	42	98	9604	228.7

125	21.5	103.5	10712.25	498.2
42	142	-100	10000	70.4
42	132.5	-90.5	8190.25	61.8
19	42	-23	529	12.6
24	21.5	2.5	6.25	0.3 ——— $\sum X^2$=873.8

Degree of freedom (DF) = (colmn-1) (row-1)

= (4-1)(2-1)=3X1=3

Level of significance 5% = 0.05

Xtab=7.815

Xcal= 873.8

Decision Rule: reject H_0 if X^2 calculated is greater than critical value, otherwise accept H_0

Therefore since X^2 calculated (873.8) is greater than X^2 table value (7.815), I reject H_0 and accept Hi which implies that the use of locally sourced building materials has a significant impact on the cost of residential property development in Owerri, Imo State.

5.1 Findings

The findings indicate that locally sourced building materials (LSBMs) are generally available for residential property development in Owerri, with respondents confirming the presence of multiple

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suppliers and relative ease of access to construction sites. However, seasonal variations and logistical challenges were reported to occasionally disrupt consistent supply. The study also revealed that LSBMs are perceived as affordable and cost-effective when compared to imported and industrial materials, owing to lower purchase prices as well as reduced transportation, labor, and maintenance costs. This affordability supports their suitability for low- and middle-income housing development. Furthermore, the use of LSBMs was found to significantly reduce overall construction costs by minimizing dependence on imported materials, lowering logistics expenses, and facilitating faster project completion, thereby improving developers' profit margins. Despite these benefits, several challenges hinder widespread adoption, including negative perceptions of quality, inadequate technical expertise, lack of standardization and quality control, weak policy support, and cultural preferences for conventional materials. These constraints underscore the need for institutional, technical, and perception-based interventions to enhance the effective utilization of LSBMs in residential development.

5.2 Conclusion

This study examined the impact of locally sourced building materials (LSBMs) on residential property development in Owerri, Imo State, with emphasis on availability, affordability, cost implications, and adoption challenges. The findings confirm that LSBMs are viable, cost-effective, and capable of reducing construction costs while improving project efficiency and developer profitability. However, their widespread adoption is constrained by irregular supply, limited technical expertise, lack of standardization, weak policy support, and negative perceptions. The study concludes that although LSBMs offer substantial economic and sustainability benefits, their full potential can only be realized through coordinated policy, institutional, and capacity-building interventions that promote their integration into mainstream residential construction.

5.3 Recommendations

Based on the findings of the study, the following recommendations are proposed:

1. Government should introduce supportive policies and incentives, such as tax reliefs and subsidies, to encourage the adoption of locally sourced building materials in residential construction.

2. Regulatory and professional bodies should establish quality standards and certification frameworks to enhance confidence in the durability and performance of locally sourced materials.
3. Capacity-building programs should be organized for construction professionals to improve technical competence in the effective use of locally sourced building materials.
4. Public awareness campaigns should be intensified to promote the economic, environmental, and cultural benefits of locally sourced building materials.

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