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A Re-examination of Housing Investment Performance in Nigeria

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Abstract

Arising from the lack of a holistic performance analysis of housing investment in Nigeria, this paper re-examines the return-risk performance of residential property assets by focusing on the tier 1 property markets of Lagos, Abuja, and Port Harcourt. Data on the rental and capital values of residential property assets, comprising bungalows, blocks of flats, and detached houses, from 1999 to 2022 were obtained from estate surveying and valuation firms in the three locations. Mean return and standard deviation were employed to analyse return and risk profiles. Variations in return and risk profiles were further examined using a four-year sub-period analysis. The return-risk ratio was also employed to measure the attractiveness of the investment. The downside risk measure of the Sortino ratio was utilised to determine the risk-adjusted performance of the residential property assets. The results revealed that, on mean return and return-risk tradeoff bases, bungalow investments had superior performance compared with other property types across the geographic areas. When aggregated, residential property assets in Port Harcourt experienced superior return-risk performance relative to other locations. On sub-period analysis, the study established variations in the performance of the residential property assets across time periods and locations. On the risk-adjusted performance measure, it was found that bungalows in Lagos had the highest risk-adjusted performance. Detached house investments across the three locations were also found to exhibit low downside risk-adjusted performance. The study concluded that investors could gain high and attractive returns when making bungalow housing investment decisions with a huge potential for downside risk-proof returns. Moreover, investors could further expand this potential by concentrating more housing investment activities in Port Harcourt, as returns in this location are insulated from downside risk. However, investors should be cautious when investing in detached house assets across the three locations, as returns from this asset might be susceptible to downside risk.

Keywords: Housing investment, residential property types, return-risk, Sortino ratio, Nigeria

1.0 INTRODUCTION

World over, real estate investments have been increasingly recognised as key and alternative asset class desiring allocation into institutional investors' portfolio. This rising profile is fuelled by its characteristics such as strong historic performance arising from exciting and attractive returns, ability to hedge inflation, as well as the ability to transmit diversification and risk-return benefits to institutional asset portfolios (Ekemode, 2021). Moreover, Ng et al. (2017) pointed out that property investment is unique because of its unusual characteristics when placed side-by-side with other investment choices and therefore makes it an investment choice world over. This assertion is evidenced by the fact that even in bad economic situations, property investments appreciate in value. A similar sentiment was shared by Nittayagasetwat and Buranasiri's (2016) study where the authors stressed the importance of real estate or property investment being a veritable source of diversifying the investment portfolio. This enables avoidance of unsystematic risks, thereby enhancing the return-generating and capital appreciation potentials of assets even in economic uncertainties.

Investors seeking to gain exposure into the real estate market could achieve this through the commitment of funds into the various real estate asset classes such as residential, commercial, industrial, retail, leisure/hospitality properties, among others. As a key component of the real estate market, housing investment is one of the many real estate investment options an investor can explore. The reason for this is because of the peculiarity that housing investment brings into the investment equation and dynamics. Apart from the global recognition of housing as an essential human need and the acceptance of its leading role in accelerating the attainment of several of the sustainable development goals, housing investment has been the hallmark of socio-economic landscape in developing countries, most especially in sub-Saharan Africa. This is because housing is a significant proportion of the household wealth and capital base in these countries.

In Nigeria, housing investments is a key precursor of national economic growth and development. Arising from this, concerted efforts by both the private and the public sectors have been geared toward housing creation. Recently, the consensus of opinion among policy makers for paradigm shift in housing provision from public-driven to private sector and market-driven housing delivery has gained traction. Hence, to satisfy the shelter requirements of a country, the participation of investors at both the institutional and individual levels becomes necessary. While there is evidence of success of private sector participation in housing delivery in several countries, available evidence

from Nigeria suggests otherwise. Although several reasons could be adduced for this outcome, the absence of a benchmark upon which the performance of housing could be measured and anchored is a significant issue.

Therefore, the need for a re-examination of housing investment performance in Nigeria came to the fore as a result of the current economic situation of the country. According to Ayomitunde et al. (2019), asset acquisition in Nigeria has shown a sharp increase recently due to the continuous rise in prices of goods (building materials inclusive). This tends to have a long-run effect on the profitability of housing construction and investment. For prospective real estate investors to be able to make wise investment decisions, therefore, this work is set to re-examine housing investment performance in order to provide information that would help housing investors make informed decisions concerning housing investment.

Although, several studies see for example Wahab et al. (2016), Agava et al. (2021), and Emele (2022) have investigated the performance of housing investments in Nigeria, these studies have not been holistic. These studies have either focused on a single location/city, without taking into cognisance the large size of the Nigerian property market. Moreover, majority of these studies comparatively evaluated the performance of housing investments relative to other property types such as commercial, industrial, retail or in comparison with financial assets including stocks, bonds and shares. Likewise, these studies aggregated residential property returns without decomposing based on sub-asset classes which are prominent in the Nigerian housing market landscape such as blocks of flats, bungalows and detached houses. Moreover, a larger proportion of these previous studies while achieving their aim and objectives focused on time periods of ten years and below. As such, these focused on limited time periods which may not capture asset performance overtime. Again, these studies aggregately analysed the investment performance over the entire study period without decomposing into sub-periods to appropriately account for the variations in the return and risk profiles. Besides, housing investment performance analysis undertaken by these previous studies have largely focused on upside risk, based on the Sharpe ratio. They have not accounted for the risk of under-performance/downside risk which is concerning for investors in volatile economies like Nigeria. Recently, the Nigerian economy had continually grappled with macro-economic shocks and imbalances which could impinge on the seamless realisation of investment goals and objectives.

The motivation for this study, therefore, stems from the realisation that since investment decisions are bounded by rationality, investors are desirous of investing in assets with the ability to safeguard their capital through the generation of stable and high returns at a minimal risk. Thus, investors are concerned about the outcomes of their investment, and this is particularly so for housing investment. Hence, it is important for investors to establish the performance of an asset before making asset allocation decisions. As such, the analysis of the performance of housing as an investment could enhance the participation of institutional investors in the housing sector. The expectation of the potential realisation of attractive investment returns could motivate cross-border investment into the housing sector, particularly for vulnerable low-income group and help reduce the housing gap in the country. Moreover, since the property market is highly localised, there could be differences in the performance of housing assets across varying locations based on the peculiarities of the locality. Besides, Nigeria is a large country with several urbanised areas with distinct property market situations. This underscores the need for multi-city analysis to reflect market dynamics across geographical areas.

Following from the foregoing, this study re-examines the investment performance of housing assets in Nigeria. This current study is unique and enriches existing knowledge on housing investment performance in the country for several reasons. First, the focus on Lagos, Abuja and Port Harcourt, the three first-tier property sub-markets with significant real estate investment return- generating potential in Nigeria could offer insights into the Nigerian real estate dynamics. Second, the study spans a 24-year period, thereby offering the analysis of property investment over a long time period, relative to other studies which were for fewer periods not exceeding 10 years. Third, the returns were analysed on a sub-period basis to reflect market cycles and structural breaks. Fourth, downside risk which reflects the risk of under-performance was analysed using the Sortino ratio. Lastly, the returns were decomposed and disaggregated based on typology of the property assets. The performance of the housing assets were decomposed into bungalows, blocks of flats and semi-detached house across the three geographical locations.

2.0 LITERATURE REVIEW

Arising from the recognition of investment performance analysis as a key consideration for investment decisions in real estate, the performance of real estate assets has received considerable attention. This is because such performance evaluation provides a more accurate assessment of the return-risk performance attributes of the assets in absolute terms and relative to other asset types (Gardner & Matysiak, 2005). Numerous studies, such as Hutchison (1994), Liow (2000), Hwa (2003), and Sun et al. (2004) have investigated the investment performance of residential property assets. For instance, Hwa (2003) analysed the performance of residential property investments in Malaysia between the 1989-2001 time period. The analysis of the risk-return and risk-adjusted performance of the assets based on residential property market sub-sectors revealed the accumulation of high and improved returns based on the residential property assets relative to equity investments. Similarly, Sun et al. (2004) assessed the investment performance attributes of residential property investment relative to stocks in Mainland China. The findings indicated that residential property is associated with high returns relative to stocks, and this high return is accompanied by lower risk.

There is a considerable amount of material on the investment performance of real estate in Nigeria (Emele, 2022; Agava et al., 2021). Several authors have examined different aspects of real estate investment and their performance, either within that particular investment class or decision, or another, such as stocks. For example, one of the earliest studies to investigate the performance of residential property investment in Nigeria was Olaleye (2000). The study found that residential property assets exhibited stable and attractive returns at a low

level of risk in Lagos, Nigeria, implying that investors could achieve enhanced performance and diversification benefits when investing in such assets. However, this study only focused on downside risk while ignoring the risk of under-performance of the residential property assets. Similarly, Bello (2003) analysed the performance of residential property investments relative to security investments in Lagos, Nigeria. Based on nominal, real, and risk-adjusted returns, the study found that residential property assets investments in securities since the returns were accompanied by lower risk. The study was, however, restricted to a single location and limited to a short time span of five years. In another study, Kunle and Sowunmi (2007) assessed the performance of residential property relative to investment in ordinary shares and stocks in the Nigerian investment market. The findings showed that, on the basis of capital appreciation and return performance, residential property assets exhibited superior performance compared to securities. Adegoke (2009) examined the performance of residential property investment in comparison with financial assets in Lagos, Nigeria, from 2003 to 2007. The findings showed that financial assets had higher return performance than residential property assets. However, this performance status was accompanied by higher risk, suggesting that, on risk-adjusted performance basis, residential property assets out-performed financial investments. The study did not account for variations in return and risk profile over time and market cycles.

Furthermore, Ekemode and Oyewole's (2017) study examined the performance and diversification importance of real estate stock and selected securities in Nigeria using a comparative assessment approach. The goal of the authors was to establish sound property-based analysis upon which investment decision-making could be premised. The authors concluded that a favourable return was evidenced in the real estate stock that could compete on both return/risk and risk-adjusted return grounds on the Nigerian stock market. The study further established that an investor could achieve high capital appreciation by purchasing real estate stock on the Nigerian stock market, which could bring enormous and substantial cash gains for the investor. This study is limited by its inability to account for variations in housing returns based on typologies. Moreover, it only focused on Lagos while ignoring other tier 1 cities with potential for investment in the country. An earlier study by Ekemode and Olaleye (2016) on the merger between direct and indirect real estate investments, using experimental evidence from the Nigerian real estate market, also shared a similar view. Investors may perhaps accomplish enhanced performance by simply committing their funds in properties that are listed on the stock market (property stock) rather than investing the same funds in the real estate market. Elile et al. (2019) examined real estate investment performance and macroeconomic dynamics from a sectorial point of view. Adopting a quantitative research method and using secondary data spanning close to four decades, the study revealed that the performance of the real estate sector could be impacted meaningfully by GDP growth and inflation, while the exchange rate revealed a pointedly bad effect on the sector performance. The inability to analyse the performance of various housing types is the major shortcoming of this study.

Okore (2021) research investigated how the cost of acquisition affected the performance of real estate investment and discovered that the cost of investment showed a positive and significance influence on that performance. Management and finance costs, on the other hand, also showed a negative but substantial influence. It was therefore recommended that the government create an enabling environment that encourages diversification, by coming up with guidelines and strategies that would promote real estate investment. Similarly, Salihu et al. (2020) work was focused on understanding the dynamics that takes place in Nigeria's real estate market. The researchers' purpose was to identify empirically the risk-return characteristics of residential property within the Kaduna metropolis. The study established a direct positive link between total returns and risk profiles of the investors in the Malali market, and therefore concluded that risk-averse investors in Kaduna metropolis prefer Malali market to any other market in Kaduna State. This study only focused on the city of Kaduna. Additionally, only the upside risk of the residential property assets were analysed.

Dodo et al. (2019) study assessed Kano's residential property market in terms of risk and return potentials. The authors' aim was to investigate trends with respect to residential property investment and the possible risks inherent in it. Properties sampled for the study were 2-bedroom, 3-bedroom, and 4-bedroom respectively. The study discovered that the discrepancy reported in the various market statistically, was significant as the P-value was less than 0.05. The inference from here therefore suggests that a wise investor would rather put his/her funds in locations where returns would be constant and dependable, with little or minimal risk, rather than an unstable and less dependable locations.

Furthermore, Awa et al. (2020) examined trends and performance in Nigeria's South-South region real estate investment market. The authors' goal was to develop a model which could forecast future rents and the capital values of diverse classes of properties. The authors employed the use of a questionnaire to solicit information about the annual rents and capital values in order to come up with the forecasting model. The findings from the study revealed that the rents and the capital values of the properties increased significantly with time, having P-values of <0.05. This study only modelled and forecasted rental and capital values of residential property assets, the return-risk performance which could guide rational investment decisions was not analysed.

A recent work by Emele (2022) investigated constraints facing real estate professionals in an opaque market. Over two hundred estate surveying and valuation firms were surveyed through questionnaire administration. Information obtained was evaluated using the mean score obtained from the data set to rank 21 characteristics identified to have constrained the quantifiability of the market performance. The study reported that insufficient knowledge of the real estate industry, coupled with a lack of consistent performance yardsticks, were identified as some of the contributing factors. The limitation of this study stems from the seeming lack of information on the investment performance of housing assets. More recently, Murtala and Popoola (2023) analysed and compared the investment performance of residential properties in Bosso and Shango areas of Minna, Nigeria. The study found that residential property assets had attractive but fluctuating returns in the two areas. It concluded by imploring investors and their fund managers to be mindful of the cyclical nature of residential property returns in making investment decisions. Apart from focusing on Minna, a tier-3 property market in Nigeria, the analysis

covered a time span of 12 years. Moreover, the returns were aggregated without decomposing into sub-periods to account for variations in return and risk profiles across market cycles.

It could be inferred from the foregoing review that most previous studies on residential property investment in Nigeria have focused on the comparative evaluation of the performance of these assets relative to financial assets such as stocks and shares, bonds and gilt-edged securities. Moreover, the majority of these studies have focused on a single property type rather than a consideration of the performance of the various classes of residential property assets such as bungalows, blocks of flats and detached houses. Furthermore, a larger proportion of these studies have analysed the risk-adjusted performance of residential property assets using the Sharpe ratio, which is an upside risk measure, rather than the Sortino ratio, a downside risk measure. The analysis of downside risk-adjusted performance is imperative for unstable and high inflationary economies like Nigeria with huge macro-economic shocks and imbalances. This is due to its potential to appropriately measure the risk of under-performance that could threaten the seamless realisation of investment motives and targets (Keeris & Langbroek, 2009). Moreover, the dearth of studies that analyse the downside risk of residential property assets while accounting for variations in return and risk profiles could inhibit the ability of investors to make rational and informed investment decisions. Additionally, real estate practitioners are denied essential housing investment information which could impair the quality of their advisory on housing assets. As such, existing studies have not holistically addressed the issue of performance of residential property investments in the country, thereby calling for new and additional evidence.

To this end, this study re-examines the performance of residential property investments in Nigeria across the three first-tier real estate markets of Lagos, Abuja and Port Harcourt. The analysis centres on the three prominent housing typologies in Nigeria, namely: bungalows, blocks of flats and detached houses.

3.0 METHODOLOGY

Data required for this study centre on specific information on the return-generating behavior of residential property investments. Due to the preponderance of three property types, namely: bungalows, blocks of flats and detached houses as the principal forms of residential property investments in Nigeria, data utilised for the study focused on these housing typologies. Arising from the unavailability of a database from which property based transaction information could be easily aggregated and extracted in Nigeria, recourse was made to appraisal-based property data as evidenced by the rental and capital values of real estate assets. In this light, rental and capital values of residential property assets were elicited from estate surveying and valuation firms involved in the management of these assets in Lagos, Abuja and Port Harcourt respectively. Apart from being located across the three key investment friendly regions of South-west, North-central and South-south geographical areas respectively, these three locations were the most developed economically with the largest aggregation of housing investments as well as the highest consumption of residential property investments in Nigeria (Wahab et al., 2016). Moreover, Lagos, Abuja and Port Harcourt are the three recognised tier 1 property markets in the country. As such, these cities witness the highest transaction dealings and patronage and this has prompted the location of most institution-based real estate investments therein (Ekemode, 2021).

The extraction of the required data was facilitated through the use of a purposive sampling technique to select estate surveying and valuation firms in the three locations that preserves historic property information for a 25-year period required for the study. In Lagos, data were obtained from seventy-eight (78) firms. A total of fifty-two (52) and thirty-five (35) estate surveying and valuation firms provided the data in Abuja and Port Harcourt respectively. The storage of the required historic information by some of the estate surveying firms using digital and electronic platforms facilitated the seamless pooling and retrieval of the data.

The extracted information contained annual rental and capital values of housing assets in the management portfolio of the estate surveying and valuation firms over a 24-year period from January 1999 to December 2022. The year 1999 marks the return to civil rule in Nigeria, accompanied by the lifting of sanctions and trade embargoes imposed on the country by international organisations. This heralded the opening up of the economy for the participation of foreign investors. Moreover, this time frame was necessitated by the desire to undertake a study involving a long time span for a holistic and robust analysis. This is because a greater proportion of previous studies have not exceeded a 10-year time period. The return performance of the residential property assets over the study period was analysed using holding period returns (HPR) as a proxy for return while standard deviation was employed as a measure of the risk of the property assets. These measures were utilised based on their proven ability to appropriately accounting for the return and risk of real estate assets as established in previous studies such as Sun et al. (2004), Nittayagasetwat and Buranasiri (2016) among others.

Holding period return is given as:

$$r = \frac{P_1 - P_o + a_1}{P_o} \quad (1)$$

Where,

r = holding period return
P_o = price of share /capital value of direct property at the beginning
P_1 = price of share/capital value of direct property at the end
a_1 = dividend of share/income of direct property received during the holding period

After computing the returns, they were aggregated annually, based on calendar years for each location based on property types. Thereafter, the mean returns and standard deviation were estimated to ascertain the risk connected with the residential property assets. To reflect economic shocks and market cycles, the returns were unbundled into sub-periods of 4 years interval. As such, the entire 24 years period were disaggregated into 6 sub-periods. Since Nigeria's democracy adopts the 4-year election cycle, the 4-year sub-period was adopted to reflect the cyclical changes arising from policy summersaults occasioned by change in government.

Thereafter, the risk-return performance of the residential property assets was determined with the aid of the Sortino ratio. The choice of the Sortino ratio is aided by its ability to account for the under-performance of assets. As a measure of negative deviations, Sortino ratio analyses assets return based on the aggregation of only the returns that were below the mean as an indication of under-performance.

The Sortino ratio is computed as:

$$Sr = \frac{r_i - r_f}{TDD} \quad (2)$$

Where,

TDD = Target Downside Deviation (downside risk)
r_i = return on individual asset/portfolio
r_f = risk free rate of return

TDD is calculated as follows

$$TDD = \sqrt{\sum_{i=1}^{n} \frac{(r_i - rf)^2}{n}} \quad \text{for all } r_i < r_f \quad (3)$$

Where,

r_i = return on individual asset/portfolio
r_f = risk free rate of return
n = number of observations

Only negative deviations are included in the sum of the subtractions. A higher Sortino ratio value is an indication of the improved risk-adjusted performance of an asset.

It is important to note that the absence of a property transaction database from which information on housing prices could be seamlessly extracted necessitated the extraction of rental and capital values of individual properties from estate surveying and valuation firms. This approach was however challenging owing to the difficulty of extracting information from individual firms which elongated the data collection. Moreover, the availability of a transaction database would have made the aggregation of individual property returns utilised for this study unnecessary.

■4.0 RESULTS AND DISCUSSION

The results of the analysis of data utilised for this study are presented and discussed in this section. The presentation of results is organised into three section. The first section presents the results of the average annual holding period return analysis while the second section centres on the return-risk performance of the assets. The third and the last section focuses on the risk-adjusted performance of the residential property assets.

4.1 Holding Period Return Analysis

Presented in Table 1 is the average holding period returns of the residential property assets across the three geographic areas. The results revealed that the residential property assets had varying returns across the three locations. In Lagos, the annual returns for bungalows ranged from 16.42% in 1999 to 24.53% in 2022. The returns rose to 32.43% in 2004 before plummeting to 10.3% in 2013. A similar pattern was observed for blocks of flats with average annual return ranging from 11.12% in 1999 to 14.09% in 2022. The highest return of 25.31% was observed in 2004 which reduced to 10.79% in 2017. The third property type - detached houses exhibited returns ranging from 8.38% to 11.85% in 1999 and 2022 respectively. Overall, residential property assets in Lagos had returns ranging from 11.97% in 1999 to 16.82% in 2022.

Regarding residential property in Abuja, the results revealed that bungalows had return of 18.42% in 1999 relative to 13.86% found in 2022. Moreover, blocks of flats had returns ranging from 24.66% in 1999 which lowered to 12.3% in 2022. Detached houses displayed average annual return of 27.01% in 2005 relative to 8.94% in 2017. On aggregate, the returns of the residential property assets in Abuja ranged from 21.67% in 1999 to 13.55% in 2022. The analysis of the returns of the housing investments in Port Harcourt showed that bungalows had returns ranging from 21.84% in 1999 to 14.56% in 2022. Likewise, blocks of flats exhibited return of 16.98% in 1999 which nosedived to 8.18% in 2017. Detached houses also had returns of 19.69% in 1999 relative to 13.23% established for 2022. Overall, the residential property investments had aggregate returns of 19.50% and 17.15% in 1999 and 2022 respectively. This is consistent with the findings of Hutchison (1994) and Hwa (2003).

It is apparent from these results that residential property assets offer exciting and attractive returns to investors in the Nigerian property market and this confirms the results of earlier studies such as Wahab et al. (2016), Agava et al. (2021) among others. To this end, investors committing their capital into the Nigerian housing market are expected to be compensated with stable and consistent attractive returns over time. The stability of returns across the housing typologies in the three locations suggest the ability of the residential property assets to offer returns on investment to investors irrespective of the typology. The prevalence of acute housing shortages bedevilling the country could necessitate this outcome. It is apposite to state that the variations in the level of development, economic status and return-generating potential across the three cities could impact the dynamics of the property market and account for this outcome. Moreover, changes in local and regional market conditions influencing housing investment could warrant this result.

Table 1 Annual holding period returns of the residential property assets

Year	LAGOS				ABUJA				PORT HARCOURT			
	Bungalow	Block of Flat	Detached House	Aggregate	Bungalow	Block of Flat	Detached House	Aggregate	Bungalow	Block of Flat	Detached House	Aggregate
1999	16.42	11.12	8.36	11.97	18.42	24.66	21.93	21.67	21.84	16.98	19.69	19.50
2000	18.89	14.74	9.27	14.30	20.81	18.49	22.45	20.58	18.48	12.90	16.81	16.06
2001	22.47	18.44	16.16	19.03	26.46	15.24	16.21	19.30	20.69	18.78	24.55	21.34
2002	28.69	16.16	24.87	23.24	30.81	15.98	13.42	20.07	17.83	13.63	21.61	17.69
2003	24.02	14.82	21.57	20.14	28.45	18.69	11.98	19.71	11.50	19.61	16.81	15.97
2004	32.43	25.31	14.82	24.19	21.98	22.02	12.61	18.87	16.81	21.49	13.92	17.41
2005	26.37	27.48	18.88	24.24	27.19	23.75	27.01	25.98	22.69	22.61	12.91	19.40
2006	21.91	23.86	20.55	22.11	34.25	18.69	18.33	23.76	25.71	26.66	13.48	21.95
2007	20.88	22.17	15.71	19.59	24.47	14.81	14.97	18.08	28.69	19.49	16.12	21.43
2008	18.69	14.08	13.56	15.44	11.39	17.03	10.58	13.00	21.41	15.41	11.18	16.00
2009	16.66	14.00	11.90	14.19	12.49	11.06	9.51	11.02	16.17	13.95	11.11	13.74
2010	19.94	11.87	16.81	16.21	16.15	15.71	9.26	13.71	12.87	19.67	14.17	15.57
2011	19.85	12.92	19.19	17.32	15.49	14.23	16.45	15.39	18.91	18.84	21.69	19.81
2012	22.06	16.81	20.08	19.65	17.98	18.46	14.61	17.02	24.45	22.91	15.00	20.79
2013	10.30	12.68	14.02	12.33	11.91	15.69	19.12	15.57	16.48	23.41	19.81	19.90
2014	18.88	15.87	12.11	15.62	18.24	22.07	19.98	20.10	13.32	26.91	20.10	20.11
2015	21.86	19.69	9.79	17.11	15.73	16.67	24.87	19.09	22.86	31.45	27.49	27.27
2016	14.40	13.78	7.44	11.87	10.68	13.68	16.28	13.55	18.49	20.81	15.38	18.23
2017	11.21	10.79	8.57	10.19	7.98	11.42	8.94	9.45	16.78	12.78	10.49	13.35
2018	15.56	13.32	9.11	12.66	9.69	10.23	11.68	10.53	11.12	8.18	9.19	9.50
2019	22.87	12.91	10.62	15.47	13.11	12.94	8.45	11.5	15.16	21.12	12.64	16.40
2020	24.89	13.65	7.04	15.19	15.73	11.08	10.62	12.48	17.34	19.18	11.24	15.92
2021	21.67	11.89	9.73	14.43	17.42	13.37	12.93	14.58	12.12	22.89	14.61	16.54
2022	24.53	14.09	11.85	16.82	13.86	12.50	14.28	13.55	14.56	23.65	13.23	17.15

4.2 Return-Risk Performance of Residential Property Assets

The outcome of the return-risk performance analysis conducted on the returns of the residential property assets is presented in this section. To this end, the mean return, standard deviation which is a measure of the riskiness of the assets and return/risk ratio of the residential property assets across the three geographic locations are presented in Table 2.

Table 2 Return/risk performance of residential property assets

Location	Asset Type	Mean	Standard Deviation	Return/Risk Ratio
Lagos	Bungalow	20.64	1.04	19.85
	Blocks of Flats	15.94	0.94	16.95
	Detached House	13.88	1.03	13.48
	Aggregate	16.80	0.82	20.49
Abuja	Bungalow	18.36	1.44	12,75
	Blocks of Flats	16.19	0.83	19.50
	Detached House	15.27	1.06	14.41
	Aggregate	16.61	0.90	18.46
Port Harcourt	Bungalow	18.18	0.95	19.14
	Blocks of Flats	19.72	1.07	18.42
	Detached House	15.97	0.96	16.63
	Aggregate	17.96	0.72	24.94

The results revealed that bungalows located in Lagos with a mean return of 20.64% had the highest average annual returns of the residential property assets across the three locations. This was followed by bungalows and blocks of flats in Abuja and Port Harcourt with mean returns of 18.36% and 18.18% respectively. It could be gleaned from these results that bungalow investments had superior performance compared with other property types. One major implication of this is that investors could achieve higher return performance by investing in bungalows in Nigeria. This agrees with the findings of previous studies such as Hwa (2003) in Malaysia.

The results further showed that blocks of flats had a lower standard deviation of 0.94% and 0.83% in Lagos and Abuja respectively compared to 1.04% and 1.44% for bungalows. This outcome implied that the superior performance of bungalows is associated with higher risks and that investors should be cautious when investing in this asset class. Moreover, the lower returns found for blocks of flats are accompanied by lower risk suggesting that investors could attain less return volatility when investing in this asset class. Overall, with a mean return of 17.96%, residential property assets in Port Harcourt experienced superior return performance relative to other locations and this performance was accompanied by lower risk as evidenced by the lowest standard deviation of 0.72%. On the basis of return-risk tradeoff, it was evident that bungalows had the highest performance per risk level with returns of 19.85% and 19.14% in Lagos and Port Harcourt respectively. Overall, residential property assets in Port Harcourt outperformed other locations on the basis of return-risk ratio with 24.94% and this may not be unconnected with the low risk associated with the assets.

4.2.1 Sub-period Performance

In a bid to account for the dynamics in the investment performance of the residential property assets, taking into consideration the changing nature of market cycles, economic shocks and volatility levels, the risk-return performance of the residential property assets was analysed over 6 sub-periods comprising a 4-year cycle. As such, the returns were aggregated and analysed from 1999 to 2002, 2003 to 2006, 2007 to 2010, 2011 to 2014, 2015 to 2018 and 2019 to 2022. This was undertaken to reveal the true and actual pattern of the return performance of the housing investments.

The results presented in Table 3 showed that for Sub-period 1, bungalows in Abuja had the highest mean return of 24.13% relative to other assets across the three locations. This high return was however accompanied by high risk of 2.79%. Concerning Sub-period 2, bungalows in Abuja also exhibited the highest mean return of 27.97% relative to other assets across the three locations. This was an increase of 3.84% over the value reported for the earlier sub-period. For Sub-period 3, bungalows in Port Harcourt were also found to display the best mean return performance of 19.79% with a high standard deviation (risk) of 3.16. Blocks of flats in Port Harcourt with a mean return and risk of 23.02% and 1.65% had the most attractive return-risk performance in Sub-period 4.

Table 3 Sub-periods return/risk performance of residential property returns

Asset Type/Statistic	LAGOS				ABUJA				PORT HARCOURT			
	Bungalow	**Block of Flat**	**Detached House**	**Aggregate**	**Bungalow**	**Block of Flat**	**Detached House**	**Aggregate**	**Bungalow**	**Block of Flat**	**Detached House**	**Aggregate**
Sub-Period 1 (1999-2002)												
Mean	21.61	15.11	14.67	17.13	24.13	18.59	18.50	20.41	19.71	15.57	20.67	18.65
Standard Deviation	2.66	1.53	3.82	2.51	2.79	2.14	2.21	0.49	0.94	1.39	1.63	1.14
Return/Risk Ratio	8.13	9.88	3.84	6.82	8.65	8.69	8.37	41.65	20.97	11.20	12.68	16.36
Sub-Period 2 (2003-2006)												
Mean	26.18	22.87	18.96	22.97	27.97	20.79	17.48	22.08	19.18	22.59	14.28	18.68
Standard Deviation	2.27	2.78	1.49	0.98	2.52	1.26	3.48	1.68	3.16	1.49	0.87	1.30
Return/Risk Ratio	11.53	8.23	12.72	23.44	11.10	8.32	5.02	13.14	6.07	15.16	16.41	14.37
Sub-Period 3 (2007-2010)												
Mean	19.04	15.53	14.50	16.36	16.13	14.65	11.08	13.95	19.79	17.13	13.15	16.69
Standard Deviation	0.91	2.27	1.10	1.15	2.96	1.28	1.33	1.49	3.45	1.45	1.22	1.66
Return/Risk Ratio	20.93	6.84	13.18	14.23	5.45	11.45	8.33	9.36	5.74	11.81	10.78	10.05
Sub-Period 4 (2011-2014)												
Mean	17.77	14.50	16.3	16.23	15.90	17.61	17.54	17.02	18.29	23.02	19.15	20.15
Standard Deviation	2.58	1.04	1.94	1.54	1.47	1.72	1.23	1.09	2.35	1.65	1.44	2.20
Return/Risk Ratio	6.89	13.94	8.40	10.54	10.82	10.24	14.26	15.61	7.78	13.95	13.30	9.16
Sub-Period 5 (2015-2018)												
Mean	15.76	14.40	8.73	12.9	11.02	13.00	15.44	13.15	17.31	18.31	15.64	17.09
Standard Deviation	2.23	1.88	4.96	1.48	1.67	1.42	3.49	2.16	2.43	5.10	4.17	3.84
Return/Risk Ratio	7.07	7.66	1.76	8.72	8.60	9.15	4.42	6.09	7.12	3.59	3.75	4.45
Sub-Period 6 (2019-2022)												
Mean	15.11	23.49	9.81	15.48	15.03	12.47	11.57	13.02	14.80	21.71	12.93	16.48
Standard Deviation	1.53	0.75	1.02	0.50	0.97	0.50	1.29	0.66	1.07	1.00	0.70	1.26
Return/Risk Ratio	9.88	31.32	9.61	30.96	15.49	24.94	8.97	19.73	13.83	21.71	18.47	13.08

Further results in Table 3 also revealed that with a mean return of 18.31%, blocks of flats in Port Harcourt had the highest return performance compared to other assets for Sub-period 5, although with correspondingly high volatility as indicated by the high standard deviation of 5.10%. Regarding Sub-period 6, which is the last time period, blocks of flats in Lagos had the best mean return of 23.49%, accompanied by a low standard deviation value of 0.75%. A positive and high return/risk ratio was also found for all the residential property assets across the three locations. A much higher return/risk ratio of 31.32 was displayed for blocks of flats in Lagos, which suggests the ability of the asset to offer high reward for investors in this asset category.

It is apparent from these results that there are variations in the return and risk profiles of the residential property assets, and this variation differs across time periods and locations. Moreover, bungalows and blocks of flats exhibited superior return performance relative to detached houses in these locations. Also, residential properties in Port Harcourt experienced higher returns relative to Lagos and Abuja. These variations notwithstanding, these results were stable and followed a consistent pattern across the sub-periods. This implied that investors could gain high and attractive returns when making housing investment decisions in the Nigeria real estate market. The differences in the returns and risks of the assets over the sub-periods across the three locations could plausibly be due to the changing macro-economic, population and demographic conditions across the three locations. For instance, Lagos continues to witness an influx of a rising population due to its status as the economic nerve centre of the country. This fuels demand and supply of new houses. Also, the expansion of Abuja as the administrative capital of Nigeria is accompanied by the provision of infrastructure and employment opportunities which have an attendant effect on housing investments. Moreover, the relocation of the operational headquarters of international oil companies operating in Nigeria to Port Harcourt increases the economic base of the city, thereby influencing the housing market dynamics.

4.3 Risk-Adjusted Performance of Residential Property Assets

The outcome of the analysis of the risk-adjusted performance of the residential property assets conducted for the study based on the Sortino ratio is contained in Table 4. The results summarised in the Table reveal that bungalows in Lagos with a Sortino value of 7.92 had the highest risk-adjusted performance. This outcome implied that investors committing funds to bungalow residential property assets in Lagos would likely earn return compensation greater than the risk-free rate. As such, these investors would enjoy higher returns relative to the prevailing investments in the country.

Table 4 Risk-adjusted performance of residential property assets

Location	Asset Type	Mean	Sortino Ratio
Lagos	Bungalow	20.64	7.92
	Blocks of Flats	15.94	2.13
	Detached House	13.88	0.03
	Aggregate	16.80	3.14
Abuja	Bungalow	18.36	2.70
	Blocks of Flats	16.19	2.04
	Detached House	15.27	0.68
	Aggregate	16.61	2.17
Port Harcourt	Bungalow	18.18	5.47
	Blocks of Flats	19.72	5.10
	Detached House	15.97	1.49
	Aggregate	17.96	4.84

Plausibly, this outcome could be attributed to the high demand for bungalows in the study area. It could also due to the preponderance of bungalows as the main feature of the rental housing market in Nigeria, as most renters prefer bungalows relative to high-rise and other multi-tenanted building types because of the privacy they confer. Closely following were bungalows and blocks of flats in Port Harcourt with Sortino values of 5.47 and 5.10 respectively. This result also indicates the potential of these housing assets to provide higher and superior returns with lower downside risk in Port Harcourt. Moreover, the detached house had the lowest Sortino value, and this is consistent across all the three locations. This suggests the inability of this asset type to under-perform others on a downside risk basis and could be attributed to the low demand usually associated with detached houses, which are often seen as a luxury properties. As such, investors may wish to limit their investment in this asset type for enhanced investment performance. Overall, residential property assets in Port Harcourt exhibited a superior aggregate Sortino ratio of 5.47 compared to 3.14 and 2.17 for Lagos and Abuja respectively. The high downside risk-adjusted performance of housing investments in Port Harcourt could be associated with the low downside target return deviation of property assets in this location. This may be due to the stability and consistent high return performance of these assets. The high rental values of residential property in Port Harcourt arising from its status as the centre of the oil industry in Nigeria could explain this outcome. Moreover, this outcome implied that the high and attractive returns accruing to residential property investors in Port Harcourt are insulated from downside variability, suggesting the protection of the assets from the ravages of the risk of under-performance that could limit the effective realisation of investment goals and objectives. As such, investors are encouraged to sustain and expand their residential property investment holdings in the city to enjoy the protection of their investment returns from the risk of under-performance. Furthermore, the poor downside risk performance exhibited by detached house investments in the three cities implies the need for investors to be cautious when making investment decisions regarding this housing type, as such decisions may be affected by the risk of under-performance.

■5.0 CONCLUSION

In conclusion, this study has undertaken a comprehensive analysis of the performance of residential property investments in Nigeria over a 24-year period focusing on the key property markets of Lagos, Abuja, and Port Harcourt, and considering the primary housing typologies of bungalows, blocks of flats, and detached houses. The study also conducted sub-period analysis to uncover variations in the return and risk profiles of the residential property assets while the risk of under-performance was analysed using the Sortino ratio.

The findings highlight the stability and consistency of returns across different housing typologies and geographic locations, indicating the resilience of residential property assets in offering returns on investment to investors in Nigeria. Notably, bungalow investments emerged as the top performer in terms of mean return and the return-risk tradeoff across the geographic areas. Furthermore, Port Harcourt stood out as a location with superior return-risk performance.

For investors, these results suggest the potential for realising attractive returns and making downside risk-proof investments in residential property assets, particularly in bungalow housing investments and in Port Harcourt. However, the study also revealed the low downside risk performance associated detached houses in Lagos, Abuja, and Port Harcourt, emphasising the need for careful consideration when investing in this property type.

Although this study re-examined the performance of residential property assets in Nigeria, it only focused on the tier 1 property markets of Lagos, Abuja, and Port Harcourt. As such, other prime property market locations like the tier 2 and 3 cities in the country were excluded. Besides, the study relied on data obtained from estate surveying and valuation firms and did not consider estate agents involved in property management activities in the country. By addressing these limitations, future research in this area could explore these additional dimensions of residential property investments in Nigeria, continuing to provide valuable insights for investors and policymakers in the real estate market.

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