

Exploring the cultural significance of architectural forms and design patterns in Ogoni communities

Abstract

This study investigates the cultural landscape of Ogoni architecture, focusing on building styles, spatial layouts, design patterns, and symbolic meanings. It identifies the principal architectural features in selected Ogoni communities and examines the cultural significance of their forms and design motifs. An inductive research approach and case study design were employed, encompassing four Ogoni Local Government Areas in Rivers State: Eleme, Gokana, Khana, and Tai. One community was selected from each area: Alesa, Bodo, Bane, and Kpite. The study population included traditional leaders, chiefs, elders, Community Development Committee members, youth leaders, market union members, women leaders, craftsmen, and household members, totaling 949 stakeholders. Using the Taro Yamane formula, a sample of 281 respondents was selected, and 20 key informants were purposively chosen for interviews. Data collection methods included questionnaires, semi-structured interviews, field observations, and photographs. Quantitative data were analyzed using descriptive statistics, Relative Importance Index, correlation, regression, and SPSS version 25, while qualitative data were analyzed thematically. The findings indicate that Ogoni traditional architecture strongly expresses cultural identity, communal life, environmental adaptation, and social values. The central courtyard is identified as the most significant architectural feature, functioning as the physical and symbolic center for family interaction, conflict resolution, storytelling, and cultural transmission. Additional elements of Ogoni architectural identity include family compound layouts, circular and clustered arrangements, indigenous materials, motifs, carvings, shrines, and sacred spaces. The study further demonstrates that Ogoni architecture embodies respect for elders, family hierarchy, unity, spirituality, environmental knowledge, and ancestral continuity. Nevertheless, modernization, environmental degradation, and declining interest among younger generations threaten the persistence of these architectural traditions. The study concludes that Ogoni architecture constitutes both material and intangible cultural heritage and recommends documentation, heritage education, digital preservation, culturally sensitive housing design, and the integration of traditional architectural principles into contemporary planning.

Keywords: architectural forms, design patterns, cultural significance, traditional architecture, spatial organization, built environment, architectural symbolism

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Introduction

Architecture is more than building physical structures. It is a way for societies to express their values, identity, beliefs, and worldview. In different societies, architecture shows how communities understand their environment, organize social life, and create meaning through forms, spaces, materials, and layouts.^{1,2} In Africa, architecture is closely tied to cultural landscapes, which reflect the relationship between the environment, cultural practices, symbolic meanings, and community identity.⁴ UNESCO⁵ describes cultural landscapes as the “combined works of nature and humankind” that show how people and their environment interact over time. In Ogoni communities, these landscapes appear in local building styles, spatial organization, materials, and the meanings given to homes and shared spaces. Ogoni architecture is not just practical; it also records identity, heritage, memory, and a sense of belonging.

Culture includes the beliefs, knowledge, customs, values, education, and practices that a society develops and passes down through generations. Culture shapes many parts of life, such as art, architecture, city planning, settlement patterns, and ways of living.⁶ Architecture is a clear expression of culture because the design and layout of homes reflect the cultural expectations, social relationships,

and environment of the people who build them. A house is not just a place to live; it shows a community’s heritage, identity, and traditions.⁷⁻⁹

Architecture brings together science, technology, art, and culture to shape spaces. It shows how communities react to their environment and decide how to live. In rural areas, traditional architecture comes from practical choices based on social structure, economy, climate, materials, religion, and customs. Culture is key because it sets the rules and values for building. Emusa et al.¹⁰ note that traditional building choices are often shaped by local customs and social expectations. Gardi¹¹ and Emusa et al.¹⁰ also point out that housing reflects a society’s cultural, social, and economic values. Traditional buildings are influenced by lifestyle, available materials, local technology, and the meanings people give to spaces.

Architecture can also be seen as a social institution shaped by culture, religion, economy, environment, and politics Emusa et al.¹⁰ Its design and layout are influenced by the society it comes from. Oliver,¹² as cited in Emusa et al.,¹⁰ says that architecture shows a people’s cultural structure and social life. Buildings and settlement patterns can reveal details about family roles, social order, gender relations, community life, and beliefs. Gifford¹³ found that how

buildings are divided inside often matches the social and political complexity of a society. Researchers agree that culture is the main factor shaping architectural space, while climate, site, and resources also play a role.¹⁴

In Nigeria, traditional architecture differs among ethnic groups and regions. The Hausa and Fulani in the north, the Nupe and Gbagyi in the Guinea Savanna, the Yoruba, Ibibio, and Igbo in the rainforest, and groups like the Tiv, Jukun, and Igala in North Central Nigeria have all developed house styles that reflect their environment, culture, resources, beliefs, and social structure.¹⁰ These differences show that traditional Nigerian architecture is closely linked to ethnicity, environment, work, spirituality, and community values. However, many traditional architectural systems are not well documented, especially regarding their symbolic meanings, cultural landscapes, and spatial logic. This lack of research is also seen in studies of Ogoni architecture, where little attention has been paid to how building forms, layouts, and cultural identity are connected.

The decline of Ogoni architectural traditions has important cultural and environmental effects. It puts cultural identity at risk, weakens social ties, and leads to the loss of local knowledge about sustainable building.^{15,16} More concrete buildings and imported designs are replacing traditional forms, which separates communities from their heritage.¹⁷ If this continues, Ogoni communities may lose valuable building knowledge, symbolic meanings, traditional techniques, and eco-friendly design principles.

Given these issues, studying Ogoni architecture, its forms, spaces, and meanings, is both timely and important. Traditional architecture helps shape and show cultural identity. In communities like Ogoni, buildings are not just for shelter or looks; they also express cultural values, social ties, spiritual beliefs, and shared memories. However, modernization has led to a shift from traditional methods to modern and Western-influenced designs. This change threatens not only the survival of traditional buildings but also the ongoing practice of local knowledge, values, and heritage.¹⁸

This study aims to explore the cultural landscape of Ogoni architecture by looking at its unique building styles, layouts, design patterns, and symbolic meanings.

The study has the following objectives:

- 1) Identify the main architectural features in Ogoni communities.
- 2) Explore the symbolic and cultural meanings of forms and design patterns.

Literature review

Importance of architecture in cultural identity

Architecture is one of the clearest and most lasting ways that cultures express themselves. It is not just about physical buildings, but also about holding shared memories, values, and social ties. The built environment is more than just a place to live or work; it reflects the beliefs, tastes, and histories of the people who design and use it.¹⁹ As globalisation and urbanisation accelerate, the link between architecture and cultural identity becomes increasingly important. Communities everywhere are trying to balance new development with the preservation of their heritage and unique character. This literature review examines how architecture shapes, sustains, and transmits cultural identity across different places and times. It brings together research on how building styles, materials, layouts, and symbols show cultural values and help build strong, connected communities.

Architecture is a main way that societies record, share, and keep collective memories over time.²⁰ Historic cities and traditional settlements act like layered stories, collecting and showing history and turning buildings into symbols of shared memory. The way a city is laid out affects how people feel about belonging and continuity. When cities keep their structure and history, they help people feel more connected and strengthen urban identity.²⁰ The idea of lieux de mémoire, or sites of memory, shows how public spaces such as squares, monuments, religious buildings, and cultural centres serve as markers that hold and share history.²¹ These places are where people connect emotionally and intellectually and where buildings and traditions come together to help communities remember and rethink their past. Keeping historic buildings is important for preserving urban memory and supporting community identity, especially as cities modernise and globalise.²²

Place attachment, which means the emotional, social, and practical bonds people form with places, is a key way that architectural heritage shapes cultural identity and well-being.²³ Their studies using hierarchical linear modelling show that features of buildings and the environment account for about 15% of the variation in place attachment at the community level. Important factors include landmarks, the compactness of buildings, the tidiness of the environment, and the number of cultural landmarks.²³ Place attachment has three main parts: place identity (the meanings people give to places), place dependence (how people rely on places), and affective bonding (emotional ties to places).

Architecture expresses cultural identity through symbolic systems that operate at multiple levels: semantic, aesthetic, functional, and spiritual. Symbolism in architecture appears in the choice of materials, the organisation of spaces, decorative motifs that convey cultural values, and the building's location. Studies on how people from different cultures perceive heritage show that background shapes how visitors understand architectural symbols. For example, mainland Chinese visitors focus on collective memory and identity, and East and Southeast Asian visitors connect through structural similarities and regional ties, while European and North American visitors are drawn to aesthetics and immersive experiences. Memorial architecture shows how materials like raw concrete can represent destruction and resilience, while glass can symbolise fragility and hope, directly shaping how visitors feel and think about traumatic history. The way spaces are arranged and the use of multiple senses can improve memory; research found that spatial immersion in memorial architecture correlates with 0.68 with memory retention, suggesting that architecture helps people remember. This effect is not limited to memorials, suggesting that all architectural heritage helps maintain cultural continuity by supporting memory and emotion.

Preserving local knowledge and traditional building methods is a key but often neglected part of protecting architectural heritage. Intangible heritage, which includes construction techniques, craft skills, material knowledge, and building philosophies, is vital to a nation's cultural identity. However, it has usually received less legal recognition and support than physical monuments. In Serbia, for instance, there is a wide variety of folk architecture, but only one traditional technique—stone carving in church buildings is listed in the National Registry of Intangible Heritage. This gap shows that preserving architectural identity needs approaches that protect both the buildings themselves and the knowledge behind them.

Vernacular architecture is “the natural and traditional way in which communities have produced their own habitat,” and it is part of ongoing change and adaptation to social needs. Unlike grand

buildings made for elites, vernacular buildings come from shared community knowledge and practice. They reflect local environments, available materials, social structures, and beliefs. This type of architecture shows what scholars call the *genius loci*, or the unique character and spirit of a place, by using local resources, adapting to the natural setting, and maintaining cultural traditions. Vernacular architecture is sophisticated in meeting both practical and cultural needs. The Casbah of Algiers, a UNESCO World Heritage site, is an example of how vernacular design enhances comfort and energy efficiency through compact layouts, shaded courtyards, thick walls, and spaces for community. These passive design strategies lower the need for mechanical cooling and help build social ties. In West Java, the traditional stilt houses and layout of Kampung Naga also show how design can support both cultural preservation and environmental sustainability, in line with Sundanese ideas about harmony between people and nature.

Forms, spaces, and meanings in cultural architecture

Cultural architecture embodies more than physical construction; it represents the articulation of community identity, values, and worldviews through forms, spatial organization, and symbolic meanings. Scholars agree that in vernacular traditions, architecture functions as a cultural language where material choices, spatial patterns, and design principles are informed by social, spiritual, and ecological factors.^{12,24} However, forms in cultural architecture often reflect locally available materials, construction techniques, and environmental adaptations. For instance, in African communities, the use of mud, thatch, and timber not only responds to climatic needs but also conveys cultural expressions of durability, belonging, and tradition.²⁵ Architectural forms, such as circular huts or rectangular compounds, are not arbitrary; they symbolize continuity, unity, and order within the community.²⁶ Norberg-Schulz²⁷ emphasizes that forms embody a society's *genius loci*, or spirit of place, anchoring cultural identity in built environments.

Meanwhile, spaces in cultural architecture are socially constructed, structured to reflect hierarchies, gender roles, and collective practices. Rapoport²⁴ argues that the arrangement of domestic and communal spaces reveals much about cultural organization and values. For example, courtyards in African and Asian traditions function as multifunctional spaces: sites for cooking, rituals, and communal gatherings, signifying the centrality of collective life.²⁸ Similarly, sacred spaces such as shrines and ceremonial grounds reinforce spiritual order and mediate relationships between the material and immaterial realms.¹⁸ Lefebvre's²⁹ notion that space is socially produced further highlights how architectural space operates as a cultural construct rather than a neutral container.

In the same vein, meanings in cultural architecture emerge through symbolism, ritual, and daily practices. Ornamentation, carvings, and spatial rituals transform structures into cultural texts that communicate identity, cosmology, and collective memory.³⁰ The symbolic use of motifs, such as geometric patterns, animal figures, or ancestral imagery, encodes cultural narratives and spiritual beliefs. Similarly, spatial rituals performed during construction or use, such as libations, dances, or initiations, invest buildings with meanings that transcend mere function. In this sense, architecture serves as what Geertz³¹ calls a "cultural system," a tangible representation of a people's worldview. Collectively, forms, spaces, and meanings in cultural architecture reveal how built environments act as cultural expressions that preserve tradition while adapting to contemporary realities. They are not simply physical shelters but symbolic landscapes that organize life, sustain memory, and embody the ethos of a people.

Traditional architectural forms in Rivers State and Other Parts of Niger Delta

The architecture of Rivers State and the Niger Delta reveals how people adapt to their environments, cultures, and economies. In the mangrove swamps and wetlands of southern Nigeria, buildings are shaped by the climate, available materials, and local beliefs. Traditional architecture here is more than practical; it reflects how communities adapt to nature, organise themselves, and express their culture.^{32,33} For example, the Ijaw, one of the largest groups in the Niger Delta, live in waterlogged areas and build houses on stilts. These homes use raffia palm, bamboo, and mangrove wood, and are connected by raised walkways. The stilt houses help people cope with flooding and encourage social life, as verandas and open decks become gathering places. Ijaw compounds also include shrines to water deities, showing how spiritual beliefs and environmental adaptation are closely linked.³⁴

The Ikwerre people, who mostly live in the upland areas of Rivers State, have their own style of building. Their homes are arranged around central courtyards where families come together for rituals and social events.³⁵ They often use mud walls covered with clay and thatched roofs, though zinc roofs have become common in recent years because of modernisation. Carvings and ancestral shrines in these homes connect the architecture to cultural identity, making the space both useful and meaningful.³⁶ Other groups in the region, such as the Ekpeye, Andoni, and Ogbia, also shape their buildings to fit their environments and cultures. The Ekpeye, for instance, build family homes around courtyards for farming rituals and gatherings, and include shrines to ancestors.³⁷ The Andoni, who live near rivers, use light timber and palm materials for houses that can handle the humid, salty air, and their buildings support community life centred on fishing and rituals.³²

In Ogoni communities, traditional homes are also organised around family groups, with separate areas for daily life, rituals, and community activities. Village squares, called bari, are important places for festivals, settling disputes, and political meetings. Sacred groves and shrines reflect the community's spiritual beliefs.^{34,38} Ogoni buildings are usually rectangular with mud walls and thatched roofs, showing both practical needs and cultural meaning. Overall, the traditional architecture of Rivers State and the Niger Delta shows how people adapt to their environment, maintain family ties, and express their beliefs. These buildings are more than shelter; they hold the community's memories, spirituality, and identity.^{39,40}

Historical background of cultural values of the Ogoni people

The Ogoni people are one of the minority ethnic nationalities of Nigeria, located in the Eastern Niger Delta within present-day Rivers State. Their territory, commonly referred to as Ogoniland, comprises six kingdoms: Khana, Gokana, Tai, Eleme, Andoni, and Oyigbo -although the first four constitute the cultural core of the Ogoni.^{41,42} Geographically, Ogoniland is situated within the alluvial floodplains of the Niger Delta, marked by low-lying terrain, swampy vegetation, and extensive mangrove forests. This ecological environment has historically shaped Ogoni settlement patterns, subsistence strategies, and architectural practices.³⁸ Settlement in Ogoni communities traditionally reflects a dispersed compound system organized around kinship ties. Compounds, often referred to as *baa*, typically comprise extended family units clustered around courtyards, serving as both domestic and social spaces.⁴³ These spatial arrangements are not merely functional but embody cultural values of kinship solidarity, ancestral veneration, and communal life. Village squares (*bari*) serve

as central nodes for political deliberation, dispute resolution, festivals, and rituals, reinforcing collective identity and social order.⁴⁴

The cultural values embedded in Ogoni settlements are deeply tied to their cosmology and worldview. Ancestors occupy a central place in Ogoni cultural life, and shrines within compounds or at community edges symbolize this connection between the living and the spiritual realm.⁴¹ Similarly, land is perceived not only as an economic resource but also as a sacred heritage entrusted by forebears, reinforcing both territorial attachment and collective custodianship.³³ These values manifest in architectural expressions such as symbolic motifs on walls, the orientation of buildings toward shrines, and the ritual use of space during festivals and rites of passage.⁴⁵ Thus, the Ogoni built environment cannot be separated from its historical and cultural context. Geography shaped their dispersed rural settlements, while kinship and cosmological values informed the spatial organization and architectural symbolism of their communities. This synthesis of environment, social organization, and belief systems positions the Ogoni cultural landscape as a significant case study in understanding the intersection of architecture, identity, and cultural meaning in indigenous African contexts.

Ogoni architectural forms and design patterns

The design patterns found in Ogoni architecture reflect not only the environmental and practical needs of the people but also their cultural, social, and spiritual beliefs. These patterns are woven into the very fabric of the community's architectural heritage, where every structure, space, and layout carries symbolic meaning. The built environment of the Ogoni people embodies the interplay between geography, social organisation, and cultural cosmology. Scholars have emphasised that Ogoni architecture is not merely utilitarian but a spatial expression of social relations, religious beliefs, and cultural identity.^{41,45} Three central elements of Ogoni architectural traditions: the compound, shrine, and communal space, reflect this cultural synthesis.

Compounds (*Baa*): A main feature of Ogoni architecture is the circular layout of family compounds. These compounds are the basic unit of Ogoni settlements. They usually house extended families, with buildings arranged around a central courtyard (*baa*), which is the centre of daily and social life.⁴³ The courtyard is used for food preparation, storytelling, and passing down traditions, helping to strengthen family bonds. Compounds are composed of rectangular mud houses with thatched or corrugated-iron roofs, grouped to allow both privacy and social interaction.⁴⁶ Kpone-Tonwe⁴⁵ explains that the way space is organised in compounds shows a hierarchy: public activities happen in outer areas, while sacred and private activities take place in the inner courtyards.

Natural Materials in Construction: Ogoni buildings use natural materials like palm fronds, thatch and tibambo, which align with sustainability and respect for the environment. Each material has a specific role in construction. These materials help keep homes cool in the hot, humid climate and also represent the close relationship between the people and their environment. For example, palm fronds are used for roofing and symbolise the connection to nature and the idea that life is cyclical, similar to how palm trees grow and renew.⁴⁶ The use of these materials also shows the Ogoni people's deep knowledge of local resources and sustainable living.

Shrines and Sacred Architecture: Religious shrines are a key part of Ogoni architecture and show the link between the physical and spiritual worlds. Shrines (*ete*) are usually found within compounds or at the edges of villages and are dedicated to deities, ancestors, or natural forces such as rivers and forests.⁴⁵ Built from mud, clay,

or wood, shrines serve as sacred symbols and ritual sites. They are carefully designed to match the spiritual beliefs of the Ogoni people. The way shrines, altars, and sacred groves are arranged follows ideas of balance and harmony. Their location in compounds shows how spiritual protection and honouring ancestors are part of daily life.³⁹ Shrines are often decorated with carvings, clay figures, and ritual objects that help keep cultural traditions alive.⁴¹

Communal Spaces (*Bari*): The village square, or *bari*, is the political, cultural, and social centre of Ogoni communities. It has long served as a place for settling disputes, holding political meetings, performing initiation rites, celebrating festivals, and hosting public events.⁴⁴ The square is important not because of permanent buildings, but because it is central and open to everyone. Okaba⁴³ notes that the *Bari* support values of inclusion and group decision-making in Ogoni society. The square often links to shrines, paths, and the chief's compound, bringing together the sacred, political, and social parts of Ogoni life.³⁸

Scholars note that colonialism and modernisation have altered Ogoni architecture. New materials such as cement and zinc roofing, along with grid-style layouts, have replaced traditional compounds and shrines, leading to a decline in mud architecture.⁴³ Communal squares have also been replaced or pushed aside by churches, schools, and government buildings, showing changes in power and culture.³³ Still, the symbolic meanings in compounds, shrines, and communal spaces remain important for Ogoni identity and resilience.

Impact of modernisation and globalisation on vernacular architecture

Modernisation and globalisation have made it harder to preserve vernacular architecture, especially in communities where traditional buildings are more than just homes—they hold cultural, spiritual, and environmental significance. Rapid urban growth, lifestyle changes, tourism, climate change, and a shift toward modern building materials have all put pressure on these traditions. As a result, the cultural meanings of traditional buildings are often lost, and local construction knowledge is no longer passed down as it once was. One example is the *Trình Tường* house of the *Bồ Y* people in Vietnam. This unique earthen-walled house is more than just a place to live; it reflects cultural values, spiritual beliefs, ethnic identity, and the connection between people, nature, and their ancestors.⁴⁷ However, modernisation, climate change, and tourism are threatening this tradition. As communities adapt to new economic and environmental realities, traditional building methods are changing or being left behind. Research on *Trình Tường* houses highlights the need for policies that protect cultural identity while also encouraging sustainable tourism and climate-friendly building practices.⁴⁷

Similar concerns are evident in Nigeria, where the gradual erosion of traditional architectural practices has contributed to the marginalisation. Nigeria faces similar issues, as traditional building practices are fading, weakening cultural identity and overlooking sustainable local building methods.¹⁰ In the past, Nigerian architecture used local materials, climate-friendly designs, shared spaces, and symbolic features that reflected each ethnic group's values. Today, modernisation and urbanisation have led to more foreign styles, concrete buildings, and uniform housing that often ignore local culture and environment. Studies of Igbo, Hausa, Fulani, and Yoruba buildings show that features such as courtyards, mud bricks, decorative details, and traditional layouts can enhance cultural relevance, sustainability, and cost-effectiveness. Still, these benefits are not widely realized because of economic challenges, urban growth, negative views of traditional designs, and a lack of ways to include indigenous

architecture in modern buildings with local identity.¹⁰ In established heritage districts, interventions such as ventilated facades and external thermal insulation systems may improve energy efficiency, but they can also alter original architectural compositions, material textures, colours, and visual character.⁴⁸ The case of the Ensanche district in San Sebastián demonstrates how unprotected buildings are especially vulnerable to unsympathetic renovations that distort the identity of everyday heritage. This reflects a wider global challenge in which modern performance requirements and imported design solutions are prioritised over regional distinctiveness, cultural continuity, and architectural authenticity.⁴⁸

The goal is not to reject modernisation but to manage it in ways that protect cultural identity and encourage sustainable growth. Vernacular architecture can stay relevant if traditional designs, materials, and meanings are thoughtfully adapted for today's needs. This means having preservation policies, involving communities, setting design guidelines, using digital records, and assessing heritage buildings before making changes. Tools like digital twins, point cloud modeling, and value assessments can help renovations improve comfort and energy use without losing cultural and historical meaning. Modernisation should strike a balance between new ideas and tradition, enabling communities to grow while preserving the architecture that shapes their identity.⁴⁹

Empirical literature review

The literature highlights the crucial link between vernacular architecture, cultural heritage, and the environment, especially for Ogoni architecture. The ICOMOS⁵⁰ Charter defines vernacular buildings as cultural symbols that integrate social, environmental, and historical meanings—key to understanding Ogoni identity. Ogoni compounds and courtyards mark community identity, history, and land relationships. These spaces provide shelter and foster communal interaction, spiritual practices, and the transmission of ancestral knowledge, supporting social cohesion and cultural continuity.

The 2011 UNEP report on Ogoniland paints a troubling picture of environmental degradation caused by oil exploration, which threatens both the natural environment and cultural identity. UNEP suggests that the destruction of Ogoniland's resources, such as clay, timber, and palm fronds—essential materials for traditional Ogoni architecture—compromises the sustainability of these vernacular structures. This highlights the need for an integrated approach to preservation that combines environmental conservation with cultural heritage protection. Such a holistic approach aligns with ICOMOS's call to preserve not only built structures but also the natural landscapes that support them.

In a similar vein, Adebara³ examines traditional courtyard houses in Nigeria, showing how private open spaces, particularly courtyards, reflect cultural values. The courtyard, in this context, is more than just a functional space; it symbolises the society's social structure, gender roles, and communal values. This is consistent with Ogoni architecture, where the central courtyard serves as a symbolic space that reinforces unity, respect, and cultural identity. Just like the Nigerian courtyard houses, the Ogoni central courtyard is vital for maintaining social order and cultural traditions, reinforcing the notion that the design of these spaces carries deep cultural and social significance.

Further studies contribute to this understanding. Sugiyama et al.⁵¹ propose a methodology for assessing heritage using digital twin technology, which can be applied to Ogoni architecture for preservation interventions. This digital approach offers a modern tool for documenting and safeguarding traditional architectural forms, providing new opportunities for heritage conservation. Similarly,

Emusa et al.¹⁰ explore how traditional Nigerian architecture, particularly Igala residential architecture, has responded to modernism. Their study sheds light on the challenges traditional forms face in maintaining cultural identity amid the pressures of modern architectural trends.

MBA et al.⁵² investigate the persistence of cultural heritage in contemporary Nigerian architecture through case studies of Enugu, Kano, and Lagos. They demonstrate that while modern architecture dominates urban spaces, traditional forms still reflect local cultural values, offering insights into the integration of heritage in modern urban planning. This is crucial for understanding the balance between preserving architectural identity and embracing modernity. In a similar global context, Senderos et al.⁴⁸ examine the effects of globalisation on architecture, focusing on urban homogenisation and the erosion of local identity. Their case study of postmodern buildings in San Sebastián underscores the loss of local heritage in the face of globalisation, a challenge that also affects Ogoni architectural identity.

Finally, Viet et al.⁴⁷ explore the traditional architecture of the Bô Y people in Vietnam, emphasising how their architectural forms reflect the community's cultural identity and values. This mirrors the role of Ogoni architecture, where traditional building forms serve as expressions of identity and heritage. This comparative study underscores the universal significance of traditional architecture in embodying cultural meanings and sustaining community identity.

Together, these studies emphasise vernacular architecture's role in preserving identity and heritage. Integrating digital twins with traditional preservation practices offers a path forward for protecting Ogoni architecture and other heritage sites.

Methodology

The study adopts an inductive research approach because it seeks to understand Ogoni architecture from the lived experiences, cultural practices, and meanings of the people rather than testing an existing theory. The research is based on a case study of selected Ogoni communities in Rivers State. This design is suitable for the study because it looks at architectural forms, spatial arrangements, and cultural meanings in their real context. Both qualitative and quantitative methods are used to provide depth and measurable results. The study focuses on key stakeholders from four Ogoni Local Government Areas: Eleme, Gokana, Khana, and Tai. One community was chosen from each area: Alesa, Bodo, Bane, and Kpite. The population includes traditional leaders, chiefs, elders, CDC members, youth leaders, market union members, women leaders, craftsmen, and household members. In total, 949 stakeholders were identified.

The study uses a multi-stagesampling technique, including purposive, stratified, and proportional random sampling. The Taro Yamane formula was used to set the sample size at 281 respondents from the total of 949. Additionally, 20 key informants were chosen for qualitative interviews. Data was collected using structured questionnaires, semi-structured interviews, field observations, and photos. These tools helped gather information about building forms, spatial layouts, cultural meanings, heritage sites, environmental conditions, and the impact of modernization. To ensure validity and reliability, the study included expert reviews, supervisor assessments, pilot testing, test-retest procedures, and Cronbach's Alpha analysis. The questionnaire and interview guide were checked to make sure they matched the study's goals. Data analysis included both qualitative and quantitative methods. Qualitative data were analyzed thematically to find cultural meanings and patterns, while quantitative data were analyzed using descriptive statistics, Relative Importance Index, and SPSS version 25.

Results and discussion

Distinctive architectural forms and design patterns in Ogoni

This section analyses survey data about how respondents view the unique architectural forms and design patterns found in traditional

Ogoni settlements. The aim is to find out how much people recognize certain spatial layouts, building features, decorative details, and material choices as key parts of Ogoni architectural identity. The analysis uses mean scores and the Relative Importance Index (RII) to measure agreement and rank the items (Table 1).

Table 1 Distinctive architectural forms and design patterns in Ogoni

Item	SD (1)	D (2)	N (3)	A (4)	SA (5)	Mean	RII	Rank
Traditional Ogoni houses have distinctive structural forms like huts, mud walls, courtyards, thatched roofs, and circular or clustered layouts of compounds.	0 (0.0%)	15 (5.9%)	0 (0.0%)	135 (53.4%)	103 (40.7%)	4.35	0.87	2
The family compound layout is central to Ogoni architectural identity.	5 (2.0%)	30 (11.9%)	0 (0.0%)	112 (44.3%)	106 (41.9%)	4.12	0.82	3
The central courtyard defines traditional Ogoni residential design.	0 (0.0%)	11 (4.3%)	0 (0.0%)	120 (47.4%)	122 (48.2%)	4.44	0.89	1
Motifs and carvings are defining features of traditional Ogoni architecture	10 (4.0%)	40 (15.8%)	0 (0.0%)	117 (46.2%)	86 (34.0%)	4.06	0.81	4
Circular or clustered building arrangements are a defining feature of Ogoni compounds.	5 (2.0%)	30 (11.9%)	0 (0.0%)	112 (44.3%)	106 (41.9%)	4.12	0.82	3
Locally sourced materials (e.g., clay, timber, palm fronds) are a defining feature of Ogoni architecture	0 (0.0%)	51 (20.2%)	0 (0.0%)	103 (40.7%)	99 (39.1%)	3.99	0.8	5

Source: Field Survey, 2026

The survey shows that most respondents clearly recognise the unique spatial organisation, building styles, and materials used in Ogoni architecture. The idea that the central courtyard is key to traditional Ogoni homes ranked highest (Mean = 4.44; RII = 0.89). In total, 95.6% agreed, with 48.2% strongly agreeing and 47.4% agreeing, while only 4.3% disagreed. The second-highest-ranked statement was that traditional Ogoni houses have unique features such as huts, mud walls, courtyards, thatched roofs, and circular or clustered layouts (Mean = 4.35; RII = 0.87). Here, 94.1% agreed, with 40.7% strongly agreeing and 53.4% agreeing, while 5.9% disagreed. The idea that the family compound layout is central to Ogoni architecture ranked third (Mean = 4.12; RII = 0.82), with 86.2% agreeing (41.9% strongly agreed and 44.3% agreed) and 13.9% disagreeing. The statement that circular or clustered building layouts define Ogoni compounds also ranked third (Mean = 4.12; RII = 0.82), with the same response pattern: 86.2% agreed (41.9% strongly agreed and 44.3% agreed), and 13.9% disagreed. The idea that motifs and carvings are key features of traditional Ogoni architecture ranked fourth (Mean = 4.06; RII = 0.81), with 80.2% agreeing (34.0% strongly agreed and 46.2% agreed) and 19.8% disagreeing. The statement that using local materials like clay, timber, and palm fronds is a defining feature of Ogoni architecture ranked fifth (Mean = 3.99; RII = 0.80). Here, 79.8% agreed (39.1% strongly agreed and 40.7% agreed), while 20.2% disagreed. Overall, the results show strong agreement that Ogoni architecture stands out for its unique spatial layouts, especially the central courtyard

and compound organisation, as well as its use of local materials and decorative details.

Symbolic and cultural meanings of forms and design patterns in Ogoni

This section analyses survey data about how respondents view the symbolic and cultural meanings found in Ogoni architectural forms and design patterns. The objective is to examine how features like spatial arrangements, decorative details, and material choices relate to cultural identity, ancestral heritage, social unity, and local environmental knowledge. To measure agreement and rank each statement, descriptive statistics, including mean scores and the Relative Importance Index (RII), were used (Table 2).

The survey shows that respondents clearly recognise the cultural, social, and environmental importance of Ogoni architectural forms and design patterns. Most agreed that the central courtyard is important for strengthening family relationships, with this statement ranking highest (Mean = 4.06; RII = 0.81). In total, 96.4% agreed; 48.6% strongly agreed and 47.8% agreed, while only 3.6% disagreed. The second highest-ranked statement was that traditional building designs in Ogoni communities reflect cultural values and ancestral heritage (Mean = 3.99; RII = 0.80). About 79.8% agreed, with 39.1% strongly agreeing and 40.7% agreeing, while 20.2% disagreed. The idea that the circular or clustered layout of compounds represents

unity and shared responsibility ranked third (Mean = 3.99; RII = 0.80), with the same agreement and disagreement percentages. Decorative features such as motifs and carvings were seen as expressions of cultural identity, ranking fourth (Mean = 3.81; RII = 0.76), with 75.1% agreeing (32.0% strongly agreed and 43.1% agreed) and 24.9% disagreeing. The statement that the design of the family compound

encourages unity among household members ranked fifth (Mean = 3.77; RII = 0.75), with 73.9% agreeing (31.6% strongly agreed and 42.3% agreed) and 26.1% disagreeing. Overall, these findings show that respondents strongly associate Ogoni architectural forms and spatial arrangements with social cohesion, cultural identity, ancestral heritage, and environmental knowledge systems.

Table 2 Symbolic and cultural meanings of forms and design patterns in Ogoni

Item	SD (1)	D (2)	N (3)	A (4)	SA (5)	Mean	RII	Rank
Traditional building designs in Ogoni communities reflect cultural values and ancestral heritage.	0 (0.0%)	51 (20.2%)	0 (0.0%)	103 (40.7%)	99 (39.1%)	253	3.99	0.8
The design of the family compound promotes unity among household members.	5 (2.0%)	61 (24.1%)	0 (0.0%)	107 (42.3%)	80 (31.6%)	253	3.77	0.75
Decorative features such as motifs, and carvings express cultural identity in Ogoni architecture.	2 (0.8%)	61 (24.1%)	0 (0.0%)	109 (43.1%)	81 (32.0%)	253	3.81	0.76
The central courtyard plays an important role in strengthening family relationships.	7 (2.8%)	2 (0.8%)	0 (0.0%)	121 (47.8%)	123 (48.6%)	253	4.06	0.81
The choice of materials (mud, bamboo, raffia) conveys traditional environmental knowledge.	5 (2.0%)	61 (24.1%)	0 (0.0%)	107 (42.3%)	80 (31.6%)	253	3.77	0.75
The circular or clustered layout of compounds symbolizes unity and collective responsibility.	0 (0.0%)	51 (20.2%)	0 (0.0%)	103 (40.7%)	99 (39.1%)	253	3.99	0.8

Source: Field Survey, 2026

Interview findings

Interview findings confirm quantitative results on the cultural significance of architectural forms and design patterns in Ogoni communities. In-depth interviews with elders, community leaders, artisans, women, and youth show a shared view: traditional architecture reflects cultural identity, spirituality, and social organisation. Respondents stressed that buildings are more than functional shelters; they symbolise the community's worldview, value systems, and ancestral heritage.

Participants' findings consistently revealed that architectural forms in Ogoni communities are perceived as more than physical shelters; they are understood as living expressions of culture, identity, and spirituality. Respondents described architecture as a "visible language" through which communal values, ancestral ties, and social structures are communicated. Across interviews, there was a strong consensus that built forms reflect the Ogoni worldview and their interconnectedness with land, lineage, and the spiritual realm.

Participants emphasised the symbolic importance of the family compound as the core of Ogoni social life. The central courtyard was repeatedly described as the "heart" of the household—an open space that fosters interaction, storytelling, dispute resolution, and daily domestic activities. According to elders and community leaders, the circular or clustered arrangement of buildings around the courtyard represents unity and collective identity. This spatial configuration was interpreted as reinforcing egalitarian ideals within the family structure, where each member has a recognised place and responsibility. Thus, architecture functions not merely as spatial organisation but as a representation of communal cohesion and continuity.

One elderly male participant (Elder 1) explained:

"Our houses are not just places to sleep. They show who we are. The way the compound is arranged tells you about the family, about respect, and about our traditions."

Similarly, a female community leader (Participant 3) noted:

"When you enter an Ogoni compound, you can see unity. The courtyard brings everyone together. It is where we talk, settle issues, and teach the younger ones."

These quotes highlight the functional and symbolic importance of the family compound, especially the central courtyard, which serves as the "heart of the home." A middle-aged artisan (Participant 5) observed:

"Everything faces the middle because we believe the family must always come together. Nobody is isolated."

This arrangement was seen as expressing unity and collective identity.

Regarding building materials, interviewees stressed the cultural and environmental significance of indigenous resources. A local builder (Participant 7) stated:

"We use clay, wood, and palm fronds because that is what the land gives us. It is part of respecting the earth."

An elderly woman (Participant 9) added:

"Palm fronds do not last forever, so we replace them. It reminds us that life continues and renews itself."

These narratives suggest that construction materials are not selected solely for practicality but also for their symbolic connection to continuity, sustainability, and harmony with nature. Participants emphasised that architecture reflects a moral responsibility to maintain balance with the natural environment.

Spiritual significance emerged strongly in discussions about shrines and sacred spaces. A traditional priest (Participant 2) remarked:

“The shrine is not an ordinary building. It is where we speak to our ancestors. The place must be close to nature because that is where spirits dwell.”

Another respondent (Youth Leader, Participant 6) explained:

“The way shrines are placed at the entrance of the compound is not by accident. It shows that our land and our spirits are connected for protection and to see if any person has any evil intention while coming into the compound.”

These responses show that sacred buildings are seen as expressions of Ogoni beliefs, linking the visible and invisible. Interviewees also described how building layout shows social hierarchy and traditional roles. An elder explained:

“The oldest man’s house is usually deeper inside the compound. That position shows respect. Children stay outside because they are still learning.”

A female participant (Participant 8) added:

“Spaces are arranged according to age and gender. It teaches order and discipline in the family.”

Such spatial organisation reinforces respect for elders and clarifies generational roles, embedding social structure within the physical environment. Architecture was further described as a medium of cultural transmission. A secondary school teacher (Participant 10) stated:

“Our buildings tell stories. When a child asks why things are arranged in a certain way, we explain our history.”

However, concerns about modernisation were also raised. A youth participant (Participant 6) observed:

“Many people now prefer modern houses. If we are not careful, our children will not understand what these old designs mean.”

This shows a tension between keeping traditional architecture and adapting to modern styles. Finally, participants repeatedly mentioned communal spaces, such as meeting huts and marketplaces, as sustaining social cohesion. A community chairman said:

“In the meeting hut, everyone can speak. It is open so that no one feels excluded.”

Participants agreed that the openness and accessibility of such spaces reflect principles of inclusivity and collective decision-making.

In summary, the interview responses reveal that architectural forms and design patterns in Ogoni communities carry layered meanings: social, spiritual, environmental, and historical. Participants consistently framed architecture as a cultural text that communicates identity, preserves tradition, and reinforces communal bonds. While modernisation poses challenges, community members recognise the urgent need to preserve these architectural expressions as integral components of Ogoni cultural heritage.

Photographs play a crucial role in this research because of their importance to the subject under investigation. To effectively illustrate the architectural forms and design patterns in a traditional Ogoni settlement, pictorial evidence in figure 4.2 below was used to corroborate the findings from the questionnaire and interview (Figure 1).



Figure 1 Architectural Forms and Design Patterns in a Traditional Ogoni Settlement

Source: Field Survey, 2026

The traditional Ogoni settlement shown in the picture is organized around a communal courtyard, with architecture that reflects the community’s social life, climate adaptation, and use of locally available materials. The buildings are arranged around an open sandy courtyard, creating a central social space where people gather to meet, discuss community matters, rest, and carry out daily activities. A large tree at the center enhances this pattern, serving both as a natural shade structure and a symbolic gathering point. Most of the houses have simple rectangular forms, with walls made from mud, clay, or laterite, which help regulate the indoor temperature by keeping the interior cooler during the day. The steeply sloped thatched roofs, made from palm fronds or raffia, are designed to shed rainwater quickly, a crucial feature in the humid Niger Delta environment, while the extended roof edges provide additional shade and protect the mud walls from direct rainfall. The settlement relies heavily on natural, earth-based materials: mud walls, timber posts, thatch, wooden benches, and packed-earth floors, which blend harmoniously with the surrounding vegetation and landscape. This architectural design supports communal living, where social interaction, family ties, and collective decision-making are central. The open layout, benches, central tree, and surrounding houses all reinforce the idea of a functional, climate-responsive, and community-oriented environment deeply connected to the local materials and traditional Ogoni ways of life.

Discussion of findings

The findings indicate that traditional Ogoni architecture transcends a mere assemblage of indigenous building techniques, representing a cultural system that expresses identity, social organisation, and environmental knowledge. The convergence of quantitative and qualitative data reveals that respondents consistently associate the defining characteristics of Ogoni architecture with communal living, family cohesion, and cultural continuity. This evidence supports the perspective that vernacular architecture serves not only as physical shelter but also as a medium for preserving and transmitting community values across generations.

A principal outcome of the study is the identification of the courtyard as the central element in Ogoni residential architecture. The

courtyard serves as the social nucleus of the household, facilitating family interactions, conflict resolution, storytelling, ceremonies, and the transmission of indigenous knowledge. Interview narratives reinforce this interpretation by describing the courtyard as the “heart” of the home, illustrating how spatial organisation embodies cultural expectations of togetherness, cooperation, and shared responsibility. In contrast to many contemporary housing forms that prioritise privacy and individualism, the traditional Ogoni compound fosters collective living and ongoing social interaction.

The organisation of the family compound further exemplifies the relationship between architecture and social structure. The arrangement of buildings reflects established cultural norms concerning kinship, seniority, respect for elders, and family hierarchy. Instead of being dictated solely by functional requirements, the spatial configuration of the compound embodies social relationships and reinforces communal identity. This demonstrates that the built environment functions as a mechanism for maintaining social order and transmitting accepted behavioural patterns within the community.

Similarly, the clustered and circular arrangement of buildings reflects the communal philosophy that characterises Ogoni society. These spatial layouts promote interaction, mutual support, and collective responsibility, thereby strengthening the sense of belonging among household members. The findings are consistent with the ICOMOS Charter on the Built Vernacular Heritage (1999), which recognises vernacular architecture as an expression of cultural traditions, social practices, and collective memory rather than solely a physical form.

The study further demonstrates that indigenous building materials carry meanings that extend beyond their functional properties. While respondents more readily identified spatial characteristics than construction materials, qualitative evidence indicates that clay, timber, raffia, palm fronds, and other locally sourced materials embody ecological knowledge, sustainability, and respect for the natural environment. The continued use of these materials reflects generations of adaptation to local climatic conditions and symbolises continuity between the people and their ancestral landscape. This underscores the close relationship between vernacular architecture and environmental stewardship in Ogoni culture.

Decorative motifs, carvings, shrines, and other symbolic elements further reinforce the cultural significance of Ogoni architecture. Although these features may not be as immediately apparent as compound layouts or courtyards, they communicate essential aspects of identity, ancestry, spirituality, and collective memory. Participants described the built environment as a “visible language” through which cultural beliefs and historical experiences are conveyed. As a result, architecture functions as an educational medium that preserves traditions and reinforces shared values within the community.

The findings also reveal that spirituality is integral to traditional Ogoni architecture. The intentional placement of shrines and sacred spaces within the landscape demonstrates that the built environment reflects indigenous cosmology, linking the physical world with ancestral and spiritual realms. This supports broader interpretations of vernacular heritage that acknowledge the inseparable relationship between tangible structures and intangible cultural meanings.⁵⁰ In the Ogoni context, architecture thus embodies religious beliefs, collective memory, and cultural identity concurrently.

The integration of quantitative and qualitative findings enhances the credibility of the study. The survey establishes broad agreement

regarding the defining characteristics of Ogoni architecture, while the interviews offer deeper insights into the cultural significance of these features. This methodological complementarity demonstrates that the uniqueness of Ogoni architecture resides not only in its physical characteristics but also in the symbolic meanings associated with its spaces, materials, and spatial organisation.

The findings also underscore increasing concerns about the continuity of traditional architectural knowledge. Participants noted that a growing preference for modern housing styles among younger generations may erode the cultural meanings embedded in indigenous architecture. This trend reflects broader global challenges related to urbanisation, modernisation, and cultural homogenisation, which ICOMOS⁵⁰ identifies as significant threats to vernacular heritage. Therefore, preserving Ogoni architectural heritage necessitates more than the conservation of historic buildings; it requires systematic documentation of indigenous construction techniques, spatial principles, cultural symbolism, and the traditional knowledge that imparts meaning to these structures.

In summary, the study demonstrates that traditional Ogoni architecture encompasses both tangible and intangible cultural heritage. Its significance derives not only from its physical forms but also from its capacity to preserve social values, reinforce communal identity, transmit indigenous knowledge, and sustain cultural memory. The findings affirm that the conservation of Ogoni architecture should be approached as the preservation of a living cultural system rather than merely the protection of historic buildings.

Conclusion

This study finds that traditional Ogoni architecture is a key part of the community’s cultural identity, social structure, environmental knowledge, and spirituality. Ogoni buildings are not just old styles; they are living cultural systems that show the community’s values, history, and connection to the land. Features like the central courtyard, family compound layout, circular building patterns, use of local materials, and decorative details all make Ogoni architecture unique. The central courtyard stands out as the most significant feature, serving as both a physical and symbolic centre for family interactions, social learning, and cultural transmission. This highlights Ogoni architecture as deeply communal, fostering unity and shared responsibility within the family. The family compound layout and clustered arrangements also embody cultural values such as respect, age hierarchy, and collective responsibility, illustrating the role of architecture in teaching social order. Ogoni architecture relies on local materials such as clay, timber, and palm fronds, demonstrating respect for the land and a balance with nature. Although these materials are seen as somewhat less important than the layout of spaces, they still have strong ecological and cultural significance, especially given environmental challenges, as UNEP⁵³ points out. Decorative features like motifs, carvings, and sacred spaces are also important in Ogoni architecture. They express cultural identity and spirituality. This aligns with ICOMOS,⁵⁰ which states that vernacular heritage encompasses both the buildings themselves and the deeper meanings they convey. In the end, Ogoni architecture should be seen as both a physical and intangible heritage. Its value comes from its buildings, cultural meanings, and the knowledge and relationships it represents. However, the study points out that modernisation, environmental damage, and changing interests among young people are threats. To keep Ogoni architecture alive, it is important to protect the buildings and also to record, teach, adapt, and pass on its knowledge and values to future generations.^{54,55}

Recommendations

- 1) **Document and preserve Ogoni architectural forms:** Systematically record traditional features like compound layouts, courtyards, materials, and motifs to safeguard cultural heritage before they are lost.
- 2) **Integrate traditional architecture into urban planning:** Encourage local authorities to recognize and protect Ogoni architectural forms within modern urban development plans.
- 3) **Promote culturally sensitive housing designs:** Encourage the use of traditional elements in modern housing, balancing cultural heritage with contemporary needs.
- 4) **Link environmental conservation with heritage preservation:** Protect natural resources that support traditional materials essential for Ogoni architecture.
- 5) **Create heritage centers:** Establish spaces where traditional Ogoni architectural forms and cultural meanings can be displayed and taught.
- 6) **Adopt digital preservation tools:** Use technologies like 3D scanning and digital archives to document and preserve Ogoni architecture for future generations.
- 7) **Encourage further research:** Conduct more studies to explore Ogoni architecture, ensuring its preservation and continued relevance in the face of modernization.

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Conflicts of interest

The authors declare no conflict of interest.

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