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Identifying the Factors That Influence Traditional Igbo Residential Buildings in the South-Eastern Geopolitical Zone Of Nigeria

***Idoko, Ikenna Emmanuel; Agbonome, Peter.C.; Bons N. Obiadi; Ikenna Michael Onuorah**

Department of Architecture, Faculty of Environmental Sciences, Nnamdi Azikiwe University, Awka, Anambra state, Nigeria.

ABSTRACT
Traditional African architecture, deeply rooted in culture and heritage, faces extinction due to neglect and a lack of appreciation for its significance in the face of civilisation, globalisation and modernization. This article appraises those factors that affect and influence traditional Igbo residential architecture. A thorough review of existing literature examines the impact of various human and environmental factors on traditional architecture in Nigeria, using the South East geopolitical zone as a case study. Adopting the mixed research method, the review appraises the factors and recommends the utilization, adoption and eventual consideration of these inherent factors in the architectural designs in the South Eastern geopolitical zone. That done, the space users' comfort and the buildings' durability would be assured.

KEYWORDS:
Identifying, Factors, Influence, Traditional, Buildings, South-East, Nigeria

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I. INTRODUCTION

Primarily, architecture embodies the provision of shelter. Architecture combines art and science to design and organise spaces, embodying a community's cultural identity as it changes over time. It reflects societal values, providing a visual representation of cultural norms and evolution throughout history. According to (Ekhaese, 2011), housing is a tangible representation of a community's socio-cultural identity, reflecting the values, beliefs, and lifestyle of its inhabitants. The cultural practices and traditions of a society exert a profound influence on the design and character of its dwellings, shaping the physical form and nature of residential spaces.

Building homes, communities, and urban centres is deeply connected to satisfying intangible human needs. Izomoh (1994), in citing Sigreid (1966) averred that the evolution of architecture is shaped by the prevailing social, technological, economic, and environmental context of a region, serving as a reflection of the collective psyche, capabilities, aspirations, and values of a society at a specific point in time, providing a physical manifestation of the progress and achievements of a particular era. Nigerian Traditional Architecture has undergone a transformative journey, evolving from simple structures with wooden frames, thatched roofs, and leafy walls to more robust buildings with mud, wood, and thatch materials. This progression has not only enhanced the physical structure but also expanded the functional scope, incorporating spaces for social and cultural activities within homes and their surroundings, reflecting the growing needs and values of the community (Izomoh,1994). Traditional architecture, stemming from rural heritage, arises from practical choices shaped by social, economic, environmental, and religious influences, reflecting the cultural context in which it evolves. It is common knowledge that the fabrics of traditional architecture are gradually disappearing owing to civilization. To that end, the factors propelling their existence and uniqueness must be studied. This research is aimed at appraising the factors that influence traditional Igbo residential buildings in the South-Eastern geopolitical zone of Nigeria.

II. LITERATURE REVIEW

According to Population of Cities (2024), the South-Eastern geopolitical zone is a distinct geographic and political region in Nigeria. It encompasses five states: Abia, Anambra, Ebonyi, Enugu, and Imo, as shown in Figure 1, which collectively form the country's inland southeastern area. The South-East zone is surrounded by the River Niger to the west, the Niger Delta to the south, the North Central region to the north, and the Cross River to the east, and features a diverse geography, with forest ecosystems in the south and a mix of forests and grasslands in the north. This region is also home to the Igbo people, who make up the majority of the population

and have a rich cultural heritage, with the zone being considered the traditional homeland of the Igbo, known as Igboland. It measures 29,388 km^2 (11,347 sq mi) in landmass.

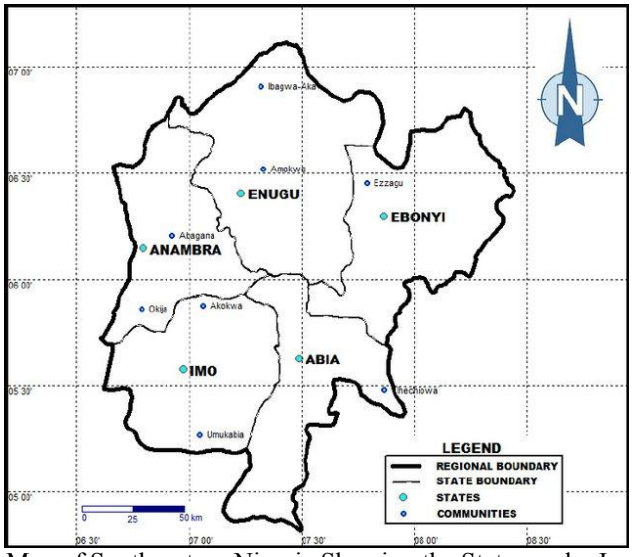

Figure 1: Map of Southeastern Nigeria Showing the States under Investigation
Source: Okonkwo (2014). Retrieved, July 2024.

Gelman (2011) stated that all politics are local. There, Gelman suggests that the term "local" in politics refers to the importance of local connections and skills for politicians to win primary elections and maintain their seats. However, he also notes that politics has become less localized over time, citing data from elections since 1968. This implies that national and broader political trends and forces have increasingly influenced local politics, making it less focused on purely local issues and more connected to statewide and national agendas. Similarly, Professor Dmochowski perceived Architecture as a "technical activity by poets". Poetry, he explained, has the kind of value that perishes when translated into a foreign language. True Architecture, like poetry, cannot be copied from foreign patterns. It must grow out of its own root, expressed in its own language. He also believed in the purity of traditional creation, in its poetry and its relevance. To this end, every piece of architecture is unique and has to be tied, constructed and appreciated according to the dictates of its locality.

The Igbo people organized their settlements into villages and townships, which can be categorized into three types: simple, complex, and compound villages. Simple villages were small, independent units with a single origin. Complex villages, on the other hand, consisted of multiple semi-autonomous units with different origins. Compound villages were made up of multiple units that traced their origin to a single ancestor, but maintained some level of autonomy. This hierarchical structure reflects the Igbo people's emphasis on community, kinship, and shared heritage (Izomoh,1994). Progressively, as the number of families grew, the villages transformed from a linear structure along the main road to a clustering pattern, driven by the importance of close family ties in Igbo culture. This shift reflected the community's values of kinship and proximity, as families sought to live close to one another, fostering a sense of unity and togetherness.

Ikudayisi (2020), citing Denyer (1979), stated that there are numerous impressive examples of traditional architecture throughout Africa's diverse geographical regions, showcasing the continent's rich cultural heritage and architectural innovation. Some examples of remarkable traditional African architecture include the pyramids of Giza (Egypt), Great Zimbabwe (Zimbabwe), Hausa City Walls (Nigeria), Axumite Empire ruins (Ethiopia), and Zulu Kraals (South Africa). These structures demonstrate the ingenuity and craftsmanship of African builders and architects, often using local materials and techniques to create functional and aesthetically pleasing spaces.

Just as Obama (2006) said, "When I decided to run for the United States Senate, I wasn't so sure of myself". The scarcity of knowledge on African Traditional Architecture, lack of assuredness and uncertainty of information is amplified by the fact that architectural history and theory have conventionally prioritized the study of iconic landmarks and their historical roots, hence, overlooking the significance of everyday building traditions and perpetuating a void in understanding and recognition of Indigenous architectural heritage such as those in Sub-Saharan Africa. As stated by (Adeyemi, 2008), besides fragmented accounts from early European explorers and missionaries, there is a scarcity of comprehensive information on African Traditional Architecture. The prevailing assumption that Africans resided in disorganized, isolated settlements, lacking appreciation for aesthetic town planning, may have hindered in-depth exploration and documentation of indigenous African architectural heritage, leading to a significant knowledge gap in this field.

AN OVERVIEW OF THE TRADITIONAL HOUSE FORMS IN THE SOUTH-EAST

In response to the discomfort caused by rain, cold winds, and high temperatures, people sought to create shelters to protect themselves. Using available materials like mud, wood, sticks, rope, and thatch, they constructed buildings that took on various forms, including rectangular structures with pitched or flat roofs and circular ones with conical roofs, ultimately shaping the architectural landscape (Izomoh, 1994). In the Igbo region of Southeast Nigeria, homes are typically arranged within a secure, walled compound, featuring a single-entry point with a covered porch. For added protection, some compounds are fortified with defensive features integrated into the walls or fencing. As noted by Dmochowski (1990), certain compounds also boast impressive, multi-story structures known as Obuna Enu, which serve as semi-defensive strongholds, often rising two or three stories high. The compounds, varying in shape and size, were typically enclosed by mud walls averaging 1.6 meters high or fencing made of sticks and thatch. Most compounds had a single entrance with a porch, and their sizes differed greatly. Wealthier individuals, including titled men like chiefs, clan leaders, and kings, had larger compounds with at least three housing units, while less privileged individuals had smaller compounds with one or two units. The size and grandeur of a compound reflected the social status and wealth of its occupants.

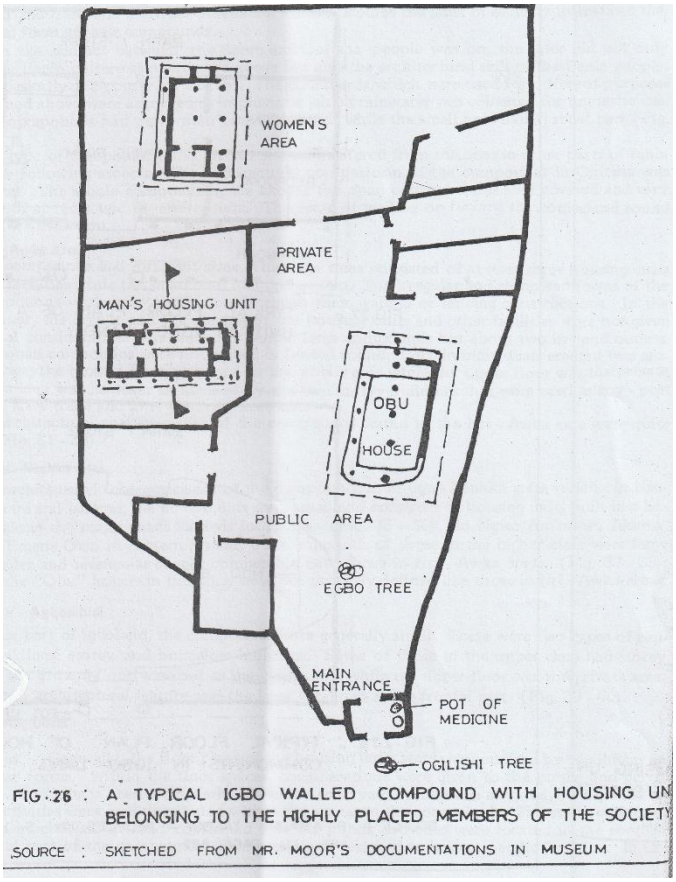

Figure 2: schematic drawing of a typical traditional Igbo residence
Source: Izomoh (1994). Retrieved, July 2024.

Additionally, (Eze and Zubairu, 2018) stated that Igbo compounds are also distinguished by the following features: buildings are constructed facing each other, creating a shared courtyard, rather than having internal courtyards. Additionally, there are separate structures for meetings and shrines. Traditional Igbo homes typically consist of one or two rooms, with men's and women's quarters separated, and children's quarters grouped. In agreement with the views held by (Eze and Zubairu, 2018) on the distinguishing features of a typical Igbo compound, (Rikko and Gwatau,2011) added that the construction materials used in Igbo land such as mud, hardwood, palm leaves, midribs, bush twines, and pawpaw trunks, were used to build drains for the traditional impluvium water tank.

Traditionally, in the layout of large compounds, the Igbo people carefully considered the distinction between private and public spaces, just as shown in figure 2. The public area, spanning from the compound entrance to the "Obu house", featured a central courtyard where specific trees, "Ogilisi" and "Egbo", were planted. These trees held cultural significance, with "Ogilisi" representing the patriarch of the family and "Egbo" symbolizing the supreme god, "Chukwu". During worship and ceremonies, family members and guests would

gather in this open area, seated around the trees, emphasizing the importance of community and spiritual connection. The compound entrance porch served as a gateway between the inner compound and outer neighboring areas and also hosted protective medicine pots. Visitors would often be invited to sprinkle water from these pots upon themselves, symbolizing the washing away of malevolent energies and signifying their good intentions. The "Obu house" was a public space within the compound, where the head of the household would receive guests, host family gatherings, and engage in leisure activities with family members, fostering a sense of community and connection.

As averred by Rapport (1969), and supported by Kazeem et al (2021), people build their shelters based on four essential conditions. These conditions are namely:

a) Climate
b) Material
c) Technology
d) Socio-Cultural
e) Economy

This is in line with the views held by the Vitruvian triad, where Vitruvius stated that every piece of architecture must satisfy the need for *utilitas, venustas and firmitas*, translating to utility, aesthetics and durability. Much as this stands, various factors see to the distinctive and unique architectural scape a people adopts. Aptly, Gardi (1973), stated that in traditional architecture, the building process is guided by established customs and traditions, which predetermine design decisions, materials, and construction methods, reflecting the community's cultural heritage and values, and resulting in structures that embody the collective identity and history of the people. A person's cultural background plays a dominant role in shaping the design and organization of their homes, which become a physical embodiment of their social and cultural identity, reflecting their values, beliefs, and traditions Olotuah (1997). Architecture is a fusion of science and art, designing and organizing spaces that embody a community's cultural identity and evolve with time. It serves as a mirror reflecting societal values and norms throughout history. Building homes, communities, and cities is deeply connected to satisfying intangible human needs, such as comfort, belonging, and expression, which are essential to human well-being and quality of life.

III. FINDINGS AND DISCUSSIONS

The world is comprised of people from vast traditional and cultural linen. The traditional linens give rise to varying traditional backgrounds which of course are engineered by various factors. According to Adeyemi (2008), A society's traditional architecture serves as a reflection of its cultural and social identity, offering insights into its values and beliefs. Buildings must be evaluated within their specific geographical, social, and cultural context. It's essential to approach architectural criticism with sensitivity, avoiding value judgments when unfamiliar with the cultural background and historical context. It has been identified that some factors influence the traditional Igbo residential buildings. These factors include:

I. Climatic Factor
II. Building/Construction Material Factor
III. Technological Factor
IV. Socio-Cultural Factor
V. Economic Factor

I. Climatic Factor

In tropical regions, the intense solar radiation due to high water vapour content and cloud cover significantly impacts the indoor thermal environment. This excessive radiation enters buildings through openings like windows, heating internal surfaces and contributing to thermal discomfort, via direct radiation and the absorption properties of building materials (Kamarul and Lilwati, 2005).

As posited by Manewa; Siriwardena; Ross; and Madanayake (2016) that the built environment faces a multitude of challenges, spanning various aspects and scales, as it strives to address diverse needs, balance competing demands, and adapt to evolving circumstances. The southeast region's warm and humid climate, marked by heavy rainfall and high temperatures, led to the development of a unique housing culture focused on maximizing protection and comfort. One architectural approach was the design of the "Obu" house, which intentionally omitted perimeter walls on one or two sides to embrace natural ventilation and illumination, providing a refreshing living space that harmonizes with the environment. Human identity is manifested not only through art, but also through architecture, as various civilizations and ethnic groups have developed unique architectural styles that reflect their cultural values, beliefs, and traditions, creating a built environment that serves as a tangible representation of their identity, evolving and leaving a lasting legacy of their cultural heritage (Shayan, 2011).

Importantly, these approaches that were intentionally and unintentionally adopted in the construction of these traditional Igbo residential buildings aided in maintaining air temperatures, relative humidity, mean radiant temperature, air velocity, metabolic rate, and clothing insulation.

II. Building/Construction Material Factor

The Igbo Traditional Building Materials

In traditional Igbo architecture, the primary purpose of housing was to meet the fundamental human needs of shelter, security, and comfort. The design and construction of homes varied across different societies, reflecting unique cultural and societal influences. The planning and building of homes followed specific patterns and forms that were shaped by local customs, available materials, and environmental factors, resulting in diverse and adaptive architectural expressions (Eze and Zubairu, 2018). Traditional architecture, stemming from rural traditions, arises from practical choices shaped by a combination of social, economic, environmental, and religious influences, reflecting the cultural context and resourcefulness of the community, and adapted to the local climate, available materials, and spiritual beliefs. Okoye and Ukanwa (2019) posited that Igbo traditional architecture is characterized by the use of locally sourced materials and techniques, with indigenous builders opting for practical resources readily available in their surroundings, such as vegetation and soil, to construct their buildings. This approach reflects a resourceful and sustainable approach to building, leveraging materials readily at hand to create functional and durable structures. According to (Alozie, 2020), Igbo traditional architecture exhibits a rich diversity in the design of compounds and buildings, which is a direct result of the wide range of materials used for constructing walls and roofs, leading to a unique and varied built environment that reflects the creative adaptation of local resources. In a similar view, (Jagadish, 2013) stated that Igbo traditional architecture unfolds from the village level, radiating to the compound level, and further to individual buildings, ultimately culminating in the careful selection and utilization of specific building materials, showcasing a holistic and integrated approach to architectural design. These materials include:

Mud:

Chukwu (2015) opined that the exact timeline of mud usage in Igboland is uncertain, but it's important to recognize that this activity is deeply rooted in the traditional uses of mud in the region. Mud played a vital role in two significant areas: house construction and pottery production, making it an integral part of Igbo culture and daily life. This can be seen in the Plate 1 below.

Plate 1: Pictorial View of mud used in the construction of walls.
Source: Author's fieldwork; May, 2024.

Igbo builders traditionally use mud as their main building material, applying it not only as a structural element but also as a finishing touch. This versatile material, composed of clay, sand, and silt, serves as a fundamental component in constructing and completing buildings, offering a practical and sustainable solution for creating durable and comfortable homes. According to Crampton (2017), mud is a mixture of water and fine-grained earth materials, such as soil, that has a smooth and sticky consistency. The term "mud" only applies when the mixture has a specific texture, neither too thin nor too thick, with a slimy or sticky feel. The ratio of water to soil and the soil's composition determines the final texture, making mud a useful material in various contexts.

Bamboo:

Bamboo stands out as a highly renewable resource due to its remarkable growth rate, making it the fastest-growing grass on the planet. Although it resembles a tree with its woody stem, bamboo is a type of grass that shares many characteristics with trees, such as its strength, durability, and versatility, making it an incredibly valuable resource with a wide range of applications.

Plate 2: Pictorial View of bamboo used as roof members.
Source: Author's fieldwork; May 2024.

In Igbo land, real bamboo sticks (Bambusa and Osytenanthu species, both male and female) are abundant and play a crucial role in traditional architecture.

As shown in Plate 2 above, bamboo is used to construct roof rafters, wattle for walls and ceilings, and other structural elements. Igbo buildings typically feature round walls and thatched hip roofs (aju or atani) or gable roofs. The roofing process involves weaving a framework from bamboo poles or sliced bamboo, followed by layering palm fronds between the rows. The rafters are then tied or knotted at strategic points to create a robust and weather-resistant roof. This traditional building technique showcases the ingenuity and resourcefulness of Igbo architecture.

Thatch:

For generations, the Igbo people have trusted thatch roofing, primarily made from straw-derived grass and Raffia palm leaflets, with ata and aju grasses being the most commonly used. Pitch roofs are the prevailing design, and their construction involves two techniques: one where horizontal ofolo sticks or bamboo form a gable end, covered with straw or palm fronds, and a more intricate method where rectangular mats are woven from palm frond leaves, providing a more durable and superior roofing solution. The use of thatch as a roofing sheet could be shown in Plate 3 below.

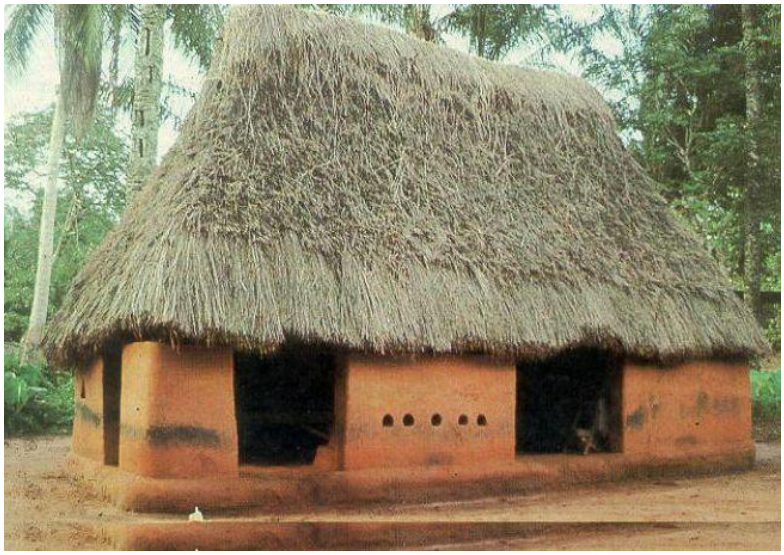

Plate 3: Pictorial View of thatch used as a roofing material. Source: Igbo Architecture | Ulo omé n'Ìgbò - Culture - Nigeria (pinterest.ca). Retrieved July 2024.

Wood:

Processed wood for construction is referred to as lumber or timber, while wood can also mean firewood or the raw material itself. Although woods are universally similar, they have different names and classifications in various regions, including Nigeria. Due to the Western world's economic influence, many woodlands worldwide have adopted Western classifications and market names. In Igbo land, various kinds of wood are commonly used, including mahogany, afara (white and black), iroko, ukpi, ubili (from palm and coconut), opepe, uku (used in door framing), walnut, cedar, avizia, obeche, ciebe (akpu), and inyi. The effective use of wood as a building/construction material could be seen in Plate 4 below.

Plate 4: Pictorial View of wood used in the construction of posts for the kitchen and the outdoor sheds. Source: Author's fieldwork; May 2024.

Fasteners:

A fastener is a device or material used to hold or join things together, such as nails, screws, bolts, clips, ties, or strings. In the context of traditional Igbo building techniques, akwala and ekwele served as fasteners, securing the structures without the need for modern metal fasteners. Traditional Igbo builders did not use nails to join building components together. Instead, they employed various types of cords and strings, such as akwala (derived from raffia palm) and ekwele (from palm fronds), to tie and secure the structures, showcasing their resourcefulness and innovative use of locally available materials.

Animal Skins:

In traditional Igbo culture, animal hides were widely used for various purposes, including decorating furniture and covering floors. According to Nwosu (1997), animal skins were also used to make clothing, footwear, and other practical items. Moreover, the use of animal skins as wall coverings or upholstery was a status symbol,

reflecting wealth and prestige in Igbo society, and showcasing the value placed on luxury and elegance. As noted by Eke (2017), animal skins were employed as a symbol of socioeconomic status and a means of distinguishing oneself from others based on social class. The ownership and display of these items served as a status symbol, signifying that a household was wealthy and affluent, thereby reinforcing social hierarchies and distinctions.

III. Technological Factor

Adeyemi (2008) stated that the creative vision of architects is brought to life through technology, which converts conceptual designs into physical buildings. Throughout history, pioneering architects have harnessed innovative technologies and novel spatial ideas to create landmark structures that showcase the synergy between design and technological advancements. This buttresses what Dmochowski (1984) held in the preface of his Corpus on the Indigenous Architecture of major groups in Nigeria. There, he viewed architecture as a creative process that combines technical skill with artistic expression, much like poetry. He emphasized that genuine architecture, like poetry, is deeply rooted in its cultural context and cannot be simply replicated by external influences. Instead, it must organically emerge from its own unique heritage, expressed in its own distinct voice. He championed the importance of preserving traditional creative practices, honouring their poetic essence, and respecting their cultural relevance. In other words, all the construction methods and the technology behind them must be in synch and agreement with such locality. Every imported technology has to be tested and proven to be efficacious.

IV. Socio-Cultural Factor

Inyiama (2014) defined culture as the unique character of a society, encompassing the shared experiences, values, traditions, and practices that define a community, including the knowledge, beliefs, customs, and skills that are exclusive to its members and shape their way of life. Anthropologists and scholars define culture as the collective behaviours, practices, and beliefs valued, cherished, and preserved because they are deemed essential and meaningful to a society's existence, shaping their identity and influencing their way of life. In the words of (Sanchez, Bartel and Blount, 2009), cultural background shapes individual perceptions and assessments of social interactions, and this diversity is reflected in the traditional building styles that once showcased the unique lifestyle, values, and cultural legacy of various nations. However, this rich cultural heritage has given way to modern housing developments, marking a significant shift away from traditional construction methods and cultural expression.

Similarly, Kalilu (1997) stated that architecture is the physical manifestation of a society's mental constructs, with regional building styles and systems shaped by their unique cultural context. A region's buildings' architectural form and design, including the humble house, are considered a tangible representation of a community's cultural legacy, encapsulating its values, beliefs, and history. The traditional housing setting fosters a vibrant socio-cultural atmosphere, where the open and welcoming design encourages communal activities like moonlight gatherings, storytelling, and other cultural practices. The cultural identity of a community, which is deeply rooted in its way of life, is deeply embedded in traditional housing, making it a distinctive reflection of its environmental and cultural heritage.

An important view held by Shayan (2011) stated that the notion that architecture mirrors culture continues to be a captivating concept, driving conversations and motivating architects to rediscover their cultural heritage. Human identity is expressed not just through art, but also through architecture, with various civilizations and ethnic groups creating unique architectural styles that reflect their cultural values and beliefs across different historical periods. This cultural expression through architecture serves as a testament to the diversity and richness of human experience, making it a vital aspect of our shared cultural heritage. Notably, as held by (Denyer, 1979; Dmochowski, 1990; Osasona, 2008; Shahack-Gross, Marshall, Ryan, & Weiner, 2004), in Africa, while geographical conditions, building materials, construction techniques, and social structures play a role in shaping housing patterns, cultural factors have a profound impact. In rural societies, cultural influences such as occupation, family heritage, religious practices, economic activities, and political hierarchies intersect and combine to shape housing patterns, reflecting the community's values, beliefs, and way of life. These cultural factors are paramount in determining the design, layout, and organization of homes and villages, making African architecture a unique reflection of the continent's rich cultural diversity.

V. Economic factor:

The Igbo people were a resourceful and skilled community, excelling in various pursuits such as farming, trading, and craftsmanship. Their agricultural endeavours focused on crops like yams, cocoyam, maize, cassava, and diverse vegetables. Additionally, they engaged in the production and trade of palm products, which they sold to communities along the Niger and Anambra Rivers, extending into present-day Benue State. The Igbo people demonstrated remarkable economic ingenuity, honing their expertise in bronze-casting and ironworking. They skilfully crafted essential tools like cutlasses, hoes, and spears, as well as pottery, with a history dating back to the

9th century AD. Furthermore, they excelled in intricate wood and ivory carvings, artwork, and body painting, showcasing their creative prowess and aesthetic sensibilities.

The economic pursuits and time periods of the people significantly impacted the evolution of their traditional architecture. House construction typically took place between harvest and planting seasons, fostering a collaborative spirit among self-help groups. Moreover, the technical expertise demonstrated in their ironworking, such as crafting cutlasses and hoes, and their moulding techniques, enabled them to effectively source building materials from the forest and develop construction methods that showcased their skill and ingenuity.

IV. CONCLUSION AND RECOMMENDATIONS

This study takes a holistic view of identifying the factors that influence traditional Igbo residential buildings. In Nigeria, where traditional building practices have been largely supplanted by foreign architectural styles and materials, it is essential to ongoing research and documentation of the interplay between traditional culture and architecture, to preserve the country's cultural heritage and architectural identity.

As creators of the built environment, architects should adopt a holistic approach, considering not only the individual building design but also the broader social and infrastructural context. They should strive to harmonize their buildings with the existing infrastructure, ensuring a cohesive and functional relationship between the built environment and the surrounding social and physical amenities.

Importantly, architects should incorporate elements of cultural preservation into their designs by drawing inspiration from traditional building patterns and forms, blending them with modern and contemporary styles. By doing so, architecture can serve as a cultural bridge, harmoniously merging a community's values, beliefs, and worldview with innovative design, thereby preserving cultural heritage for future generations.

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