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ASSESSMENT OF INDIGENOUS KNOWLEDGE ON HOUSING CONSTRUCTIONS IN AKURE SOUTH, NIGERIA

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Abstract
The study shows that indigenous housing construction is intricately intertwined with cultural values, identity, and meanings to reinforce a sense of belonging within the community. Moreover, it also shows that knowledge extends beyond mere technical know-how to a holistic understanding of the environment, the cultural symbolism of architectural forms, and the social cohesion that arises from shared building practices. These collaborative endeavors strengthen social bonds, reinforce a sense of mutual support, and promote intergenerational knowledge transfer. The study epitomizes the capacity of indigenous knowledge to evolve and respond to the changing needs of communities as a result of modernization over time. Hence, the study examined the growing threat to indigenous housing practices due to rapid urbanization and modernization, using a mixed-method approach. The study employed a multi-stage random sampling technique to determine sample size. Unstructured interviews through interview guides were adopted in the qualitative phase. The study concludes that indigenous housing construction techniques are valued for maintaining cultural identity and promoting sustainability.

Keywords: Indigenous knowledge, Housing constructions, Urbanization, Architectural heritage, Traditional materials.

Introduction

Traditional building materials and construction methods are frequently tailored to the specific climatic and environmental conditions of the region. Mud houses in Southwest Nigeria feature thick walls that effectively insulate against heat and rain. Straw roofs are also designed to shed water and provide insulation (Oluwatayo et al., 2019). These practices have evolved over generations as a result of intimate knowledge of local ecosystems, climate patterns, and available resources. The use of locally sourced building materials, such as mud, thatch, or bamboo, exemplifies this harmonious relationship with the natural world (Berkes, 1999). Moreover, indigenous builders have developed techniques that minimize environmental impact. In regions prone to flooding or earthquakes, indigenous dwellings often incorporate elevated or flexible foundations to withstand natural disasters. Furthermore, the use of organic and renewable building materials, such as bamboo or thatch, demonstrates a deep commitment to sustainability. These materials have a smaller ecological footprint compared to more resource-intensive modern alternatives, aligning with indigenous values of stewardship and responsible resource management (Colding et al., 2001). Traditional knowledge about local flora and fauna informs building practices, ensuring minimal disruption to ecosystems and the sustainable use of resources (Gadgil, 1998). However, these traditional practices face a growing threat due to the rapid urbanization and modernization sweeping across the globe (Fagbenle et al., 2015). As urban centers expand and modern building materials and techniques become more readily available, there is a risk that the unique indigenous knowledge of architectural designs, building materials, and construction techniques will gradually erode or be

marginalized (Turner, 2014). Furthermore, as indigenous housing practices are intrinsically linked to the sustainability and resilience of local communities (Berkes. et al., 2000), the potential loss of these practices poses a multifaceted problem. An assessment of indigenous knowledge is therefore crucial in understanding indigenous housing construction practices, materials, and innovations. Such indigenous housing knowledge that is embedded within communities is a valuable resource that can inform the development of context-appropriate, affordable and sustainable housing models. This is pertinent in Akure South Local Government Area of Ondo State, Nigeria, where indigenous knowledge continues to hold relevance in contemporary housing construction. Gaps in the literature identified the limited research on indigenous housing knowledge in the Akure South context. Hence, an appraisal of indigenous knowledge systems can provide insights into their current application in Akure South for housing design, materials, and techniques. The assessment can reveal indigenous knowledge's importance, viability, and potential integration into formal housing development policies and programs. Hence, this study intends to assess the impact of indigenous knowledge on housing constructions in Akure South, Nigeria.

Theoretical Underpinnings

Indigenous Knowledge

Indigenous knowledge is a body of knowledge and skills that has been built up over generations by indigenous peoples. It benefits housing construction in the world as a result of global knowledge of the stakeholders in the housing construction industry. It is based on a deep understanding of the natural world and the relationships between people and their environment. Indigenous knowledge is often passed down orally from generation to generation, and it is an important part of indigenous culture and identity (Smith, 2012). Indigenous knowledge is an important natural resource that can facilitate the development process of any nation in cost-effective, participatory, and sustainable ways (Hansen and Erbaugh, 1987). According to Dei (1993), indigenous knowledge includes the cultural traditions, values, beliefs, and worldviews of local peoples as distinguished from Western scientific knowledge. Such local knowledge is the product of indigenous people's direct experience of the workings of nature and its relationship with the social world. Warren (1991) further stated that indigenous knowledge is local knowledge, knowledge that is unique to a given culture or society.

Indigenous knowledge is particularly significant in housing construction, as it provides valuable insights into sustainable and environmentally friendly building practices (Fagbenle, et al., 2015) More often than not, indigenous communities in Southwest Nigeria have developed a tradition of constructing mud houses with thick walls that effectively insulate against heat and rain, demonstrating their deep understanding of local climatic conditions (Fagbenle et al., 2015). Indeed, the International Indigenous Forum on Biodiversity (2003) pointed out that indigenous knowledge is the essence of the identities and worldview of indigenous peoples. It constitutes the collective heritage and patrimony of indigenous people. Therefore, it is priceless.

Indigenous Housing Construction

Indigenous housing construction embodies a deep respect for the natural world, utilizing locally sourced materials and minimizing environmental impact. Mud bricks, a prevalent material in many indigenous communities, offer energy-efficient construction, reducing the carbon footprint associated with the manufacturing and transportation of materials (Kivisto, 2014). Indigenous housing construction practices in Nigeria not only demonstrate a deep understanding of the local environment but also embody a profound connection to cultural heritage. The use of traditional materials, such as mudbrick, thatch, and wood, reflects the deep-rooted connection to the land and the preservation of traditional skills. Abdullahi (2020) highlights the cultural significance of indigenous housing, emphasizing its role in preserving cultural identity and transmitting traditional knowledge between generations.

In the architectural heritage of indigenous construction, courtyard houses stand as exemplary embodiments of a seamless fusion between functionality and aesthetics. Akinwumi (2017) articulates the intrinsic qualities of these dwellings, constructed with meticulous consideration for the Nigerian climate, employing innovative design principles that prioritize both environmental adaptation and cultural significance. Central to the

courtyard house architectural design is the concept of a central courtyard, around which the entire dwelling is meticulously organized. This design facilitates not only a spatial arrangement that provides optimal privacy for the inhabitants but also serves as a nexus for ventilation, natural light, and communal interactions. The courtyard becomes a multifunctional space, acting as the heart of the home where daily activities unfold and community bonds are nurtured. The architectural prowess of the courtyard houses extends beyond its aesthetic appeal, incorporating elements that address the unique climatic conditions of Nigeria. Akinwumi, further underscores the astute use of natural ventilation strategies, ensuring a continuous flow of fresh air throughout the dwelling. This design feature becomes particularly crucial in the Nigerian climate, contributing to a comfortable and well-ventilated living environment. Additionally, passive solar design principles are embedded within the structure, allowing for the harnessing of solar energy for temperature regulation and reducing dependency on external energy sources.

A study by Gadgil and Berkes (1991) delved into the indigenous housing practices of arid climates shedding light on their sustainable construction methods. This research provides valuable insights into the architectural traditions and environmental wisdom employed in indigenous construction, showcasing a harmonious relationship between housing practices and the local ecosystem. Indigenous housing use of locally available materials, such as mud brick and reeds, underscores their resourcefulness and adaptability to climate. Mud brick, a traditional building material, offers natural insulation, helping to regulate indoor temperatures in response to the region's climatic challenges. The incorporation of reeds further exemplifies their utilization of materials in ways that are both practical and environmentally sensitive. Central to indigenous housing design, are principles that prioritize passive solar cooling, natural ventilation, and rainwater harvesting. These design elements are attuned to the specific climatic conditions and environment. Passive solar cooling techniques leverage the sun's energy for temperature regulation, reducing the reliance on external energy sources. Natural ventilation strategies enhance airflow, providing a cooling effect and improving indoor comfort. Rainwater harvesting reflects the indigenous people's ability to adapt to water scarcity by maximizing the use of available resources sustainably. The study's findings highlight the indigenous people's profound understanding of their local environment and the integration of this knowledge into their housing practices. Such indigenous knowledge not only addresses immediate needs for shelter but also contributes to the broader goals of sustainability and resilience in the face of environmental challenges. The research serves as a noteworthy example of how traditional societies, through centuries of experience, have developed architectural solutions that are not only culturally significant but also environmentally sustainable. This knowledge is a valuable resource for contemporary discussions on sustainable architecture and the potential integration of traditional wisdom into modern construction practices.

Methodology

A survey research design was employed in this study on the target population which comprises all indigenous communities in Akure South Local Government Area that utilize traditional techniques and materials for housing construction. From these, a sample size was derived through a multi-stage sampling technique on the 11 districts that comprise the Akure South Local Government Area. In the first stage, 5 districts (which is > 45% of the total district area) will be randomly selected from the list of all indigenous communities that practice traditional housing construction in Akure South. In the second stage, 120 households (> the threshold for quantitative survey according to Onwuegbuzie and Johnson (2004) either 64 participants for a one-tailed test or 82 participants for a two-tailed test is the minimum required sample size) that utilize indigenous building materials and techniques will be systematically sampled from the selected communities, with 24 households selected from each community. Additionally, 10 indigenous builders/architects (> the threshold value of 14, with expertise in traditional construction practices from the study area) were selected for interviews to obtain qualitative insights. Indeed, according to Guest, Bunce, and Johnson (2006), a minimum of 12 participants is the required sample size for the qualitative phase. The survey instrument is a structured questionnaire to obtain data from the respondents. This was administered to the 120 sampled household heads to gather quantitative data

on socioeconomic characteristics, housing conditions, indigenous materials, and techniques utilized. The interview was unconstructed and open-ended. In each case, a respondent was allowed to give in response to a question. The Statistical Package for the Social Sciences (SPSS) software, version 22, was employed for quantitative data analysis, enabling us to conduct both descriptive and inferential statistical tests to examine the relationships between indigenous knowledge and housing construction. The DocTool was used to analyze the qualitative response to the interview.

Results and Discussion

The respondent sample contained more females than males, allowing for insights across genders (Table 1). However, most respondents were young adults in their 20s and 30s, presenting limitations in capturing perspectives from older community members. Educational levels were high overall, with a majority having achieved tertiary qualifications. This supports stronger analytical capabilities among respondents to thoughtfully assess survey questions. In terms of livelihoods, many respondents were students and self-employed in small enterprises, indicating decent employment and entrepreneurship opportunities. Household incomes presented a polarization between lower-earning households and those with moderately higher incomes, pointing to simultaneous economic vulnerability as well as reasonable wealth creation within the community.

Table 1: Gender of respondents

Gender	Frequency	Percentage (%)
Male	55	42.3
Female	75	57.7
Total	130	100.0

Cement bricks have become the predominant wall construction material, displacing more traditional organic materials like mud, earth, and wood. This likely signals the perception that cement confers greater durability and strength, compared to sustainability. A slight majority of houses were built by local tradesmen, evidencing continuity in indigenous building knowledge and skills. A significant portion were also self-built by owners and families, highlighting the accessibility of vernacular construction methods for community self-reliance. In terms of building ages, many houses were either constructed amidst modernization pressures in the past 10-25 years, or recently built within the past decade subject to modern planning regulations (Table 2). Both periods reveal impacts on integrating traditional materials and designs. Satisfaction with housing quality showed ambiguity, with only some residents expressing clear satisfaction, versus other's direct dissatisfaction, and many neutral outlooks. Access to locally sourced materials was viewed positively by over a third and unchanged by over a third, indicating reasonably favorable sentiment overall.

Table 2: Age of buildings in the community

Age of Buildings	Frequency	Percentage %
Less than 10 years	35	26.9
10-25 years	63	48.5
Over 25 years	32	24.6
Total	129	100.0

Indigenous building techniques were confirmed as still extensively used by some, showing knowledge retention, but also acknowledged as rarely applied anymore by others, indicating vulnerability (Table 3). Knowledge acquisition remained strong through intergenerational transfer in families and direct on-site learning, affirming traditional modes of dissemination. Most respondents believed indigenous architectural designs and motifs maintain importance, valuing cultural identity and continuity. However, perspectives on the advantages of indigenous versus modern techniques were mixed, with some recognizing unique benefits but others unconvinced of relevance beyond antiquity. Similarly, while most supported greater efforts to actively safeguard indigenous building knowledge as intangible heritage, some opposed this.

Table 3: Indigenous technique practice in the community

Indigenous Technique Practice	Frequency	Table N %
Yes, extensively used	44	33.8
Yes but declining	42	32.31
Rarely used anymore	41	31.5
No longer used	3	2.3
Total	**130**	**100.0**

Major risks raised regarding indigenous building knowledge continuity included loss of specialized practitioners, preferences shifting to modern industrial materials, and constrained access to traditional natural construction resources (Table 4).

Table 4: Challenges facing the continuation of indigenous housing knowledge in the community

Challenges	Frequency	Percentage (%)
Lack of access to traditional materials	22	16.9
Lack of skilled indigenous builders	53	40.8
Preference for modern materials	46	35.4
No major challenges	9	6.9
Total	130	100.0

Table 5: Incorporation of indigenous features choice into new housing

Choice of Indigenous features	Frequency	Percentage (%)
Yes	95	73.1
Maybe	30	23.1
No	5	3.8
Total	130	100.0

Youth interest in learning was polarized, with some observing disinterest among younger generations while others noted strong enthusiasm. Government policies were viewed as largely inadequate in supporting indigenous building capacity. Most advocated integrating relevant indigenous concepts into architecture and construction curriculums, but some uncertainty and opposition gaps exist (Table 4a-d).

Key integration areas were identified as direct skills transfer, materials and techniques, and abstract design principles. The greatest emphasis was placed on propagating technical knowledge rather than symbolic cultural aspects. A strong desire was expressed by most to thoughtfully incorporate indigenous architectural features into new housing (Table 5), blending past and present. Complementary hybridization of indigenous and modern techniques was recognized by many, enabling selective incorporation. Most also supported formal accreditation of indigenous builders to establish heritage-based livelihood microenterprises and legitimize these skills. Greater usage of indigenous techniques was widely advocated, positioning them as specialized place-based solutions versus antiquities.

Conclusion

The study highlights the potential benefits of integrating indigenous knowledge into modern construction. Traditional materials, such as mudbrick and thatched roofs, offer sustainability advantages, reducing reliance on energy-intensive manufacturing and transportation of modern materials. Indigenous design principles, such as passive solar design and natural ventilation, can further enhance energy efficiency and reduce reliance on mechanical systems. Beyond sustainability, integrating indigenous knowledge fosters cultural sensitivity and community engagement. Traditional architectural designs and material choices reflect the cultural identity and values of communities. By incorporating these elements into modern housing, we can create dwellings that resonate with the cultural heritage of the people who will inhabit them. Additionally, involving community members in the planning and design process ensures that their needs and preferences are considered, fostering a sense of ownership and pride in their homes. The study advocates for the integration of indigenous housing knowledge into modern construction practices, emphasizing its potential to enhance sustainability, cultural sensitivity, and community engagement. By embracing traditional wisdom and adapting it to contemporary needs, we can create housing solutions that are not only structurally sound but also culturally meaningful, environmentally responsible, and socially equitable.

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