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An Evaluation of the Performance of Residential Property Investments in Minna, Niger State, Nigeria

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Abstract

This study evaluated the performance of residential property investments in Minna, Niger State, Nigeria. Data for the study were collected through field survey from estate surveying and valuation firms which are active in the residential property market in Minna. Thus, a total of 382 residential investment properties were selected from the property portfolio of estate surveying and valuation firms in the city for the study. Variables utilised for the study include the capital value, annual expenses in form of taxes, rates, repairs etc. and annual rental value of 1-BR, 2-BR and 3-BR apartments for the period, 2009 – 2021 and analysed using analysis of variance, geometric mean and coefficient of variation. The findings indicate that the variance in total return for all residential investment property types across all the study locations is statistically significant, also the risk associated with this return varies according to the residential property investment types across all the locations considered in the study. The study recommends that prudent residential real estate investors in the city require impeccable pre-investment appraisal of residential property investments at all locations in the city before investing their capital, particularly if they are risk averse.

Keywords: Residential property; Investment performance; Total return; Risk; Minna

JEL Classification: D23, E22

1. Introduction

Residential property investment is one of the major types of property investment that are undertaken by real estate investors in Nigeria (Medale & Ezeokoli, 2023). In fact, it is a major asset class available to investors (Mashaba, 2021; Australian Investors Association, 2023). It entails the provision of shelter for the generation of regular income flows (rental income) or capital gain or both. The huge housing deficit in

Nigeria coupled with effective demand for residential accommodation in urban centres in the country has created significant investment opportunities for investors in the residential property sector of the nation's economy (Moore, 2019). This has necessitated the need for empirical studies on the performance of residential property investments in the country to provide insight on the worthwhileness of such investments in terms of types and location. Property investors need to know the type of property to invest in whether it would be used for either residential, shopping malls, ware houses, or a combination of all these (Ryder, 2012; Ojo *et al*, 2022). As elucidated by Ajayi and Fabiyi (1984), property investors should no longer base their decision on intuition and guess work on property investments which may later become unrealistic. This reinforces the need for property investment performance analysis (Bowles *et al*, 2001; Baum *et al*., 2021 & Emele, 2022).

Thus, a property investor needs to choose a particular type of residential property he or she wants to invest in before going into the investment process. This would guide the investor on the nature of risk-return characteristics associated with the property investment type. The major requirement in property investment is to put into consideration the expected risk and return (MacGregor & Nanthakumaran, 1992; Newell & Webb, 1996; Adair *et al.,* 2005; Baum *et al*, 2021). Apparently, an investor who has invested a huge amount of funds into residential property would like to know how the property has performed through its various returns in comparison with other property types. The Nigerian property market has continued to be constrained by the lack of standard performance measurement framework due to several factors (Emele, 2022), resulting in scanty studies on residential property investment performance. Besides, measuring the performance of residential property investments is location specific. Consequently, residential property investment performance indices vary across locations, property types and sub markets. The performance indices at one location may not guide investment decisions at another locality reliably. It is against this backdrop that this study was carried out to evaluate the performance of residential property investments in Minna, Niger State, Nigeria to provide necessary information for rational property investors in the locality.

2. Literature Review

The concept of real estate investment performance denotes the effectiveness of real estate investment decision at a specific location within a given period of time (Hall, 1983). In this context, the real estate investment that has performed well is the one that is effective. Thus, evaluating the performance of real estate investment requires the determination and impeccable interpretation of appropriate performance measures. Idowu (2006) conducted a study on residential property returns in Lagos and its environs between for the period, 1991 - 2004. The study revealed that returns displayed

an unstable pattern in real terms while rental and capital value showed an upward growth. This study focused only on residential property return in the city center, ignoring the satellite towns. Udoetuk (2008) evaluated the performance of residential property investments in selected areas of Lagos state from 1990-2004. The study used data on rental and capital values of residential properties in Victoria Island, Lekki Phase 1, Ikeja and Agege The study found that residential property investments in Victoria Island and Lekki phase 1 had the highest rental and capital growth, compared to those in Ikeja and Agege.

Olaleye, Adegoke and Oyewole (2010) studied the nature of direct property investments and created a list of property companies in comparison with other securities in the Nigeria stock exchange over the period, 2001 - 2007. Mean return, standard deviation, correlation and Sharpe market index model were employed to evaluate the capital return and diversification potential of the investment media. The study found that a number of investment options in the property and stock markets had attractive returns and investment in real estate performed better than stocks.

Oyewole (2013) investigated the performance of residential and commercial property investments in Ilorin. Standard deviation, coefficient of variation and Sharpe index were used as indicators for performance measurement in the study. The findings of the study revealed that residential property investments in the study area is more risky with a high coefficient of variation (CV) of 0.74 than commercial property investments with CV of 0.46. The total Sharpe index indicated that commercial property investments performed better when compared with residential property investments. Mathew (2013) measured the worthwhileness of retail property investments and residential property investments within a period of 11 years i.e. 2000-2011 in Ilorin, Nigeria. The study obtained average return, adjusted risk return, capital value and capital growth for the property investments. A regression model was developed to predict rental growth rate of the properties. The study found that commercial properties were more worthwhile than residential properties, having a mean annual return of 1.2% against 11.8%. Also in terms of adjusted risk return, commercial property investments performed better with shape index of 1.11 to 0.55 of residential property investment.

Ogunleye (2014 compared the investment performance of housing estates in government reserved areas (GRA) at Ijapo and Alabaka in Akure, Ondo State of Nigeria. Data for the study consisted of rental values of residential properties and were obtained from practicing firms of estate surveyors and valuers in Akure for the period, 2004 - 2014. Basic descriptive statistical models were employed for data analysis. The result of the study indicated that housing investments in Alabaka performed better than that of Ijapo during the study period. Similarly, Umeh (2014) assessed the relative

performance of investment in real estate stock before and after stock market crash using Modigliani analysis. The study found that real estate performed better in the post market crash than it was before it. Also, Ade (2015) evaluated the performance of residential property investments in a number of locations in Ado-Ekiti. Income return from residential property investments across the locations was used for the study. The study found that rental and capital growth were remarkable overtime and the rate of growth was not static and also revealed that the return from the property investments in G.R.A was higher than those in other locations.

Adeniran (2015) carried out a study on the performance of residential property investments in Ado-Ekiti for the period, 2008-2014. The primary data used for the study were rental and capital values of residential properties in the study area. The study found that residential property investments in GRA, Adebayo and Ajilosun produced the highest rental and capital values, while those in Ajebandele, Basiri and Okella had a lower return. Massive increase in returns of the residential properties in Basiri and Adebayo in the last three years was observed when comparison was made with those in other areas. Wahab *et. al.* (2016) assessed the performance of three-bedroom residential property investments in four locations in Abuja. Coefficient of variability and Sharpe index were adopted as indicators of performance. On the basis of risk- return, the findings indicated that Gwarimpa market performed better than others. Diala (2016) evaluated the risk and return characteristics of residential and commercial property investments in Abuja and Port Harcourt property markets. The purpose of the study was to ascertain the property class and market that gives variability in returns. The data obtained for the study were analysed through arithmetic mean return (AMR), standard deviation (SD) and coefficient of variation (CV) models. The study revealed that residential and commercial property investments produced good returns but very uncertain as shown in the wide dispersion of returns. Udobi *et al* (2019) measured the performance of residential property investments in some designated urban residential areas of Anambra State of Nigeria, precisely Onitsha and Awka. The return on residential property investments in the two urban areas were compared. The risk of residential property investment in Awka and Onitsha were 29.2% and 26.3% respectively. The study revealed that residential real estate investments in Awka was somewhat more risky than those of Onitsha throughout the period.

Mashaba (2021) investigated the performance of residential property investments in South Africa, based on value segments from 2010 to 2019. The study found that the performance of residential property investments varied across segments and that economic factors had mixed relationships with residential property segments. Ojo *et al* (2022) comparatively examined the performance of commercial and residential real estate investments in Ibadan property market to provide information for investment

decisions. A mix of qualitative and quantitative research designs were adopted for the study. Data for the study were gotten from sixteen practicing estate surveyors and valuers in the city through random sampling technique. The study established that Ibadan property market provided mean holding period returns of 10.82%, 14.31% and 8.29% for office, shop and residential property types respectively and that the selected property types are perverse hedges against inflation.

Medale and Ezeokoli (2023) evaluated the risk-return performance of residential property investment in Lagos, Nigeria between 2001 and 2021 based on quantitative survey approach. Primary data on non-owner-occupied residential property investments in Somolu and Eti-Osa areas of Lagos were obtained from estate surveying and valuation firms for the study through structured questionnaire. The study found that rental prices experienced an overall upward trend, with flats and bungalows exhibiting higher rental growth rates compared to other property types. It also found that appreciation rates in the study areas varied across property categories, with duplexes in Eti-Osa and bungalows in Somolu showing higher average annual appreciation rates. Previous studies on the subject have revealed varying levels of residential property investment returns, based specifically on location and property types. In terms of location, the studies aforementioned focused significantly on the property markets in south western Nigeria than in any part of the country, thereby establishing a geographical gap regarding the measurement of residential property investment performance in the country. This study is therefore an attempt to close this gap.

3. Methodology

Descriptive design is the research design adopted for this study. The variables required for the study include the capital value, annual expenses in form of taxes, rates, repairs etc. and annual rental value of 1-BR, 2-BR and 3-BR apartments in Minna for the period, 2009 – 2021 and were measured on the ratio scale. Data for the study were collected through field survey using multi-stage sampling technique. This involved the selection of estate surveying and valuation firms which are active in the residential property market in Minna through purposive sampling technique and afterwards, residential investment properties managed by these firms were selected using simple random sampling technique. In order to obtain a sample that is a good representation of the population, the sample size model adopted by Smith and Strattek (2010) was used as follows:

$$n = \frac{Z^2 \times \delta^2 \times \left(\frac{N}{N-1}\right)}{ME^2 + \left(\frac{Z^2 \times \delta^2}{N-1}\right)} \quad \ldots\ldots 1$$

Where: n = sample size, Z = standardised normal value at 95% confidence level which is 1.96, δ = standard deviation put at 0.5 (depicting a safe decision enhancing large enough sample), ME = marginal error put at $\pm$5%, N = total number of properties under review which is 814. Thus, a total of 382 residential investment properties were selected from the property portfolios of estate surveying and valuation firms in Tunga, Bosso, Dutsen Kura, Maikunkele, Maitumbi, Kpagungu, Barkin Sale and Sauka Kahuta neighbourhoods of Minna city for the study. These residential neighbourhoods were selected because the dominant types of residential investment properties required for the study are located therein. Structured questionnaire was administered to the managers of these properties for data collection. The capital value of the residential investment properties, annual expenses in form of taxes, rates, repairs etc. and annual rental values of one -bedroom, two-bedroom and three-bedroom apartments for the period, 2009 – 2022 are the data collected for the study.

Total return was determined for all residential investment property types selected for the study. This was computed as the sum of the income and capital returns given no further expenditure of capital on the property investment during the measurement period as follows:

$$\text{Total Return (TR)} = \frac{(CV_t - CV_{t-1}) + NI_t}{CV_t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \; 2$$

Where $CV_t = Current\ market\ value\ of\ the\ property$, $CV_{t-1} = Market\ value\ of\ the\ property\ in\ last\ period$, $NI_t = Current\ net\ income\ of\ the\ property$

Total return index (TRI) analysis was employed to measure the trend in total return for the residential investment properties under study using 2009 as the base year whilst the holding period return (HPR) for each residential property type during the study period was determined via the geometric mean model. Other statistical techniques used to analyse the data include coefficient of variation and analysis of variance.

4. Results

Using Equation 2, the total return for the properties under study was computed based on the capital values, rental values and operating expenses of residential investment properties selected for the study for the period, 2009 – 2021 and the results are presented in Tables 1, 2 and 3 for all the residential areas delineated for the study.

Table 1: Total Return on Residential Property Investments in Tunga, Bosso and Dutsen Kura Areas, 2009 - 2021

Year	Residential Neighbourhood, Property Type and Total Return (%)								
	Tunga			Bosso			Dutsen Kura		
	1BR	2 BR	3 BR	1BR	2 BR	3 BR	1BR	2 BR	3 BR
2009	8.4	3.1	2.5	5.6	6.0	3.1	11.1	6.4	4.5
2010	8.4	16.1	2.5	5.6	6.0	3.1	11.1	6.4	4.5
2011	15.4	28.62	26.5	6.4	26.0	18.1	11.1	8.68	17.2
2012	30.4	23.36	15.26	6.0	21.9	19.0	22.0	17.7	15.8
2013	17.0	19.63	13.5	11.7	18.8	15.1	11.0	6.2	10.54
2014	15.4	16.82	12.2	12.0	19.6	13.55	11.1	14.8	10.1
2015	15.3	14.82	14.32	17.36	17.1	11.0	21.05	15.8	11.71
2016	20.06	18.91	10.10	15.8	17.8	13.5	10.0	14.2	9.60
2017	12.0	16.29	12.0	14.6	5.6	13.0	19.7	13.1	15.6
2018	21.7	14.35	13.34	25.6	15.6	10.29	21.2	18.92	11.6
2019	14.72	16.52	12.08	21.5	12.6	9.2	5.95	16.4	11.0
2020	10.35	12.48	11.52	18.25	9.65	7.39	9.65	13.39	8.72
2021	13.23	15.50	13.0	18.42	19.5	17.2	13.8	8.6	16.77
HPR	15.43	16.52	12.08	13.58	14.91	11.7	13.64	12.27	11.28

Source: Authors Computation

Table 1 displays the total return on residential property investments in Tunga, Bosso and Dutsen Kura areas between 2009-2021. The HPR is the geometric mean of total return for the entire period that is, the average total return for each residential property type considered for the study. The result indicates that 2 BR apartments in Tunga performed better than others with HPR of 16.52%. This outcome may be attributed to the fact that Tunga is a residential neighbourhood of choice in the city due to its high accessibility and complementarity vis-à-vis essential facilities such as hospitals, schools, police stations and banks when compared with other residential areas. Likewise, the market for 2 BR apartments in Tunga is very active. This has attracted real estate investors over the years as they could liquidate their investments within a considerable period of time.

The total return on residential property investments in Maikunkele, Maitumbi and Kpakungu areas between 2009 and 2021 are presented in Table 2. These areas are satellite residential neighbourhoods within the city. In these neighbourhoods, investment in 3 BR apartments earned the highest HPR of 14.63%, closely followed by 2BR apartments with HPR of 14.05% during the period.

Table 2: Total Return on Residential Property Investments in Maikunkele, Maitumbi and Kpagungu Areas, 2009 - 2021

Year	Residential Neighbourhood, Property Type and Total Return (%)								
	Maikunkele			Maitumbi			Kpagungu		
	1BR	2 BR	3 BR	1BR	2 BR	3 BR	1BR	2 BR	3 BR
2009	6.5	6.0	5.6	5.37	10.0	20.0	6.14	10.22	9.85
2010	6.5	6.0	6.5	5.37	10.0	20.0	6.14	10.22	9.85
2011	6.2	9.6	13.2	9.0	23.11	15.15	5.37	10.22	9.6
2012	7.7	8.7	23.9	9.0	20.8	19.76	6.5	10.7	5.0
2013	9.0	9.4	20.5	12.3	11.18	14.47	7.51	11.3	15.5
2014	7.7	16.83	13.22	7.03	9.0	16.18	7.1	10.9	11.45
2015	13.0	15.9	5.44	7.03	15.4	12.5	6.8	15.44	11.9
2016	8.9	15.92	5.6	27.7	22.05	19.8	5.8	13.92	16.2
2017	14.47	14.78	5.6	10.33	15.0	8.9	15.6	13.33	11.34
2018	18.36	8.35	7.89	10.8	13.6	14.9	5.8	18.0	12.2
2019	17.59	17.1	6.49	11.5	12.7	10.6	12.8	16.8	11.64
2020	15.35	15.18	5.23	8.53	7.29	8.33	9.54	13.39	8.54
2021	15.0	15.21	4.0	6.07	13.9	10.6	12	18.37	10.9
HPR	11.17	12.15	9.31	9.87	14.05	14.63	8.19	13.26	11.04

Source: Authors Computation

Table 3 shows the total return on residential property investments in Barkin Sale and Sauka Kahuta areas for the study period. Based on the HPR for the period, investment in 2 BR apartments in Barkin Sale performed better than others with the highest average total return of 15.26%. As earlier deduced, investors prefer this residential property type generally due to the availability of an active market for it, coupled with the ease of converting the investment into cash due to the growing demand for this property type by single family occupiers in the city. To observe the trend in total return during the study period, total return index (TRI) was constructed for the residential investment properties under study using 2009 as the base year and the results are presented in Tables 4, 5 and 6.

Table 3: Total Return on Residential Property Investments in Barkin Sale and Sauka Kahuta Areas, 2009 - 2021

Year	Residential Neighbourhood, Property Type and Average Total Return					
	Barkin Sale			Sauka Kahuta		
	1BR	2 BR	3 BR	1BR	2 BR	3 BR
2009	7.15	10.0	5.6	6.8	7.0	4.25
2010	7.15	10.0	5.6	6.8	7.2	16.75
2011	13.1	9.0	22.3	17.7	11.18	26.75
2012	18.1	20.2	19.8	6.41	20.2	22.0
2013	17.6	11.8	30.05	15.1	23.26	11.0
2014	24.5	23.4	14.04	13.2	23.9	17.90
2015	7.2	8.88	22.2	12.9	10.6	15.76
2016	14.4	15.3	11.35	23.6	12.7	6.2
2017	6.8	14.0	11.97	15.1	22.3	4.92
2018	26.13	17.85	14.2	12.76	8.0	13.2
2019	12.8	22.7	6.1	15.5	20.7	5.4
2020	10.95	17.25	4.33	8.77	15.25	10.33
2021	12.16	19.4	4.95	10.06	12.18	9.0
HPR	13.53	15.26	13.0	12.57	14.8	12.38

Source: Authors Computation

Table 4: Total Return Index (TRI) for Residential Property Investments in Tunga, Bosso and Dutsen Kura Areas, 2009 - 2021

Year	Residential Neighbourhood, Property Type and Total Return Index (TRI)								
	Tunga			Bosso			Dutsen Kura		
	1BR	2 BR	3 BR	1BR	2 BR	3 BR	1BR	2 BR	3 BR
2009	100.0	100.0	100.0	100.0	100.0	100.0	100.0	`100.0	100.0
2010	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2011	183.3	923.2	1060.0	114.3	433.3	583.9	100.0	135.6	382.2
2012	361.9	753.5	610.4	107.1	365.0	612.9	198.2	276.6	351.1
2013	202.4	633.2	540.0	208.9	313.3	487.1	99.1	96.9	234.2
2014	183.3	542.6	488.0	214.3	326.7	437.1	100.0	231.3	224.4
2015	182.1	478.1	572.8	310.0	285.0	354.8	189.6	246.9	260.2
2016	238.8	610.0	404.0	282.1	296.7	435.5	90.1	221.9	13.3
2017	142.9	525.5	480.0	260.7	93.3	419.4	177.5	204.7	346.7
2018	258.3	462.9	533.6	457.1	260.0	331.9	191.0	295.6	257.8
2019	175.2	532.9	483.2	383.9	210.0	296.8	53.6	256.3	244.4
2020	150.3	455.3	470.5	365.4	200.5	300.7	100.5	249.5	279.3
2021	157.5	500.0	520.0	328.9	325.0	554.8	124.3	135.4	372.7

Source: Authors Computation

Table 5: Total Return Index (TRI) for Residential Property Investments in Maikunkele, Maitumbi and Kpagungu Areas, 2009 - 2021

Year	Residential Neighbourhood, Property Type and Total Return Index (TRI)								
	Maikunkele			Maitumbi			Kpagungu		
	1BR	2 BR	3 BR	1BR	2 BR	3 BR	1BR	2 BR	3 BR
2009	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2010	100.0	100.0	16.1	100.0	100.0	100.0	100.0	100.0	100.0
2011	95.4	160.0	235.7	167.6	231.1	75.75	87.5	100.0	97.46
2012	118.5	145.0	426.8	167.6	208.0	75.8	105.9	104.7	97.5
2013	138.5	156.7	366.1	229.1	118.8	72.35	122.3	110.6	157.4
2014	107.7	280.5	236.1	130.9	90.0	80.9	110.7	106.7	116.2
2015	117.1	265.0	97.1	130.9	154.0	61.3	110.7	151.1	120.8
2016	80.2	265.3	100.0	422.9	220.5	99.0	94.5	136.2	164.5
2017	130.4	246.3	100.0	192.4	150.0	44.5	254.1	130.4	115.1
2018	165.4	139.2	140.9	201.1	136.0	74.5	94.5	176.1	123.9
2019	158.5	285.0	115.9	214.2	129.0	53.0	208.5	164.4	118.2
2020	147.2	253.9	90.2	200.6	118.4	50.2	196.2	135.3	90.4
2021	135.1	235.5	71.4	113.0	139.0	53.0	195.4	179.7	110.7

Source: Authors Computation

Table 6: Total Return Index (TRI) for Residential Property Investments in Barkin Sale and Sauka Kahuta Areas, 2009 - 2021

Year	Residential Neighbourhood, Property Type and Total Return Index(TRI)					
	Barkin Sale			Sauka Kahuta		
	1BR	2 BR	3 BR	1BR	2 BR	3 BR
2009	100.0	100.0	100.0	100.0	100.0	100.0
2010	100.0	100.0	100.0	100.0	102.7	100.0
2011	183.2	90.0	398.2	260.3	159.7	629.4
2012	253.1	202.0	353.6	94.3	288.5	517.7
2013	246.2	118.0	536.6	220.0	332.3	258.8
2014	342.7	234.0	250.7	194.1	341.4	421.2
2015	100.7	88.8	396.4	189.7	151.4	370.8
2016	201.4	153.0	202.7	347.1	181.4	145.9
2017	95.1	140.0	213.8	222.1	318.6	115.8
2018	365.5	178.5	257.5	187.6	114.3	310.6
2019	179.0	227.0	108.9	227.9	295.7	127.1
2020	160.3	230.5	90.6	250.4	190.6	187.3
2021	170.1	194.0	88.4	147.9	174.0	211.8

Source: Authors Computation

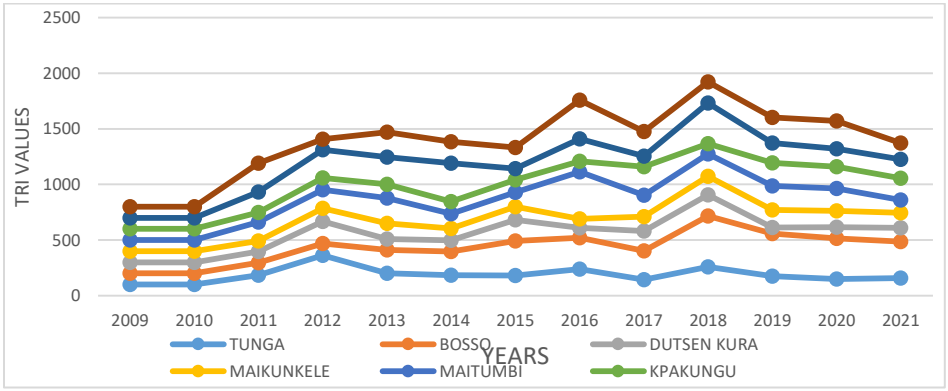

Figure 1: Graphical trends of Total Return Index (TRI) for 1 Bedroom Apartments

Figure 1 indicates the trend of one bedroom investment returns in the study area across the study period in a graphical form. According to the graph, the trend shows that from 2009-2021 there has been a variation in returns. It further indicates that the highest trend was in 2018 in Bosso area and the lowest was in Dutsen Kura in 2019. These variations may be attributed to the impact of unstable macroeconomic determinants on real estate investments in the country.

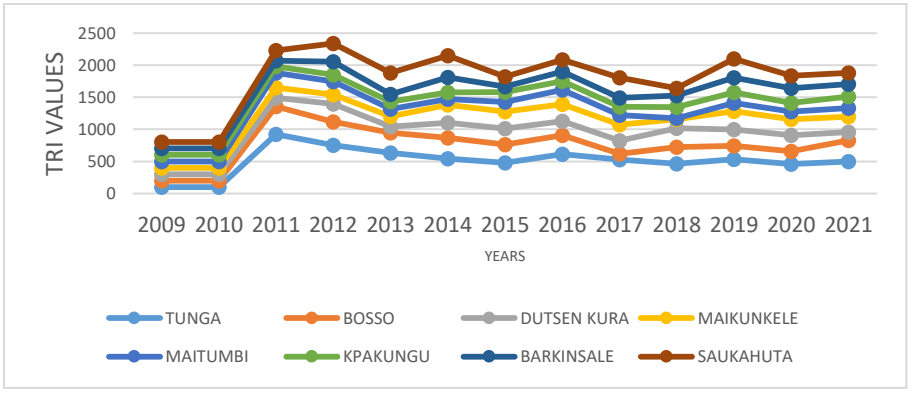

Figure 2: Graphical Trends of Total Return Index for 2 Bedroom Apartments

Figures 2 and 3 display the graphical trends of returns for 2BR and 3BR apartments respectively across the study period in the various residential neighbourhoods. The

graphs indicate variations in total return from 2011 to 2021 and these point to volatility across the return indices over the years.

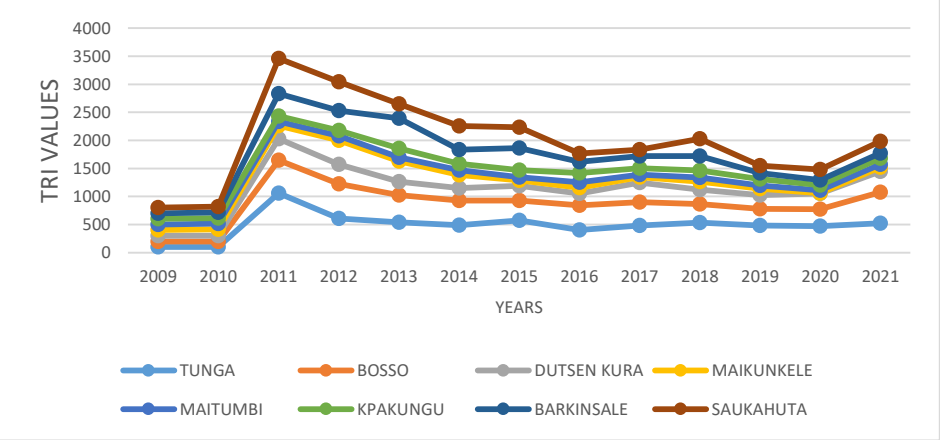

Figure 3: Graphical Trends of Total Return Index for 3 Bedroom Apartments

The extent of variance in total return for each residential property type across all the study locations was measured through a one-way analysis of variance. The result is presented in Table 7.

As presented in Table 7, the calculated F-values are 2.139636, 2.928597 and 2.941148 for I-bedroom, 2-bedroom and 3-bedroom apartments respectively with $p \leq 0.05$. This indicates that the variance in total return for all residential investment property types across all the study locations is statistically significant. The implication of this is that total returns for residential investment properties in the city do not follow the same pattern and real estate investors in the city are likely to get varying levels of total return for similar type of residential property investments at different locations in the city. This affirms the findings of earlier studies that location plays a crucial influence on residential property investment performance in cities. The risk associated with the total return for residential property investments considered in the study was measured through the coefficient of variation and the result is presented in Table 8.

Table 7: Analysis of Variance of Total Return for Residential Property Investments across all locations in the Study Areas

Residential Property Type	Source of Variation	Sum of Squares	Degree of freedom	Mean Square	F	P-Value	F Crit @ α = 0.05
1 BR	Between Groups	713.6943	12	59.47453	2.139636	0.024543	1.891216
	Within Groups	1973.556	71	27.79656			
	Total	2687.25	83				
2 BR	Between Groups	749.5237	12	62.46031	2.928597	0.002378	1.891216
	Within Groups	1514.268	71	21.32772			
	Total	2263.792	83				
3 BR	Between Groups	923.3057	12	76.94214	2.941148	0.002291	1.891216
	Within Groups	1857.402	71	26.16059			
	Total	2780.707	83				

Source: Authors Computation

Table 8: Risk associated with Residential Property Investment Return in the Study Areas

Location	Coefficient of Variation		
	1 BR	2 BR	3BR
Tunga	0.38	0.35	0.50
Bosso	0.50	0.43	0.43
Dutsen Kura	0.38	0.36	0.37
Maikunkele	0.41	0.33	0.66
Maitumbi	0.59	0.34	0.33
Kpagungu	0.41	0.35	0.38
Barkin Sale	0.48	0.35	0.58
Sauka Kahuta	0.39	0.44	0.57

Source: Authors Computation

The coefficient of variation indicted in Table 8 represents the level of risk associated with the residential property investments under study. For 1- BR apartments, Tunga (0.38) and Dutsen Kura (0.38) had the lowest whilst Maitumbi had the highest level of risk (0.59) during the period. For 2-BR apartments, the coefficient of variation shows

that risk was lowest in Maikunkele (0.33) and highest in Sauka Kahuta (0.44) during the period. However, for 3-BR apartments, Maitumbi had the lowest level of risk (0.33) whereas it was highest in Maikunkele (0.66). This result indicates that the risk connected with the return on these residential property investments varies according to the residential property investment type across all the locations under study. Based on this outcome, investments in Tunga (1-BR and 2-BR apartments), Dutsen Kura (1-BR and 2-BR apartments) and Maitumbi (2-BR and 3-BR apartments) should be considered by real estate investors if they are risk averse.

5. Conclusion

The variance in total return for all residential investment property types across all the study locations in Minna is statistically significant. The study concludes that total returns for residential investment properties in the city do not follow the same pattern and real estate investors in the city are likely to get varying levels of total return for similar type of residential property investments at different locations in the city. The risk associated with this return also varies according to the residential property investment type across all the locations considered in the study. Conclusively, the findings of this study will guide prospective real estate investors to make worthwhile decisions regarding residential property investments in the area. Based on the outcomes of the coefficient of variation, property investors in the city that are risk averse should specifically consider investing in Tunga (1-BR and 2-BR apartments), Dutsen Kura (1-BR and 2-BR apartments) and Maitumbi (2-BR and 3-BR apartments). Others that are not risk averse could invest in other types of residential property investment at other locations in the city.

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