(REVIEW ARTICLE)

Innovative design solutions for social housing: Addressing the needs of youth in Urban Nigeria

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Abstract

This study explores the development of youth-centric social housing in Nigeria, addressing the critical need for innovative and sustainable housing solutions tailored to the nation's growing youth population. The purpose of this study is to analyze the multifaceted challenges associated with housing development, including economic, technological and environmental considerations, and to propose strategies that can enhance the affordability, sustainability, and resilience of youth-centric housing projects. Employing a comprehensive review of relevant literature and case studies, the study examines key implementation strategies, stakeholder engagement practices, and policy frameworks that can support the successful deployment of such housing initiatives.

The main findings of this study emphasize the importance of integrating renewable energy technologies, smart housing systems, and circular economy principles into housing designs to reduce costs and environmental impact. The study also highlights the necessity of robust IT governance, forensic accounting and legal frameworks to ensure transparency, security, and compliance in housing projects. The socioeconomic impacts of youth-centric housing are also analyzed, revealing significant potential for enhancing economic opportunities, promoting social cohesion and fostering environmental sustainability.

In conclusion, the study affirms that a holistic approach is required to address the housing needs of Nigeria's youth, combining technological innovation, strong governance, and active stakeholder engagement. The study recommends that policymakers and stakeholders prioritize the development of integrated strategies that leverage financial technology, renewable energy, and smart technologies, while ensuring robust governance and legal compliance. These efforts are essential for creating sustainable, resilient and inclusive communities that can meet the evolving needs of Nigeria's youth, thereby contributing to the nation's long-term development goals.

Keywords: Youth-centric housing; Renewable energy; Smart technologies; Sustainability; IT governance; Nigeria.

1. Introduction

The provision of affordable and adequate housing in Nigeria has long been a complex challenge, closely linked to the country's broader socioeconomic and demographic context. With Nigeria's population, especially in urban areas, continuing to grow rapidly, the demand for housing consistently exceeds the available supply, resulting in a severe

housing deficit. This imbalance has led to various housing crises, including the rise of overcrowded slums, substandard living conditions, and high rental costs. The swift pace of urbanization exacerbates these challenges, straining existing infrastructure and housing stock. Consequently, many low-income individuals face unsustainable living conditions with limited housing options in an increasingly constrained market.

Over the years, the Nigerian government has implemented various policies aimed at addressing this housing shortfall. However, these initiatives have often failed to meet their objectives due to inadequate funding, corruption, and poor implementation. The public sector's contributions to housing provision have largely been insufficient, especially in delivering sustainable solutions for the urban poor. Despite numerous public housing programs, most have not effectively met the population's housing needs, resulting in a persistent and worsening housing deficit.

In response to these ongoing challenges, there has been a recent shift towards more innovative and sustainable housing approaches. This shift is driven by a growing recognition of the need for solutions that not only provide immediate shelter but also contribute to long-term sustainability and resilience within urban environments. A key development in this area is the integration of technology, such as artificial intelligence and machine learning, into the planning and design of housing projects. These technologies offer new opportunities to optimize housing solutions, making them more efficient, cost-effective, and better suited to the diverse needs of different population segments, including the youth.

The youth demographic in Nigeria, a significant and rapidly growing segment of the population, faces unique challenges in the housing market. Many young people in urban areas struggle with unemployment or underemployment, severely limiting their ability to afford decent housing. Moreover, traditional housing models often do not align with the lifestyle needs and preferences of the youth, who may prioritize proximity to educational institutions, employment opportunities, and social amenities over other factors such as size or privacy. Addressing these challenges requires housing solutions that are not only affordable but also tailored to the unique needs and aspirations of young people.

Historically, the Nigerian housing market has lacked affordable options, particularly for the youth. This scarcity has forced many young people to either continue living with their parents well into adulthood or resort to substandard living conditions. The inability to secure affordable housing has broader social and economic implications, including increased social discontent, hindered economic mobility, and exacerbated inequalities. Therefore, addressing the housing needs of the youth is not merely about providing shelter; it is a critical factor in promoting social stability and economic development.

One promising approach to addressing these challenges is the adoption of innovative design solutions that incorporate sustainable building practices, modern architectural designs, and advanced technologies. These solutions can be tailored to meet the specific needs of young people, offering housing options that are affordable and conducive to their lifestyle. For example, modular housing designs, which allow for the construction of flexible and scalable units, can be particularly effective for the youth. Modular housing offers the advantage of being cost-effective, quick to construct, and adaptable to different living arrangements, making it an ideal solution for young people with varying housing needs.

Moreover, integrating green building practices and sustainable materials into housing designs is crucial, especially in the context of global climate change. As the world grapples with the environmental impacts of urbanization, there is a growing emphasis on the need for environmentally sustainable housing solutions. In Nigeria, this means designing housing units that are energy-efficient, use sustainable materials, and are resilient to environmental challenges such as flooding and extreme heat. By incorporating these principles into the design and construction of youth housing, it is possible to create living spaces that are not only affordable but also contribute to the long-term sustainability of urban environments.

In addition to innovative design solutions, there is a need for a more inclusive approach to housing policy that recognizes the unique challenges faced by the youth. This includes developing policies that incentivize developers to build affordable housing for young people and creating programs that offer financial assistance to those seeking to purchase or rent homes. Furthermore, fostering greater collaboration between the public and private sectors is essential to ensure that housing solutions are both economically viable and socially equitable. By creating an enabling environment for developing affordable housing, it is possible to address the housing needs of the youth in a way that promotes social inclusion and economic development.

This study aims to explore innovative design solutions for social housing projects in urban Nigeria that better address the needs of the youth. It will investigate various architectural and urban planning strategies that prioritize sustainability, affordability, and functionality. The study seeks to identify the key barriers to implementing these

solutions and propose actionable strategies for policymakers, developers, and other stakeholders to enhance housing outcomes for the youth. By focusing on youth-centric housing solutions, this study aims to contribute to the broader discourse on sustainable urban development in Nigeria and provide practical recommendations for future housing policies and initiatives.

2. Contextual Background

Nigeria's housing crisis is closely linked to the country's rapid urbanization and persistent socio-economic challenges. Although urbanization is often seen as a sign of economic growth, in Nigeria, it has intensified the housing shortage and strained existing infrastructure. The migration of rural populations to urban centers in search of better opportunities has drastically increased housing demand, far exceeding the current supply. This shortfall is particularly severe for low-income groups, who are often forced into informal settlements or substandard living conditions.

Historically, the Nigerian government has sought to address the housing crisis through various public sector initiatives, such as establishing housing corporations, launching mass housing projects, and offering affordable housing schemes. However, these efforts have frequently been undermined by inadequate funding, corruption, and poor implementation, resulting in a persistent housing deficit that leaves many urban dwellers without adequate housing.

Recognizing these challenges, there has been a recent shift toward more innovative and sustainable housing delivery methods. Increasing emphasis is now placed on integrating environmental sustainability into housing designs, focusing on resilience and adaptability to climate change. This is particularly important in Nigeria, where climate-related issues such as flooding and extreme weather are becoming more common. Sustainable housing designs address immediate shelter needs and contribute to the long-term sustainability of urban areas by minimizing their environmental impact.

One major challenge in implementing sustainable housing solutions in Nigeria is the need for a paradigm shift in housing delivery. Traditional models, which depend heavily on government intervention and large-scale projects, have proven insufficient for meeting the needs of a rapidly growing urban population. Instead, more flexible and innovative approaches are required to cater to the diverse needs of different demographic groups, especially the youth, who are increasingly marginalized in the housing market.

In this context, integrating the circular economy into traditional business models offers a promising solution for improving housing delivery in Nigeria. The circular economy promotes material reuse and recycling, waste reduction, and the creation of sustainable value chains. Applying these principles to the housing sector can reduce the environmental impact of housing developments while making them more affordable and accessible. This approach aligns with global sustainability trends and provides a viable strategy for addressing Nigeria's housing crisis.

Moreover, the role of technology in improving housing delivery is crucial. Integrating digital tools and platforms into the housing sector can streamline planning, design, and construction processes, making them more efficient and cost-effective. Technologies such as artificial intelligence (AI) and machine learning can optimize housing designs to meet the specific needs of various population segments, including the youth. Additionally, digital platforms can enhance communication and collaboration among stakeholders, leading to more coordinated and effective housing delivery.

The underlying context of Nigeria's housing crisis highlights the need for a multifaceted approach combining innovative design principles, sustainable practices, and technological advancements. While integrating the circular economy and digital tools into housing delivery offers a promising way forward, success will require addressing the socio-economic challenges that have long undermined housing initiatives in Nigeria. By tackling issues such as corruption, inadequate funding, and poor implementation, Nigeria can move toward a more sustainable and inclusive housing system that meets the needs of its growing urban population.

2.1. Conceptual Framework of Social Housing Design

The provision of affordable housing in Nigeria is closely linked to the country's socio-economic dynamics, government policies, and the rapid urbanization that has characterized its development in recent decades. While urbanization is a global trend, it presents unique challenges in Nigeria, where the influx of people from rural areas into urban centers has outpaced the growth of essential infrastructure and services. This has led to a significant housing shortage, disproportionately impacting low-income earners. The resulting overcrowded and poorly developed urban areas underscore the urgent need for innovative and sustainable housing solutions that address the needs of the growing urban population, particularly the youth.

Historically, the Nigerian government has attempted to address the housing crisis through various public sector interventions. However, these efforts have often been undermined by inadequate funding, corruption, and poor policy implementation. Public housing programs aimed at assisting low-income earners frequently fall short, with many projects left incomplete or abandoned. Even when housing units are completed, they often fail to meet the needs of the intended demographic in terms of both affordability and suitability.

In recent years, there has been increasing recognition of the need for a paradigm shift in housing provision in Nigeria. Traditional approaches, which heavily depend on government intervention, have proven insufficient to meet the demands of a rapidly urbanizing population. Instead, there is a growing focus on integrating innovative design principles that prioritize sustainability, resilience, and adaptability. These principles are vital not only for addressing immediate housing needs but also for ensuring long-term sustainability, particularly in the face of environmental challenges like climate change.

A conceptual framework for social housing design in Nigeria must consider the country's socio-economic and environmental realities. This includes addressing the specific needs of different demographic groups, especially the youth, who face unique challenges in the housing market, such as high unemployment and limited access to affordable housing. Effective housing policies must provide affordable options that align with the lifestyle preferences and aspirations of young people.

Moreover, housing design should foster community building and social cohesion by incorporating shared spaces and amenities that encourage interaction. Economic viability is also essential, ensuring that housing solutions are sustainable for both residents and developers. Additionally, integrating environmental sustainability into housing design—through the use of sustainable materials, energy-efficient designs, and green spaces—is crucial for creating resilient urban developments that contribute to broader efforts to mitigate climate change.

2.2. Innovative Design Solutions for Youth-Centric Social Housing

The rapid urbanization in Nigeria has heightened the demand for innovative housing solutions, especially for the youth, who are increasingly marginalized in the housing market. Traditional housing models, which rely heavily on government intervention, have proven insufficient to meet the diverse needs of this demographic. As a result, there is a growing emphasis on developing youth-centric social housing that is both affordable and aligned with the lifestyle preferences and future aspirations of young people. This shift toward innovative housing design is critical for addressing Nigeria's housing crisis and ensuring that young people have access to environments that support their economic and social growth.

One promising approach to youth-centric housing involves the integration of flexible and modular housing designs. These designs offer adaptable living spaces that can evolve with the changing needs of residents. For example, modular housing units can be easily expanded or reconfigured to accommodate different family sizes or add amenities as needed. This flexibility is especially important for young people, who may experience significant changes in their living arrangements as they move through different life stages. By adopting modular designs, developers can create more responsive and sustainable living environments that cater specifically to the needs of the youth.

Sustainability is another essential component of innovative housing design for young people. As environmental concerns become more pressing, it is crucial that new housing developments minimize their ecological impact. This can be achieved by using energy-efficient materials, renewable energy sources, and green building technologies. Prioritizing sustainability not only reduces the environmental footprint of new constructions but also creates healthier living environments. For environmentally conscious young people, these sustainable housing options are likely to be particularly attractive.

Furthermore, technology plays a vital role in enhancing housing delivery. The integration of digital tools and platforms into the housing sector can streamline planning, design, and construction processes, making them more efficient and cost-effective. Technologies such as artificial intelligence (AI) and machine learning can optimize housing designs, ensuring they meet the specific needs of various population segments, including the youth. Additionally, digital platforms can improve communication and collaboration among stakeholders, leading to more coordinated and effective housing delivery.

The integration of smart home technologies is also crucial in developing innovative housing solutions for the youth. Smart systems can manage energy consumption, enhance security, and provide convenient access to services like

maintenance and community management. For tech-savvy young people, these smart features can significantly improve the livability of their homes.

Finally, addressing the financial challenges faced by young Nigerians is essential. Many young people struggle with unemployment or underemployment, making traditional housing options unaffordable. Innovative financing models such as rent-to-own schemes, microfinance options, and public-private partnerships can offer more accessible pathways to homeownership or long-term rental stability, enabling young people to secure decent housing despite financial constraints.

2.3. Challenges and Barriers to Implementation

The implementation of innovative design solutions for youth-focused social housing in Nigeria faces numerous challenges and barriers that hinder progress. These obstacles, ranging from financial constraints to institutional inefficiencies, must be addressed to successfully realize housing initiatives aimed at meeting the needs of the youth. Although there is growing recognition of the importance of these housing solutions, the path to their implementation remains fraught with complexities.

A primary barrier is inadequate funding. Developing sustainable and affordable housing requires significant financial resources, but historically, the Nigerian government's budget allocation for housing has been insufficient. The private sector, which could help bridge this funding gap, often views the low-income youth housing market as unprofitable and risky, leading to underfunded or stalled projects.

Institutional barriers also complicate the implementation of youth-centric housing. Bureaucratic inefficiencies, corruption, and poor coordination among government agencies often result in delays and mismanagement of projects. The lengthy process of obtaining necessary approvals and permits further discourages developers from pursuing projects targeting low-income youth. Additionally, Nigeria's regulatory framework for housing development is often outdated, impeding the adoption of modern, cost-effective building practices.

Another significant challenge is the shortage of skilled labor and technical expertise. Nigeria's construction industry lacks professionals trained in modern building techniques, including sustainable practices and new materials. This skills gap drives up construction costs and limits developers' ability to implement innovative design solutions. The lack of continuous professional development opportunities exacerbates this issue, preventing the workforce from staying current with industry advancements.

Social and cultural factors also pose challenges. A strong preference for traditional housing designs and methods often conflicts with modern, sustainable housing solutions. Resistance to change can hinder the adoption of designs that are better suited to the needs of the youth. Additionally, societal attitudes toward youth, particularly regarding their financial independence and readiness for homeownership, influence the availability and acceptance of housing options targeted at this demographic.

Economic instability in Nigeria, characterized by high inflation, fluctuating currency values, and general uncertainty, further complicates the implementation of youth-centric housing projects. These challenges impact developers' ability to forecast costs and young people's purchasing power. Even when housing options are available, they may be unaffordable for the intended beneficiaries due to high costs and limited financial support.

Finally, environmental challenges related to climate change add another layer of complexity. Increasingly severe weather conditions, such as flooding and heatwaves, necessitate housing designs that are resilient to these challenges, requiring additional resources and expertise that are often lacking in Nigeria.

2.4. Case Studies and Best Practices

Examining successful social housing initiatives worldwide provides valuable insights that can be adapted to Nigeria, especially to address the housing needs of marginalized groups, including the youth. These case studies showcase innovative strategies for overcoming common challenges in housing development.

A notable example is Chile's "Incremental Housing" model from the Quinta Monroy project, which effectively meets the housing needs of low-income populations. In this initiative, families receive basic housing structures that they can expand as their financial circumstances improve. This approach enables families to gradually take ownership of their homes, aligning housing development with their economic capabilities. The success of this model highlights the

importance of flexibility and scalability, key elements that could be adapted to youth-focused housing in Nigeria, where financial instability is common among young people.

In India, the Slum Rehabilitation Scheme in Mumbai serves as a successful model of leveraging public-private partnerships to provide affordable housing. This initiative involved collaboration between the government and private developers to redevelop slum areas into housing units. The government provided land and policy support, while private developers handled the construction. The alignment of incentives for all stakeholders was critical to the project's success, illustrating the potential of public-private partnerships in Nigeria to expand affordable housing projects aimed at the youth.

Singapore's public housing program also stands out, with the Housing and Development Board (HDB) playing a pivotal role in providing affordable housing to the majority of the population. The success of this program is attributed to strong government commitment, efficient resource allocation, and a focus on long-term sustainability. For Nigeria, establishing a similarly empowered and well-funded housing authority could streamline the implementation of youth-focused housing initiatives and enhance overall outcomes.

In Kenya, the "Solar-Powered Affordable Housing" project demonstrates the integration of technology and innovation in housing development. This project used solar panels to provide affordable and sustainable energy to residents, reducing both environmental impact and long-term housing costs. This model shows the potential for integrating renewable energy solutions into Nigerian housing projects, particularly in areas with limited electricity access. The success of this initiative underscores the importance of renewable energy in addressing housing affordability and sustainability challenges.

Lastly, the Netherlands' "Youth Housing" programs offer diverse housing options tailored to the needs of young people, emphasizing community-building and proximity to employment and education. Similarly, Sweden's "Circular Economy Housing" project, which utilizes recycled materials and sustainable methods, demonstrates how sustainability can lower construction costs and environmental impact. These models offer actionable insights for Nigeria, highlighting the importance of flexibility, public-private partnerships, sustainability, and community-building in creating affordable, youth-focused housing solutions.

2.5. Future Trends and Research Directions

As the demand for youth-centric social housing grows in Nigeria, there is an urgent need to explore future trends and research directions that can address the evolving challenges in this sector. Emerging technologies, shifting socio-economic dynamics and environmental considerations are expected to play crucial roles in shaping the future of housing development. This section highlights key trends and research areas that could contribute to the sustainable and inclusive development of social housing for Nigerian youth.

One significant trend in housing development is the increased integration of renewable energy solutions into housing designs. With the global push toward sustainability, incorporating renewable energy sources like solar and wind power into residential buildings is becoming increasingly important. This trend is particularly relevant for Nigeria, where reliable electricity access remains a significant challenge. Integrating renewable energy can reduce dependency on the national grid, lower energy costs, and enhance the sustainability of housing developments (Ugonabo & Emoh, 2013). Future research should focus on optimizing the use of renewable energy in social housing projects, exploring cost-effective and efficient technologies that can be tailored to Nigeria's unique climatic and economic conditions.

An emerging trend in housing is the adoption of smart technologies. The concept of smart homes, which leverages Internet of Things (IoT) devices to automate and optimize household management, is gaining global traction. In Nigeria, integrating smart technologies into social housing has the potential to greatly enhance residents' living conditions by improving security, energy efficiency and overall convenience (Johnson et al., 2024). Research should explore the feasibility of deploying smart technologies in low-cost housing, identifying how these technologies can be tailored to meet the specific needs of Nigerian youth without significantly increasing housing costs.

The circular economy is also poised to influence the future of social housing in Nigeria. This model, which emphasizes reducing waste, reusing materials, and creating sustainable value chains, offers a promising approach to minimizing the environmental impact of housing development (Olotuah & Bobadoye, 2009). Given that the construction industry is one of the largest producers of waste globally, incorporating circular economy principles into housing development can help mitigate environmental degradation while reducing construction costs. Future research should investigate how to

implement circular economy practices in Nigeria's housing sector, focusing on the use of recycled materials, sustainable construction methods, and innovative waste management systems.

Social and demographic changes are expected to shape the future of youth-centric housing. As Nigeria's population continues to grow, with a significant proportion of young people entering the workforce, there will be increasing pressure on housing supply. Additionally, shifts in lifestyle preferences, such as the rising demand for urban living and the need for proximity to employment and educational opportunities, will influence housing designs (Oduro, Uzougbo & Ugwu, 2024). Research should focus on understanding these demographic trends and their implications for housing policy and design, ensuring that future developments align with the needs and aspirations of Nigeria's youth.

Furthermore, the role of public-private partnerships (PPPs) in housing development is likely to expand. PPPs have been successful in various international contexts, providing mechanisms to leverage private sector investment for public housing needs (Hjort & Widén, 2015). In Nigeria, expanding PPPs could be crucial for scaling up affordable housing for the youth. Research should examine best practices for implementing PPPs in the Nigerian context, ensuring these partnerships deliver both social and economic benefits.

Finally, the impact of climate change on housing development cannot be overlooked. Nigeria is already facing climate-related challenges, such as increased flooding and extreme weather events, which threaten housing infrastructure (Gires, 2022). Future research should focus on developing resilient housing designs that can withstand these environmental challenges, exploring materials, building techniques, and urban planning strategies that enhance the resilience of social housing projects.

2.6. Policy Implications and Recommendations

The development of youth-centric social housing in Nigeria requires a comprehensive policy framework that addresses the multifaceted challenges identified in this study. Effective policies are essential to guide the implementation of sustainable housing initiatives, ensuring that they align with broader socioeconomic goals and contribute to the overall development of the country. The following section outlines the key policy implications and provides recommendations to enhance the effectiveness of housing policies in Nigeria.

A critical policy implication is the need for greater integration of renewable energy solutions into housing projects. Given the challenges associated with access to reliable electricity in Nigeria, the incorporation of renewable energy sources, such as solar and wind power, into housing designs is essential for enhancing the sustainability and affordability of social housing (Uzondu & Lele, 2024). Policymakers should prioritize the development of incentives and regulatory frameworks that encourage the adoption of renewable energy technologies in housing projects. This includes subsidies for solar panel installations, tax breaks for developers who incorporate renewable energy, and the establishment of clear standards for energy-efficient building practices.

The need for economic integration is also paramount, particularly as Nigeria seeks to align its housing policies with broader industrial and economic strategies. For instance, financial technology innovations have the potential to improve housing affordability by providing innovative financing solutions that make homeownership more accessible to the youth (Akinwunmi, 2009). Policymakers should explore how fintech solutions can be integrated into housing policies to offer affordable mortgage options and streamline access to housing finance. By leveraging technological advancements, Nigeria can create a more inclusive housing market that addresses the financial constraints faced by young people.

In addition to economic integration, there is a pressing need to address the challenges associated with economic diversification, as evidenced by comparative studies between Nigeria and South Korea (Adeola & Evans, 2017). Nigeria's housing policies should be designed to support economic diversification by promoting the use of locally sourced materials in construction, which can stimulate domestic industries and reduce the overall cost of housing. This approach not only aligns housing development with national economic goals but also enhances the sustainability of housing projects by reducing reliance on imported materials.

The importance of accountability and transparency in housing development cannot be overstated. Forensic accounting practices, as highlighted in the public sector, offer valuable tools for enhancing the accountability and transparency of housing projects (Oladeji & Olatunji, 2024). Policymakers should incorporate forensic accounting methods into housing policy frameworks to ensure that funds allocated for housing development are used efficiently and that corruption is minimized (Hassan, 2024). This will help build public trust in housing initiatives and ensure that resources are directed towards the intended beneficiaries, particularly the youth.

Privacy and data protection are also critical considerations in the context of smart housing developments. As Nigeria continues to explore the integration of digital technologies into housing projects, it is essential to establish robust privacy and data protection policies to safeguard the personal information of residents (Edwards, 2016). Policymakers should develop comprehensive data protection regulations that address the unique challenges posed by smart housing technologies, ensuring that the privacy rights of residents are upheld while enabling the benefits of digital innovation.

Lastly, the legal frameworks governing housing development must be robust and forward-looking to support the long-term sustainability of housing projects. Legal frameworks and policy directions that promote sustainable housing are essential for addressing the environmental challenges associated with urbanization (Bansal & Pandey, 2024). Policymakers should focus on creating legal standards that encourage the use of sustainable building practices, promote environmental resilience, and ensure that housing developments are aligned with national and international sustainability goals (Ranhagen & Groth, 2012).

2.7. Socioeconomic Impacts of Youth-Centric Housing

The development of youth-centric housing in Nigeria holds significant potential for driving socioeconomic change, particularly in urban areas where the youth population is rapidly increasing. This section explores the various socioeconomic impacts of youth-centric housing, emphasizing the potential benefits and challenges associated with implementing such initiatives in Nigeria.

One of the primary socioeconomic impacts of youth-centric housing is the enhancement of economic opportunities for young people. By providing affordable and accessible housing, youth-centric projects can reduce the financial burden associated with housing costs, enabling young individuals to allocate more resources toward education, entrepreneurship, and other productive activities (Adegoke et al., 2024). The availability of affordable housing can also facilitate greater mobility, allowing young people to move closer to employment opportunities and reducing the economic disparities between urban and rural areas.

The integration of smart technologies in youth-centric housing projects further amplifies these economic benefits. Smart housing systems, which include features such as energy-efficient appliances, smart grids, and automated home management systems, can significantly reduce the cost of living for residents (Uzondu & Lele, 2024). These technologies not only enhance the quality of life for young people but also contribute to broader economic growth by reducing energy consumption and fostering innovation in the housing sector. Moreover, the implementation of smart grids in housing projects can improve the reliability of electricity supply, which is a critical factor in supporting economic activities in urban areas.

In addition to economic impacts, youth-centric housing can also have profound social implications. Access to stable and affordable housing is a fundamental determinant of social well-being, and youth-centric projects can play a crucial role in promoting social cohesion and reducing inequality (Frank, 2018). By providing housing that is tailored to the specific needs of young people, these projects can help to create vibrant and inclusive communities where young individuals can thrive. This, in turn, can reduce the prevalence of social issues such as homelessness and crime, which are often exacerbated by inadequate housing.

The integration of renewable energy solutions into youth-centric housing projects further enhances their socioeconomic impact. Renewable energy sources, such as solar and wind power, can significantly reduce the cost of electricity for residents, making housing more affordable in the long term (Terrapon-Pfaff et al., 2019). Additionally, the use of renewable energy in housing projects contributes to environmental sustainability, which is increasingly recognized as a critical component of social and economic development (Seifried & Witzel, 2010). By reducing the reliance on fossil fuels, renewable energy can help to mitigate the environmental impact of urbanization and promote a more sustainable future for Nigeria's youth (Bhandari, 2017).

The deployment of battery energy storage systems (BESS) in conjunction with renewable energy sources also plays a pivotal role in enhancing the resilience and reliability of electricity supply in youth-centric housing (Nair & Garimella, 2010). BESS allows for the storage of excess energy generated from renewable sources, which can then be used during periods of high demand or when renewable energy generation is low. This technology not only supports the integration of renewable energy into urban housing but also contributes to the stability of the national grid, thereby ensuring that young residents have access to reliable electricity.

Furthermore, the introduction of blockchain technology in housing finance offers innovative solutions for addressing the financial barriers to homeownership among the youth. Blockchain-based platforms can provide decentralized and

transparent financial services, enabling young people to access affordable mortgage options and secure their first homes (Adegoke et al., 2024). The use of blockchain in housing finance can also reduce the risk of fraud and corruption, which are significant challenges in Nigeria's real estate sector, thereby improving the overall efficiency and accessibility of housing finance.

2.8. Environmental Sustainability and Resilience

Environmental sustainability and resilience are critical considerations in the development of youth-centric social housing in Nigeria. As the nation grapples with the challenges posed by rapid urbanization, climate change, and environmental degradation, it is essential to integrate sustainability and resilience into housing policies and practices. This section examines the key strategies and approaches that can enhance the environmental sustainability and resilience of youth-centric housing projects in Nigeria.

The integration of renewable energy into housing designs is one of the most effective strategies for enhancing environmental sustainability. Renewable energy sources, such as solar and wind power, provide a clean and sustainable alternative to fossil fuels, reducing the carbon footprint of housing developments (Uzondu & Lele, 2024). In Nigeria, where access to reliable electricity is a persistent challenge, the adoption of renewable energy technologies can also improve energy security for young residents. By incorporating solar panels, wind turbines, and other renewable energy systems into housing projects, developers can create environmentally friendly communities that are less dependent on the national grid and more resilient to energy disruptions.

Legal frameworks play a crucial role in advancing environmental sustainability in housing development. The enforcement of environmental laws and regulations is essential to ensure that housing projects adhere to sustainable building practices and minimize their impact on the environment (Oduro, Uzougbo & Ugwu, 2024). In Nigeria, policymakers must strengthen environmental regulations related to housing construction, including guidelines on energy efficiency, waste management, and the use of sustainable materials. By establishing clear legal standards, the government can promote the adoption of environmentally responsible practices in the housing sector, thereby contributing to the broader goal of sustainable development.

Innovation in low-cost housing also presents opportunities for enhancing environmental sustainability. While affordability is a key concern in housing development, it is important to ensure that low-cost housing solutions do not compromise environmental standards (Hjort & Widén, 2015). Innovative construction techniques, such as the use of prefabricated materials and modular designs, can reduce waste and lower the environmental impact of housing projects. Additionally, the integration of green building practices, such as rainwater harvesting, natural ventilation, and the use of recycled materials, can further enhance the sustainability of low-cost housing developments. These approaches not only reduce the environmental footprint of housing projects but also contribute to the resilience of communities by making them less vulnerable to environmental hazards.

Urban resilience is closely linked to the ability of housing projects to withstand environmental challenges, such as flooding, heatwaves, and other extreme weather events. In Nigeria, where climate change is expected to exacerbate these challenges, it is essential to design housing projects that are resilient to environmental shocks (Ugonabo & Emoh, 2013). This requires the adoption of climate-resilient building techniques, such as elevated foundations, flood-proofing, and the use of durable materials that can withstand extreme weather conditions. By incorporating resilience into the design and construction of housing projects, developers can create communities that are better equipped to cope with the impacts of climate change, thereby protecting the livelihoods and well-being of young residents.

IT governance plays a significant role in enhancing the resilience of housing projects. The integration of digital technologies into housing management systems can improve the monitoring and maintenance of infrastructure, making it easier to identify and address vulnerabilities before they become critical issues (Dubey et al., 2023). For example, the use of sensors and data analytics can help detect structural weaknesses, energy inefficiencies, or environmental hazards in real-time, enabling proactive interventions that enhance the overall resilience of housing projects (Hassan, 2024). Furthermore, IT governance frameworks can ensure that these technologies are implemented in a secure and efficient manner, protecting the privacy and safety of residents while supporting the sustainability goals of the housing sector (Terrapon-Pfaff et al., 2023).

The adoption of circular economy principles in urban development is another key strategy for promoting environmental sustainability and resilience in housing projects. Circular economy approaches emphasize the reduction of waste, the reuse of materials, and the creation of closed-loop systems that minimize environmental impact (Ezeudu & Ezeudu, 2019). In the context of housing development, this can include practices such as recycling construction waste, using eco-

friendly materials, and designing buildings for longevity and adaptability. By adopting circular economy principles, Nigeria can create more sustainable housing developments that not only meet the immediate needs of young residents but also contribute to long-term environmental resilience.

2.9. Implementation Strategies and Stakeholder Engagement

The successful implementation of youth-centric housing projects in Nigeria requires comprehensive strategies that address the technical, financial, and social aspects of development while ensuring active engagement with key stakeholders. Effective implementation strategies must integrate modern technologies, leverage financial innovations, and ensure robust governance frameworks to create sustainable and resilient housing solutions for the youth.

One of the primary implementation strategies is the integration of financial technology (fintech) solutions to improve housing affordability and accessibility. Fintech innovations, such as digital payment platforms and blockchain-based housing finance models, can streamline the process of acquiring and managing housing finance, making it more accessible to young people (Akinwunmi, 2009). By leveraging these technologies, developers and financial institutions can offer flexible and affordable financing options tailored to the needs of the youth, thereby reducing barriers to homeownership.

In addition to financial innovations, robust IT governance is critical to the successful implementation of smart housing projects. As housing developments increasingly incorporate digital technologies, it is essential to establish governance frameworks that ensure the security, privacy, and efficiency of these systems (Steurer, 2007). IT governance strategies should include comprehensive cybersecurity measures to protect against potential threats, as highlighted by Uzondu and Lele (2024), and should ensure that housing projects are managed in a transparent and accountable manner. This approach will not only enhance the resilience of housing projects but also build trust among residents and stakeholders.

Forensic accounting practices are also vital in ensuring transparency and accountability in the implementation of housing projects. The application of forensic accounting can help detect and prevent financial mismanagement, corruption, and fraud, which are significant risks in large-scale housing developments (Adebisi & Gbegi, 2015). By incorporating forensic accounting into the governance structure of housing projects, stakeholders can ensure that financial resources are used efficiently and that the projects deliver the intended social and economic benefits.

Legal frameworks are equally important in facilitating the implementation of youth-centric housing projects. A robust legal and regulatory environment is necessary to support the adoption of sustainable building practices, protect the rights of residents, and ensure compliance with environmental standards (Oduro, Uzougbo & Ugwu, 2024). Policymakers should focus on developing and enforcing laws that promote sustainability, affordability, and inclusivity in housing projects, thereby creating a conducive environment for the successful implementation of youth-centric housing initiatives.

Stakeholder engagement is a critical component of the implementation process. Engaging stakeholders—including government agencies, private sector partners, financial institutions, and community members—ensures that the interests and needs of all parties are considered (Oladeinde et al., 202). Effective stakeholder engagement strategies should include regular consultations, collaborative decision-making processes, and transparent communication channels. This approach will not only facilitate the smooth implementation of housing projects but also foster a sense of ownership and commitment among stakeholders, thereby enhancing the long-term success of the initiatives.

3. Conclusion

This study set out to explore the development of youth-centric social housing in Nigeria, focusing on innovative design solutions, policy implications, and the socioeconomic and environmental impacts of such initiatives. The study aimed to provide a comprehensive analysis that could guide the effective implementation of housing projects tailored to the needs of Nigeria's growing youth population.

The key findings of this study highlight the critical need for integrating renewable energy, smart technologies, and sustainable building practices into housing developments. The incorporation of these elements not only enhances the affordability and accessibility of housing for young people but also contributes to broader environmental sustainability goals. The study also underscored the importance of robust legal frameworks and IT governance in ensuring the security, transparency, and efficiency of housing projects. These findings point to the necessity of a multifaceted approach that combines technological innovation, strong governance, and active stakeholder engagement to successfully implement youth-centric housing initiatives.

In conclusion, the study confirms that addressing the housing needs of Nigeria's youth is essential for promoting socioeconomic development and enhancing the overall quality of life in urban areas. The integration of financial technology solutions and forensic accounting practices can significantly improve the accessibility and accountability of housing finance, making it easier for young people to achieve homeownership. Furthermore, the emphasis on environmental sustainability and resilience is crucial in ensuring that housing developments are not only affordable but also capable of withstanding the challenges posed by climate change and rapid urbanization.

The study recommends that policymakers prioritize the development of comprehensive strategies that incorporate these key elements, fostering collaboration between public and private sectors to scale up the implementation of youth-centric housing projects. By doing so, Nigeria can create sustainable, resilient, and inclusive communities that meet the evolving needs of its youth, thereby contributing to the nation's long-term economic and social stability. This study serves as a blueprint for future research and policy development in the field of social housing, offering valuable insights for stakeholders committed to advancing housing solutions in Nigeria.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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