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PREFACE

The School of Environmental Technology International Conference (SETIC 2024), organized by the School of Environmental Technology, Federal University of Technology Minna, Nigeria, is a prestigious platform that brings together experts from diverse fields to exchange knowledge and drive innovation. This year, the conference is held in collaboration with notable institutions, including the School of Architecture and Design, Lovely Professional University, New Delhi, India; Abubakar Tafawa Balewa University (ATBU), Bauchi State, Nigeria; the Architectural Engineering Department, Najran University, Najran, Saudi Arabia; Perch Inc Development Consultancy Services, Zimbabwe; Faculty of Health Sciences, Graduate Education Institute, Istanbul Gelişim University, Istanbul, Turkey; Robotics & Additive Technologies Innovation Research Cluster, Transport & Communication Institute, Riga, Latvia; Architectural Engineering Department, College of Engineering, University of Hail, Hail, Saudi Arabia; New Gate University, Minna, Nigeria; and the University of Law Business School, Birmingham, United Kingdom, to mention a few.

This year's theme, "Global Economic Revolution and the Resilience of the Built Environment in an Emerging World," seeks to explore the dynamic relationship between global economic shifts and the adaptability of the built environment. The theme emphasizes the necessity for resilience, sustainability, and innovation in the face of unprecedented challenges and evolving economic landscapes. The sub-themes of the conference delve into crucial aspects such as sustainable design, technological integration, disaster management, and the role of policy in shaping future infrastructures.

The response to this year's conference has been both enthusiastic and far-reaching, with participants from a wide range of countries, including Latvia, India, Turkey, United Kingdom, Malaysia, Saudi Arabia, Zimbabwe, South Africa, and beyond. The hybrid nature of the event offering both virtual and physical participation has enabled an even broader exchange of ideas and perspectives. The conference serves as a vibrant platform for professionals, academics, and researchers to engage with cutting-edge developments in the built environment and related fields, fostering collaborations that will shape the future of global practice.

A wide range of papers, spanning science, engineering, and the social sciences, have been presented at this year's event, highlighting the interdisciplinary nature of challenges we face and the solutions to these challenges.

We would like to express our deep gratitude to the SETIC 2024 Conference Organizing Committee (COC) for their unwavering dedication and hard work in making this conference a resounding success. We are confident that this event will inspire all participants and leave a lasting impact on the field

ACKNOWLEDGEMENT

The success of SETIC 2024 is built upon the foundation laid by the previous editions of the School of Environmental Technology International Conference held in 2016, 2018, 2020, and 2022. We owe a great deal to the unwavering support and commitment of many, particularly the Vice-Chancellor of the Federal University of Technology, Minna, and the Dean of the School of Environmental Technology, alongside Dr Dodo Y. A., Dr Ajayi O. G., Dr Moveh S., Dr Kayode I. Adenuga and other esteemed colleagues whose efforts has been instrumental to this success.

It is my privilege, on behalf of the Conference Organizing Committee (COC), to extend a big thank you to all that attended the 5th Biennial SETIC, held between October 22nd to 24th, 2024. We are grateful for the opportunity to witness this grand event, now enhanced by the hybrid format, accommodating both physical and virtual participation—an innovation born from the challenges of the global pandemic.

This year's conference had serves as an international platform where scholars, professionals, and practitioners in the built environment and allied fields converge to tackle critical issues around the theme "Global Economic Revolution and the Resilience of the Built Environment in an Emerging World." The conference offered an opportunity to share best practices, theories, and concepts, fostering meaningful discussions that can shape future research and industry practices.

We were honored to have our distinguished keynote and guest speakers:
Prof. Kamuzhanje Joseph, Perch Inc. Development Consultancy Services, Zimbabwe.
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Dr. Ahmed Osman Ibrahim, Associate Prof. Architectural Engineering Dept., College of Engineering, University of Hail, Hail, Saudi Arabia.

Additionally, we extend our appreciation to the esteemed panelists that participated in the Round Table Talk on "Role of the Built Environment in Promoting Security Food Security (The Role of Building Integrated Agriculture [BIA]) in persons of Assoc. Prof. Dr. Habiba Atta (Nigeria), Assoc. Prof. Dr. Samuel Moveh (Latvia), LAr. Ts. Dr. Nurzuliza B. Jamirsah (Malaysia), Arch. Abdulmalik Aminu (Nigeria) and our amiable moderator, Asst Prof. Yakubu Aminu Dodo. The session with them on innovative architectural and urban design solutions for food security was insightful as it addresses pressing needs in the built environment.

With over 150 papers covering the twelve subthemes of the conference, SETIC 2024 was engaging and enriching experience. Through parallel sessions and poster presentations, participants had the chance to delve into key issues surrounding Global Economic Revolution and the Resilience of the Built Environment in an Emerging World. All attendees were believed to have made use of most of the discussions, collaborations, and networking opportunities available to them.

In closing, I would like to express my sincere gratitude to the Dean of the School of Environmental Technology, the Conference Organizing Committee (COC), and the entire School for their trust and support. To our reviewers and committee members, thank you for your dedication and hard work in making this event possible.

Wishing everyone the best and memorable experience as SETIC 2024 lives on in our heart.

Thank you, and God bless you all.

Assoc. Prof. Ogunbode E. B.
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Selected papers from the conference proceedings will also be considered for publication in reputable academic journals.

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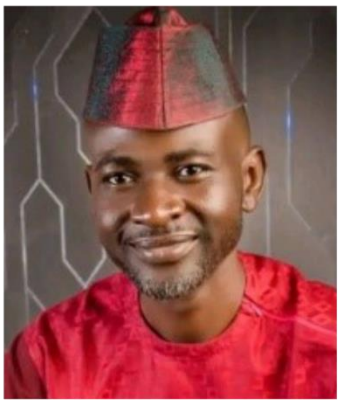

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School of Environmental Technology International Conference Proceedings

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Volume 1 proceedings

Assessment of Public Real Estate Investment Performance in North Central Nigeria: A Literature Review

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Abstract

This paper examines the performance of public real estate investments in North Central Nigeria, focusing on their impact on economic development, infrastructure, and social welfare. A comprehensive literature review was conducted, drawing from recent studies on public real estate investment in developing nations. The methodology is a systematic literature review to assess the performance of public real estate investments in North Central Nigeria. Academic journals, government reports, and conference proceedings from the past decade were reviewed to gather relevant information on the subject. A search was conducted using keywords such as "public real estate investment," "North Central Nigeria," "housing development," "infrastructure," and "economic impact." The findings highlight how public real estate investments contribute to job creation, housing development, and infrastructural improvements. However, significant challenges such as inequitable housing distribution, limited access to amenities, and inefficient planning remain. The paper provides insights into how these investments can be better aligned with community needs for improved social and economic outcomes.

Keywords: Estate, Investment, Performance, Public and Real

1. Introduction

Real estate investment is recognized globally as a driver of economic growth, urbanization, and improved social well-being. Public sector real estate projects are especially crucial in developing nations like Nigeria, where private sector investments may be inadequate to meet housing and infrastructure needs. In North Central Nigeria, which includes Abuja, Niger, Benue, Kogi, Nasarawa, Plateau and Kwara states, public real estate investments have been employed as tools for stimulating local economies, reducing housing shortages, and addressing infrastructural gaps. However, the performance of these investments in terms of their socio-economic impact has been subject to debate. This paper seeks to review existing literature on the performance of public real estate investments in North Central Nigeria. Specifically, it will examine how these investments have influenced job creation, housing availability, and infrastructural development. By synthesizing findings from various studies, the paper aims to assess the overall performance of these investments and their contribution to local communities. The real estate sector has immensely contributed to the development and progress of many economies in the world and is often considered as the leading indicator of the economic health of any economy. Real estate refers to any physical property or improvements affixed to the land and other developments on it including land itself. Real estate property development is a multifaceted business, encompassing activities that range from the renovation and release of existing buildings to the purchase of raw land and the sale of improved land or parcels to others for a profit (Ajello, *et al.,* 2015). Botha (2013) and Khan, *et al* (2014) found that property and construction are the most significant contributors to an economy's growth in terms of GDP and employment. Property development and investment performance is high in areas with effective and efficient infrastructural developments and structures. Examples of structures and infrastructural developments that promote Commercial Property Development and Investment (CPDI) are good governance structures, a stable economic climate, political stability and social amenities (Turcu, 2012; Kauskale, 2017). Real estate investment plays a crucial role in providing job opportunities, sheltering households, enhancing income distribution and alleviating poverty (International Monetary Fund, 2016).

2. Methodology

This paper relies on a systematic literature review to assess the performance of public real estate investments in North Central Nigeria. Academic journals, government reports, and conference proceedings from the past decade were reviewed to gather relevant information on the subject. A search was conducted using keywords such as

"public real estate investment," "North Central Nigeria," "housing development," "infrastructure," and "economic impact."

The criteria for including studies in this review were:

1. Published between 2011 and 2023.
2. Focused on public real estate projects in Nigeria.
3. Examined the socio-economic impact of these investments, with particular attention to housing, job creation, and infrastructure.

A total of 21 studies were selected for review, with a focus on those that offered empirical data or case studies relevant to North Central Nigeria. Data was synthesized to identify recurring themes, challenges, and best practices related to public real estate investment performance.

3. Literature Review

Public real estate investment refers to government-led projects aimed at developing housing, commercial properties, and associated infrastructure for public use. Research suggests that public investments in real estate can drive economic growth by creating employment opportunities, improving access to housing, and boosting infrastructural development (Akinwale and Adedayo, 2021). In developing economies, these investments are crucial for addressing deficits in housing supply and modernizing urban areas. In the Nigerian context, the government has launched several initiatives to improve housing availability through public-private partnerships (PPPs) and direct state intervention. public real estate projects have generated short-term employment opportunities in construction and ancillary sectors. However, the long-term impact on local economies varies depending on the quality of planning and execution.

Public real estate investment plays a pivotal role in the socio-economic development of countries worldwide. Governments invest in real estate to provide essential infrastructure, stimulate economic growth, and improve the quality of life for their citizens. Globally, public real estate investments encompass a wide range of projects, including affordable housing, commercial properties, and public facilities such as schools and hospitals. These investments are critical for addressing urbanization challenges, reducing housing deficits, and fostering inclusive growth (UN-Habitat, 2020). In developed countries, public real estate investments have significantly contributed to urban renewal and economic revitalization. For instance, in the United States, initiatives like the Low-Income Housing Tax Credit (LIHTC) program have successfully spurred the development of affordable housing, benefiting millions of low-income families (Schwartz, 2021). Similarly, in Europe, public real estate projects have been instrumental in enhancing urban infrastructure and promoting sustainable development (European Commission, 2022).

3.1 Housing Availability and Affordability

Chapter 2 Nigeria faces a significant housing deficit, estimated at over 20 million units (Adegbile and Ilesanmi, 2022). Public real estate projects, particularly affordable housing schemes, have been designed to alleviate this shortage. However, studies show that the success of these projects is mixed. In North Central Nigeria, many public housing projects are either incomplete or inaccessible to low-income earners due to high costs (Ibrahim and Yusuf, 2021). Public real estate investments often target middle-income households, leaving the poorest segments of society underserved.

The issue of affordability is compounded by the rising cost of construction materials, inefficient project management, and corruption in the allocation of housing units (Ogunbiyi *et al.,* 2019). While there are examples of successful public housing initiatives in the region, such as in Abuja, the general consensus is that public real estate investments have fallen short of addressing the housing needs of the majority.

3.2 Infrastructural Development

Public real estate investments often include infrastructure development as part of broader urbanization efforts. Roads, utilities, schools, and healthcare facilities are commonly developed alongside housing projects to ensure that new residential areas are adequately serviced (Olajide and Adeleke, 2020). However, the extent to which these infrastructures meet the needs of local populations varies. For instance, Nwaka *et al.* (2023) found that several public real estate projects in Kogi and Benue states suffered from poor integration with existing infrastructure, leading to limited access to services like electricity and water. The literature also highlights that infrastructure development associated with public real estate projects can have both positive and negative effects. While new roads and utilities can improve access to urban centers, they can also strain existing infrastructure if population growth outpaces the development of amenities.

3.3 Challenges in Public Real Estate Investment

The literature identifies several challenges in the implementation and performance of public real estate projects in Nigeria. These include bureaucratic inefficiencies, misallocation of funds, corruption, and a lack of transparency in project execution (Adetola and Banjo, 2020). Additionally, political interference often results in projects being abandoned or poorly executed, further reducing their effectiveness (Anifowose and Adeyemi, 2019). These issues undermine the potential of public real estate investments to drive sustainable development.

3.4 Theoretical framework

Theoretical framework provides a comprehensive perspective on the assessment of performance in public real estate investment, drawing upon insights from public choice theory, institutional economics, financial economics, and urban economics.

Modern portfolio theory (MPT)

Markowitz's work was built on the principles of mean -variance analysis, which assumes that investors are risk -averse and seek to maximize their expected returns while minimizing the variance (risk) of their portfolios (Markowitz, 1959).

Real Estate Market Cycle Theory (REMCT)

This theory explains the cyclical nature of real estate markets, typically comprising four phases: recovery, expansion, hyper-supply, and recession (Mueller, 1999). Understanding these cycles helps in timing public investments to optimize social and economic benefits.

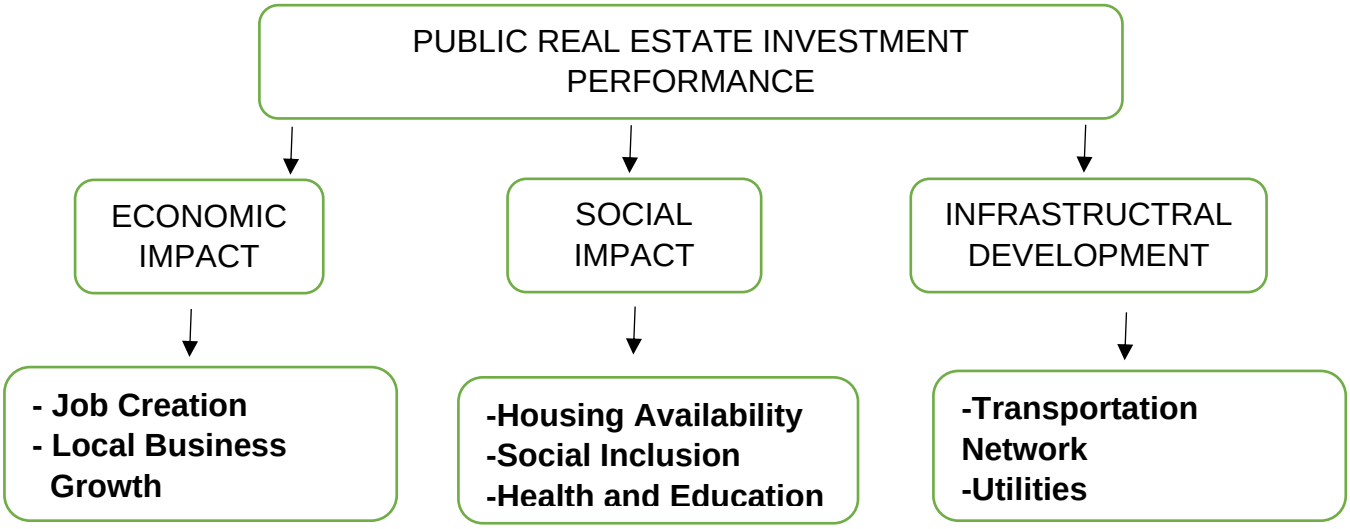
Location Theory (LT)

Originally developed by Johann von Thünen in 1826 and expanded later (Alonso, 1964), this theory emphasizes the importance of location in determining real estate value and development potential. Location significantly affects access to infrastructure, housing demand, and job creation.

Triple Bottom Line Theory (TBLT)

Elkington (1997) proposed this theory, which evaluates investments based on their economic, social, and environmental outcomes. TBL is essential for assessing the broader impact of public real estate projects on local communities beyond financial

3.5 Conceptual Framework



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4. Results and Discussion

The literature review reveals that while public real estate investments in North Central Nigeria have contributed to job creation, housing development, and infrastructural improvements, their overall performance remains suboptimal. Several key findings emerged.

4.1 Job Creation

Public real estate investments have been effective in generating employment, particularly during the construction phases of projects. Many studies highlight the positive short-term effects on local economies due to the demand for labour, materials, and services (Akinwale and Adedayo, 2021). However, the long-term impact is less clear, as job creation often diminishes once construction is completed.

4.2 Housing Availability

While public investments have increased the number of housing units available in urban areas, these developments have not significantly alleviated the housing deficit. The issue of affordability persists, with many housing projects catering to middle- and high-income earners (Adegbile and Ilesanmi, 2022). As a result, low-income households continue to face barriers to accessing public housing.

4.3 Infrastructural Development

Public real estate investments have led to the development of critical infrastructure in some areas. However, several projects are marred by poor planning and inadequate integration with existing urban infrastructure. This has resulted in uneven access to services like water, electricity, and transportation, particularly in rural and peri-urban areas (Nwaka *et al.,* 2023).

4.4 Challenges

The challenges identified in the literature—such as corruption, political interference, and inefficient project management—continue to hinder the success of public real estate investments in North Central Nigeria. Addressing these issues is essential for improving the social and economic outcomes of future projects.

5. Conclusion

The performance of public real estate investments in North Central Nigeria has been mixed. While these investments have contributed to job creation, housing availability, and infrastructure development, their full potential has not been realized due to various challenges. For future public real estate investments to be more effective, it is crucial

to improve transparency, project management, and the alignment of investments with the needs of local communities. Policymakers should prioritize affordable housing initiatives and ensure that infrastructural development is well-planned and sustainable.

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