AN ASSESSMENT OF THE APPROPRIATENESS OF THE INVESTMENT METHOD OF VALUATION FOR RESIDENTIAL PROPERTIES IN LAGOS, NIGERIA

Stanley Chika Nwaogu[1], Esther .I. Oladejo[2] and Charles .C. Egolum[3]

[1]Department of Estate Management, University of Nigeria, Enugu Campus, Enugu, Nigeria

[2,3]Department of Estate Management, Nnamdi Azikiwe University Awka, Anambra, Nigeria

ABSTRACT

The investment method of valuation is applied in calculating market value of properties expected to earn income. The method is useful in the process of estimating the non-market value of properties. Calculating market value of residential properties with the application of investment method means estimating the market value of the right to receive infinite income flows. This study examines the appropriateness of the investment method of valuation for residential properties in Lagos. The objectives are to investigating the annual rental growth rate pattern from 2009-2018; factors that informs the investment method of valuation used: preferred valuation method used for valuing residential properties and identify the level of variation in the use of conventional and contemporary investment method. The study population is residential properties and Estate surveyors and Valuers while systematic random sampling approach was adopted. Sample size is 195. Statistical tools used are weighted mean, geometric mean, standard deviation and coefficient of variation, rental index, analysis of variance. The result showed that rental values of residential properties in Lagos increased at a phenomenal rate within the period, 2009 to 2018; rental growth follows similar trend; market analysis and forces are factors informing investment method of valuation used; investment method, comparison and cost method are often used while investment method of valuation is not preferred for residential properties valuation; wide differences exist between conventional and contemporary valuation techniques. Estate Surveyors and Valuers should apply their distinct experience in carry out valuation while ensuring buyers' preference in the assessment of residential properties.

KEYWORDS: Investment Property Databank, Royal Institution of Chartered Surveyors, Nigeria property market, Years' Purchase.

1. Introduction

The Estate management profession began in Nigeria in 1969 when some few foreign trained Estate Surveyors gathered together to form the Nigerian Institution of Estate Surveyors and Valuers. In 1975, Decree 24 was enacted by the government to give the profession a legal backing. The Estate Surveyors perform other duties apart from valuation. The process for determining the value of the investment properties entails capitalizing the net rental income having carefully deducted all outgoings from the gross rent (Kuye, 2009, Ajayi, 2010). Property valuation as a discipline is fast becoming a global issue. In recent past, this discipline has attracted a lot of attention especially in the areas of accuracy, variance and the development of new techniques. The investment method of valuation is mainly applied in calculating market value of properties which earn or might earn income. The method may also turn useful in the process of estimating the non-market value of a property. Calculating market value of residential properties with the application of investment method means estimating the market value of the right to receive infinite income flows. However, the correctness of the calculations solely depend on the correct estimation of rental values, capitalization rates, discount rates or yields applied and other parameters reflecting the market segment represented by a valued properties. (Kuye, 2009) observed that "in developing economies such as Nigeria, the market valuation of investment properties does not appear intricate as obtained in advanced countries like the United Kingdom where several legislations constitute a predominant factor normally applied in valuing investment properties".

Ayedun (2009) noted that the Nigerian Institution of Estate Surveyors and Valuers (NIESV) and the Estate Surveyors and Valuers Registration Board of Nigeria (ESVARBON) have not been carrying out investigation on valuation accuracy and consistency like their counterparts in Britain where RICS and Investment Property Data Bank carried out bi-yearly study on valuations. Most property Investors who undertake property development are desirous to optimize the returns on their investments. Thus, when they commission Estate Surveyors and Valuers to acquire or dispose their properties they do so believing that these practitioners will give them the best opinion of the market value. However, scholars have generally discovered that these clients have been disappointed at the figures they were advised by different Valuers. This is due to the wideness in the opinion values. It is as a result of this that this study becomes imperative.

This study is intended to examine the appropriateness of the investment method of valuation for residential properties in Lagos metropolis. To achieve the foregoing, the researchers sought for answers to the following questions: To what extent do the Estate Surveyors and Valuers comply with the use of investment method in valuing residential properties? What factors inform the

method of valuation to be used in valuing residential properties? To what extent does the investment method of valuation estimate market value of residential properties in Lagos metropolis? What are the deficiencies observed in the use of investment method in valuing residential properties in Lagos metropolis? The remaining part of the study is presented as follows: the second section presents review of the related literature, section three presents the methodological approach used for the study, the results and discussion was presented in section four, while section five presented summary of findings, policy implication and conclusion.

Objectives of the Study

1. To determine the annual rental growth rate pattern for residential properties from 2009-2018.
2. To establish the factors that informs the investment method of valuation to be used in valuing residential properties.
3. To identify the methods of valuation preferred and used by estate surveyors and valuers for valuing residential properties.
4. To identify the level of variation in the use of conventional and contemporary investment method in the market valuation of residential property investments in Lagos.

Scope of the Study

The scope of the study was residential investment property returns in Lagos State based on the rental values, growth rate and impact of inflation of the properties under study spanning from 2009-2018.

2. Literature Review

According to Ogunba (2015), Estate Surveyors and Valuers began to adopt the position that the economy was too volatile and unstable to support the investment method capital values. This position was hinged on the premises that the investment method invariably produced estimates lower than market prices. In reaction to this, the Nigerian Institution of Estate Surveyors and Valuers commissioned a research on valuation methods with special reference to years purchase to be adopted in Nigeria property market (Igboko, 2016). This notwithstanding, the general response was a preference for cost method of valuation for investment property which has attracted a lot of critics especially from the academia (Ogunba and Ajayi, 2017; Ogunba et al, 2018). According to Ogunba et al, (2018), the Nigerian valuers should revise the yields they employ in recession times downwards to compensate for investors' expectations of income

growth (the reserve yield gap issue) and such a revision of yield should be done appropriately within the framework of discounted cash flow analysis.

In practice, it has been observed that residential property prediction often seems to be incorrect because the market value usually is not the same with price. In determining value the Estate Surveyor and Valuer sometimes uses personal knowledge, experience and judgment to arrive at final opinion of value. The vulnerability of not taking cognizance of the client's interest is feasible and consequently, there is a wide gap between the price obtained and his opinion (Aluko 2015, Ajayi 2017, Aiyedun 2019). Jefferies (2019) concluded that investment value and market value do not mean the same as the difference between the two values is subjective while their variance arose from different parameters and assumptions chosen by the Valuer. Unlike commodity goods which operate in a perfect market, the Valuer performs his duties within an imperfect market. The effect is therefore reflected in his advice of the property worth. According to Roulac (2017) cited in Aluko (2015), Valuers must be keenly aware of threefold connection between time, price and change as evident in the property market in their valuation function. Often pertinent questions like how well do valuation methods interpret the property market in Nigeria, to what extent do valuations opinions represent market prices, how consistent and reliable are valuation opinions are asked (Ogunba and Ajayi, 2017). It is as a result of the need to proffer answer to these questions that this research becomes imperative. To determine value certain different methods are used depending on the purpose of valuation and where the wrong method is used wrong value will be obtained. Though it is true that property market has its problems due to its characteristics, it is also important to investigate if the methods of valuation used by the Nigerian Valuers are appropriate.

In valuation of income producing properties like the residential properties, the Investment method is the most appropriate as it estimates the present worth of the right to future benefits. The implication of this is that annual values and capital values are related (Ayedun, 2017). This implies that the variable being the annual net rent and the years purchase must be accurate or near accurate otherwise there is bound to be problem. The appropriateness of the investment method will be in doubt if there is a misleading in the determination of the rent and the capitalized rate. However, the issues raised by Watt's (2015) reported in Dugeri (2009) as regards the imperfections and inefficiency of the property market must be examined by the Estate Surveyors in their final output. Thus, necessary care must be taken in the determinations of the multipliers. Since this depends on the experience of the Valuer.

According to Jefferies (2019) Income properties valuation have been in existence in the United Kingdom and America between the 17th century to the 21st century. However he observed that

"the 21st century Valuers and appraisers reacting to pressure of globalisation, require valid and easily understood valuation models transparent to clients" He noted that while some of them are complex others are easy to understand. These valuation methods he noted include real value model, equated yield, real value or equated yield hybrid technique, discounted cash flow (DCF) model, dialectic model, short cut discounted cash flow. Also Australia and New Zealand had their version of these models. Jefferies (2019) citing Trott (2016) observed that ''Wood's Real value approach is too complex for most practitioners to be able to use in their day to day work'' However, he recommended a more practical and simple equated yield. Subsequently, RICS Information Paper on Commercial Property Valuation Methods (RICS, 1997) in Jefferies paper recommended Equated Yield (EY) and Short Cut discounted cash flow (DCF) methods. Irrespective of the treatise of literatures surrounded with contentions for and against the need for a more improved income capitalisation a fact unfolds that the traditional income approach is outdated and requires a reexamination by the valuers in emerging economy. Until this is done their opinion of value will be nothing other than mere exercise.

Olujimi and Bello (2019) suggested that infrastructural facilities are probable factors that can influence rental value of residential properties in Nigeria as they are factors that strengthen the social livelihood of human being in urban areas. Ibrahim (2018) opined that the existence of facilities in a property would lead to high preference and competition for such properties which may results into high rental values. The absence of facilities may results into the opposite, that is, low patronage, and competition which lead to low rental values. Meanwhile, the issue of how the valuer would analyse the several factors affecting the market values of a property during the valuation process is still a problem. The solution to the problem could lie in the ability to understand the major determinants and their relative effects so that comparable sales and rental records could be more accurately adjusted in arriving at the asking price. Definitely, ordinary recognition of factors is good, but not so useful to the valuer.

Mbachu and Lenono (2017) examined the factors affecting the market values of residential properties in the Johannesburg central business district, it is somehow exceptional to the previous studies. The study made use of descriptive survey method. The survey involved both qualitative and quantitative data gathering with the use of unstructured interviews and structured questionnaire respectively. Content analyses and multi-attribute methods were employed in the analyses of the research data. The results of the study showed that location, market conditions, micro and macroeconomic dynamics, planning or building regulation, nature of interest, time value of property, property design, property size, property yield and building features are the

most influential factors affecting the market values of residential properties in the Johannesburg central business district.

Ogunba & Ajayi (2017) remarked that changing property investment landscape in the past forty years necessitated a corresponding response from all categories of Valuers in Nigeria including the academics and practitioners. Presently, most of the Valuers have not been using modern techniques to carry out their investment valuation and about 3.3% of Lagos based Valuers employed rational discounted cash flow (DCF) to carry out valuations (Ogunba, 2015). This is a clear indication that a great number of Nigerian Valuers are yet to embrace modern income valuation methods.

Bello & Bello (2017) discovered in his study on Lagos metropolis that the Nigerian estate surveyors and Valuers did not take into consideration buyers preferences in the assessment of property value noting that external factors which influence valuation cannot be easily assessed using conventional method of valuation. They posed the question "how reasonable, defensible, logical and natural are their methods of valuation, how well do these methods interpret the Nigerian residential property market in terms of buyers behaviour. "Highest and best use has a role use in valuation. The price offered by buyer therefore is a reflection of their perception or concepts of value and as such could be at congruent with market value. Consequent to the inappropriateness and lack of accuracy attached to the investment method scholars have expressed the need for paradigm shift. Ajayi (2017) discussed the existing valuation methods dated back to the last four hundred years. Secondly, "the application of remunerative interest to the rent annuities and the development of a distinct class of professionals to do the laborious calculations" Interest Act 1545 served as the legal backing. Investment valuation here took cognizance of time value of money. This is an improvement thus it gave birth to the profession estate surveying and valuation.

3. Methodology

The research approaches adopted for this work were both qualitative and quantitative techniques. To cover the study area effectively, a field survey were conducted with structured questionnaires for the major study population and anchored with semi-structured interviews for the secondary population and other relevant secondary data. The rental values of the selected residential real estate investments were collected from principal partners and branch managers of Estate Surveying and Valuation firms' in Lagos because Estate Surveyors and Valuers are the only professionals empowered in Nigeria by Decree No24 of 1975 to determine the values of properties and their interest. The total population for the study is three hundred and eighty two

(382) while Taro Yamani formula was used to determine 195 used as sample size. Hence, 195 questionnaires were administered to the firms. However, 174 questionnaires were properly filled and returned for collation, this represents 89.2% response rate. This response rate was considered enough by the researcher.

The average rental growth rate and coefficient of variation for residential property investments in Lagos for the period, 2009 – 2018 collected from Estate Surveying and valuation firm's were calculated. The average rental growth rate for the period, 2009 – 2018 were calculated using geometric mean rental growth rate and is determined as follows: -

$$X = \sqrt[n]{X_1 x X_2 x X_3 x \ldots x X_n}$$

Where X = geometric mean

X_1, X_2,… X_n are rental growth rate for each year

n = total number of years within the period

The choice of geometric mean for the calculation of the average rental growth rates for the properties for the period, 2009 – 2018 is based on the fact that each annual rental growth rate accumulated over each year, thereby creating a compounding process for the entire period. The geometric mean reasonably approximates the exponential characteristics of this compounding process (Hargitay and Yu, 2019). The standard deviation is given by: -

Standard Deviation $= \sqrt{\Sigma \left(\frac{\bar{x}-x}{N-1}\right)^2}$

Where x, $\bar{x}$ and N are as defined above. The coefficient of variation is the ratio of standard deviation of rental growth rates to the average rental growth rate and is determined as follows: -

Coefficient of variation = $\dfrac{\text{Standard Deviation of Rental Growth Rate}}{\text{Average Rental Growth Rate}}$

In order to determine whether increase in rental values of residential properties in Lagos is due to rise in inflation, correlation analysis were adopted. However, annual rental growth in the properties under study was carried out using the Pearson' s Product Moment Correlation Model. The Pearson's Correlation Coefficient is denoted by r and is computed with the expression:

$$r = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{[N \sum X^2 - (\sum X^2)][N \sum Y^2 - (\sum Y)^2]}}$$

where X = Inflation Rate

Y = Annual Rental growth Rate

XY = Product of Inflation and Annual Rental Growth Rates

N = Number of pairs

r = Correlation Coefficient

4. Results And Discussion

In this section, an analysis of the distribution and collection of questionnaires distributed.

Table 1: Distribution and Return of Questionnaire Administered on Practicing the Estate Surveyors and Valuers and Residence of the property

Class of Respondent	Sample Size/Number Distributed	Number returned / retrieved	Number not returned or improperly filled	Percentage of total number distributed and returned/retrieved	Percentage not returned or improperly filled	Total
Estate Surveying and Valuation Firms	195	174	21	89.2%	10.8%	100%
Total	195	174	21	89.2%	10.8%	100%

As depicted from the above, 195 questionnaires were distributed to Estate Surveying and Valuation firms, Out of this number, 174 questionnaires were returned / retrieved, representing 89.2% of the total number of questionnaires distributed while 21 questionnaires representing 10.8% were not returned.

Table 2: Rent Review Intervals Observed in Residential Properties in Lagos

Description	Rent Review Intervals Observed and Frequency of Properties					
	2years	3years	4years	5years	6years	Total
Tenements	11	13	7	-	-	31
1-Bedroom Flat	18	14	6	-	-	38
1-Bedroom Semi-detached bungalow	6	6	1	-	-	13
2-Bedroom Flat	22	11	4	-	-	37
2-Bedroom Semi-detached bungalow	4	4	1	-	-	9
3-Bedroom Flat	22	11	4	-	-	37
3-Bedroom Semi-detached bungalow	4	4	1	-	-	9
Total	87	63	24	-	-	174

Expected Rent Review Pattern in Residential Property Investments in Lagos.

Data collected on rent review frequency in residential properties in Lagos as presented in Table 3 reveals that most rent review in residential properties in the city are between 2 and 3 years, representing about 86.21% of the intervals observed. The expected rent review pattern is 2.638 (say 3years). The analysis for expected rent review pattern is presented in Table 4.1.22 as follows:

Table 3: Expected Rent Review Pattern in Residential Property Investments in Lagos

Rent Review Pattern	Frequency	% Occurrence	Probability	Expected Rent Review Pattern
2 years	87	50	0.5	1
3 years	63	36.2	0.362	1.086
4 years	24	13.8	0.138	0.552
5 years	-	-	-	-
6 years	-	-	-	-
Total	174	100	1.0000	2.638

Inflation in Nigeria

In order to determine the relationship between inflation and annual rental growth in the properties under study, data on inflation in Nigeria is required. The Central Bank of Nigeria provided the source of data on inflation in Nigeria. Visits were made to the Enugu Branch of the apex bank and inflation rates for the period, 2009 – 2018 extracted from its annual reports for the period. Inflation rate for 2018 was derived from the quarterly report of the National Bureau of Statistics (NBS) for the second quarter of the year. Data on inflation in Nigeria for the period 2009–2018 is presented in Table 4 as follows:

Table 4: Inflation in Nigeria, 2009–2018

Year	Inflation %
2009	11.54%
2010	13.72%

2011	10.84%
2012	12.22%
2013	8.48%
2014	8.06%
2015	9.01%
2016	15.68%
2017	16.52%
2018	12.09%

Source: Central Bank of Nigeria (CBN) Annual Reports, 2009–2018

Table 5: Awareness of the various types of the Investment method

Description	Frequency		Ranking	Ranking	d	d^2
	Yes	No	Yes	No		
Discounted cash flow model (DCF)	95	79	1	8	7	49
Wood's real value model	89	85	2	7	5	25
Equated yield model	88	86	3	6	3	9
Real value/Equated yield hybrid model	82	92	4	5	1	1
Short-cut discounted cash flow	77	97	5	4	1	1

model						
Split rate, Equivalent yield or Layer method	70	104	6	3	3	9
Blackadar's dynamic capitalization model	66	108	7	2	5	25
Arbitrage model	61	113	8	1	7	49
						168

The finding in the presentation above showed the summary of the position of various respondent Estate Surveyors and Valuers on their awareness of the various investment methods. It can be deduced that the practitioners acknowledged awareness of the first four methods that is, the Discounted Cash Flow (DCF) method, Wood's real value model, Equated yield model and Real value/Equated yield hybrid model. On the other hand, the second group claimed ignorance of the other four methods of investment.

Table 6: Weighted Rent for 3 bedroom flat in Lagos for 2011

Rent (N)	Frequency	Relative Frequency	Weighted Rent
₦800,000	1	0.05	₦ 40,000
₦ 900,000	1	0.05	₦ 45,000
₦ 1,000,000	5	0.25	₦ 250,000
₦ 1,200,000	3	0.15	₦ 180,000
₦ 1,300,000	1	0.05	₦ 65,000
₦ 1,400,000	3	0.15	₦ 210,000

₦ 1,500,000	3	0.15	₦ 225,000
₦ 1,700,000	3	0.15	₦ 255,000
∑	20	1.0000	₦ 1,270,000

The same procedure was adopted for the calculation of weighted rents for each year for the other type of residential properties. These calculations are summarised in Tables 7.

Table 7: Weighted Rents for 2 Bedroom Flat, 3 Bedroom Flat, 2 Bedroom Detached Bungalow and 3 Bedroom Detached Bungalow in Lagos, 2009 – 2018

Year	2 Bedroom Flat	3 Bedroom Flat	2 Bedroom Detached Bungalow	3 Bedroom Detached Bungalow
2009	₦ 805,000	₦ 1,010,000	₦ 980,000	₦ 1,422,000
2010	₦ 975,000	₦ 1,120,000	₦ 1,000,000	₦ 1,642,000
2011	₦ 1,112,000	₦ 1,270,000	₦ 1,243,000	₦ 1,840,000
2012	₦ 1,227,500	₦ 1,480,000	₦ 1,495,000	₦ 2,153,000
2013	₦ 1,412,500	₦ 1,760,000	₦ 1,679,000	₦ 2,345,000
2014	₦ 1,533,250	₦ 1,907,500	₦ 1,842,000	₦ 2,752,500
2015	₦ 1,651,250	₦ 2,205,000	₦ 2,070,000	₦ 2,840,000
2016	₦ 1,775,000	₦ 2,575,000	₦ 2,220,000	₦ 3,010,000
2017	₦ 1,845,000	₦ 2,770,000	₦ 2,450,000	₦ 3,240,000
2018	₦ 2,090,000	₦ 2,980,000	₦ 2,800,000	₦ 3,500,000

Rental Growth For 2 Bedroom Flat, 3 Bedroom Flat, 2 Bedroom Detached Bungalow and 3 Bedroom Detached Bungalow in Lagos, 2009 – 2018.

Annual rental growth rates were determined for the properties under study for the period, 2009 – 2018. The annual rental growth rates were determined based on weighted rents in each type of property for each year under study. The annual rental growth rates were calculated as percentage increase in rent for each of the years under study. For example, the annual rental growth rate in 2–bedroom flat for 2010 is 21.12%. This is calculated as follows:-

Rent for 2009	₦ 805,000
Rent for 2010	₦ 975,000
Rental Increase	₦ 170,000
Rental growth rate for 2009	$\dfrac{₦\,170,000}{₦\,805,000} \times \dfrac{100}{1}$
	= 21.12%

The same procedure was adopted for the calculation of annual rental growth rates for each year for each type of property under study as summarized in Tables 8.

Table 8: Annual Rental Growth for 2 Bedroom Flat, 3 Bedroom Flat, 2 Bedroom Detached Bungalow and 3 Bedroom Detached Bungalow in Lagos, 2009 – 2018

Year	Annual Growth Rate			
	2 Bedroom Flat (%)	3 Bedroom Flat (%)	2 Bedroom Detached Bungalow (%)	3 Bedroom Detached Bungalow (%)
2009	–	–	–	–
2010	21.12	10.89	2.04	15.47
2011	14.05	13.39	24.3	12.06
2012	10.39	16.54	20.27	17.01
2013	15.07	18.92	12.31	8.92

2014	8.55	8.38	9.71	17.38
2015	7.70	15.60	12.38	3.18
2016	7.49	16.78	7.25	5.99
2017	3.94	7.57	10.36	7.64
2018	13.28	7.58	14.29	8.02

Table 9: Average Rental Growth Rates for 3 – Bedroom Flat in Lagos

Year	X	$(x - \bar{x})$	$(x - \bar{x})^2$
2009	–	– 11.43	130.6449
2010	10.89	– 0.54	0.2916
2011	13.39	1.96	3.8416
2012	16.54	5.11	26.1121
2013	18.92	7.49	56.1001
2014	8.38	– 3.05	9.3025
2015	15.60	4.17	17.3889
2016	16.78	5.35	28.6225
2017	7.57	– 3.86	14.8996
2018	7.58	– 3.85	14.8225

Average Growth Rate (X)

$$= \sqrt[10]{(1.0)(1.1089)(1.1339)(1.1654)(1.1892)(1.0838)(1.1560)(1.1678)(1.0757)(1.0758)} - 1$$

$$= \sqrt[10]{2.9505} - 1$$

$$= 1.1143 - 1$$

$= 0.1143$

$= 11.43\%$

Standard Deviation $= \sqrt{\dfrac{302.0263}{9}}$

Standard Deviation $= \sqrt{33,5585}$

$= 5.79\%$

Coefficient of variation $= \dfrac{5.79}{11.43}$

$= 0.5066$

The same procedure was adopted for the calculation of average rental growth rate, standard deviation and coefficient of variation for each type of property under study for the period, 2009 – 2018. These are summarized in Table 10 as follows:-

Table 10: Average Rental Growth Rates, Standard Deviation and Coefficient of Variation for 2-Bedroom Flat, 3-Bedroom Flat 2-Bedroom Detached Bungalow and 3-Bedroom Detached Bungalow in Lagos, 2009 – 2018.

Type Of Residential Property	Rental Growth Rate, 2009 – 2018	Standard Deviation	Coefficient of Variation
2-Bedroom flat	10.01	6.03	0.6024
3-Bedroom flat	11.43	5.79	0.5066
2-Bedroom detached bungalow	11.07	7.41	0.6694
3-Bedroom detached bungalow	9.43	5.86	0.6214

Generally, the average rental growth rate are for residential properties in Lagos for the period, 2009 – 2018 is phenomenal as summarised in Table 10. The table shows similar trend for all the residential properties in study. Though 3-Bedroom detached bungalow have the lowest rental growth rate followed by 2-Bedroom flat. The Table 10 shows that all the study residential properties have average rental growth rates and the implication of these is that, investors in residential property investments in Lagos are likely to get high returns if they invest in such properties

Rental Index for 2-Bedroom Flat, 3-Bedroom Flat, 2-Bedroom Detached Bungalow and 3-Bedroom Detached Bungalow in Lagos, 2009 – 2018.

Using 2009 as the base year, rental index was constructed for the residential properties for the period, 2009 – 2018. Based on data in Tables 4.1.26, 4.1.27 and 4.1.28, rental index was calculated as follows: -

$$\left[\frac{1 + r}{100}\right] x \text{ Rental Index in the preceding year}$$

where r = annual rental growth rate in the current year.

For example, the annual rental growth rate for 3-bedroom flat for 2010 is 10.89%. The rental index is calculated as follows:-

$$\left[\frac{1 + 10.89}{100}\right] x \; 100 \; (rental \; index \; for \; the \; base \; year)$$

= [1 + 0.1089] X 100

= [1.1089] X 100

= 110.89

The same procedure was adopted for the calculation of rental index for all the study residential property in Lagos using 2009 as the base year. These are summarised in Tables 4.1.29 as follows:-

Table 11: Rental Index for 2-Bedroom Flat, 3-Bedroom Flat, 2-Bedroom Detached Bungalow and 3-Bedroom Detached Bungalow in Lagos, using 2009 as the base year.

Year	Rental Index			
	2 Bedroom flat	3 Bedroom flat	2-Bedroom Detached Bungalow	3-Bedroom Detached Bungalow
2009	100	100	100	100
2010	121.12	110.89	102.04	115.47
2011	135.17	124.28	126.34	127.53
2012	145.56	140.82	146.61	144.54
2013	160.63	159.74	158.92	153.46
2014	169.18	168.12	168.63	170.84
2015	176.88	183.72	181.01	174.02
2016	184.37	200.5	188.26	180.01
2017	188.31	208.07	198.62	187.65
2018	201.59	215.65	212.91	195.67

The Table 11 presented above showed rental index for study residential properties in Lagos for a period of ten years. Results of the rental index analysis in Lagos maintained higher upward trends in rental values. These upward trends are due to annual growth in inflation, among other factors.

Analysis of Variance of Annual Rental Growth Rates for Residential Property Investments in Lagos, 2009 – 2018.

As shown in Tables 12, rental values of residential properties in Lagos, comprising 2-Bedroom Flat, 3-Bedroom Flat, 2-Bedroom detached bungalow and 3-Bedroom detached bungalow increased annually at different rates in the past 10 years. But are the differences in annual rental growth rates within and between the various types of residential properties in Lagos statistically significant? This is an important question which this research will try to answer. In answering this question, the two way factor analysis of variance (ANOVA) was used. This resulted in F – ratio. The calculated F – ratio was compared with the critical F- value at appropriate degree of freedom to determine whether differences in annual rental growth rates within and between the various types of residential property investments in Lagos under study is statistically significant. The analysis of variance is as follows:

Table 12: ANOVA

Year	Annual Rental Growth Rates for 2-Bedroom Flat, 3-Bedroom Flat, 2-Bedroom Detached Bungalow and 3-Bedroom Detached Bungalow			
	X_1	X_2	X_3	X_4
2009	–	–	–	–
2010	21.12	10.89	2.04	15.47
2011	14.05	13.39	24.3	12.06
2012	10.39	16.54	20.27	17.01
2013	15.07	18.92	12.31	8.92
2014	8.55	8.38	9.71	17.38
2015	7.70	15.60	12.38	3.18
2016	7.49	16.78	7.25	5.99
2017	3.94	7.57	10.36	7.64

2018	13.28	7.58	14.29	8.02
$\sum$	101.59	115.65	314.87	95.67

From Table 12

X_1 = Annual Rental Growth Rates for 2 – bedroom flat

X_2 = Annual Rental Growth Rates for 3 – bedroom flat

X_3 = Annual Rental Growth Rates for 2 – bedroom detached bungalow

X_4 = Annual Rental Growth Rates for 3 – bedroom detached bungalow

Table 13: Analysis of Variance on rental growth rates for 2-Bedroom flat, 3-Bedroom flat, 2-Bedroom detached bungalow and 3-Bedroom detached bungalow

Source of variance	Sum of squares	Degree of freedom	Mean square	F – ratio
Within groups	284.068	8	35.51	1.3300
Between groups	29.59	3	9.86	0.3493
Error (residual)	640.71	24	26.70	
Total	954.368	35	27.27	

Hypothesis: The investment method does not estimates market value of residential properties in Lagos metropolis.

Decision Rule: Accept the null hypothesis if the F – ratio value is less that the critical F – value at 0.05 level of significance, otherwise, reject the null hypothesis.

Decision, Conclusion and Reason: From the Table 13, the critical (table) value of F at degree of freedom of 3 and 24 at 0.05 level of significance is 3.01. This is greater than the calculated F

ratio. Since the calculated F – ratio of 0.3493 is less than the critical F – value of 3.01, showing that the annual rental growth rates for residential property investments in Lagos do not differ significantly. It also implies that although rental values of residential properties in Lagos, comprising 2-bedroom flat, 3-bedroom flat, 2-bedroom detached bungalow and 3-bedroom detached bungalow respectively increased at a phenomenal rate within the period, 2009 – 2018, differences in the rates of such increases within and between the various types of residential properties in the property market are not statistically significant and hence, rental growth in residential properties in the metropolis follows a similar trend and pattern. These in all ramification shows that the investment method often used do not estimate market value of residential properties.

Table 14: Ranking of Factors that inform Investment Method of Valuation to be Used in Valuing Residential Properties

S/N	Description	Strongly Agreed	Agreed	Undecided	Disagreed	Strongly Disagreed	N	FX	$\bar{x}$	Ranking
		X	X	X	X					
1	Market analysis/forces	305	47	–	12	8	372	1745	4.69	1
2	Yield	259	51	–	35	27	372	1596	4.29	3
3	Property Size	20	7	–	28	317	372	501	1.35	9
4	Property Design/Style	70	83	–	90	129	372	991	2.66	6
5	Age	16	94	–	125	137	372	843	2.27	8
6	Planning/Building Regulation	35	90	–	113	134	372	895	2.41	7

7	Rental value/Income	309	31	–	20	12	372	1721	4.63	2
8	Time value of the property	161	137	–	39	35	372	1466	3.94	4
9	Nature of property interest	176	90	–	59	47	372	1405	3.78	5
	Total	1351	630	–	521	846			3.34	

In the data presented in Table 14 showing the mean mark calculated from the response of the respondents on ranking of factors that inform investment method of valuation to be used in valuing residential properties, Market analysis/forces was rated highest with a weighted mean score of 4.69 while property size on the other hand was the least rated by the respondents having a weighted mean score of 1.35. This result confirms that market analysis/forces are the major factor that informs investment method of valuation to be used in valuing residential properties.

Table 15: Ranking of Methods of Valuation Often used by Estate Surveyors and Valuers for Valuing Residential Properties

S/N	Description	Always X_4	Sometimes X_3	Seldom X_2	Not Used X_1	N	FX	$\bar{x}$	Ranking
1	Cost method only	8	20	4	340	372	440	1.18	7
2	Combination of cost method and comparison method	305	43	8	16	372	1381	3.71	2

3	Direct comparison method only	31	20	12	309	372	517	1.39	6
4	Combination of cost method and investment method	90	254	8	20	372	1158	3.11	4
5	Investment method only	23	51	82	216	372	625	1.68	5
6	Combination of investment method, comparison and cost method	340	16	12	4	372	1436	3.86	1
7	Combination of investment method and comparison method	281	47	28	16	372	1337	3.59	3
	Total	1078	451	154	921			2.65	

As shown in Tables 15, the combination of investment method, comparison and cost method was rated highest with a weighted mean score of 3.86 while cost method only on the other hand was the least rated by the respondents having a weighted mean score of 1.18. This result confirms that combination of investment method, comparison and cost method is often used by Estate Surveyors and Valuers for valuing residential properties.

Table 16: Summary of Analysis of Variance on method of valuation preferred by Estate Surveyors and Valuers for valuing residential properties

Source of variance	Sum of squares	Degree of freedom	Mean square	F – ratio
Between groups	77462.57	3	25820.86	1.9583
Within groups	316441.43	24	13185.06	
Total	393904	27	14589.04	

Hypothesis: The investment method is not preferred by Estate Surveyors and Valuers for valuing residential properties.

Decision Rule: Accept the null hypothesis if the F – ratio value is less that the critical F – value at 0.05 level of significance, otherwise, reject the null hypothesis.

Decision, Conclusion and Reason: From the table, the critical (table) value of F at degree of freedom of 3 and 24 at 0.05 level of significance is 3.01. This shows that the critical F – value of 3.01 is greater than the calculated F – ratio of 1.9583 which proves that the investment method of valuation is not preferred for valuing residential properties in Lagos.

Table 17: Summary of Capital Values of Conventional Technique and Contemporary Technique.

Nature of Interest	Valuation				Differential ₦			% Difference		
	Conventional Technique ₦000,000	Contemporary Technique ₦								
		Discounted Cash	Real Value	Rational Approach	Discounted Cash Flow	Real Value	Rational Approach	Discounted Cash Flow	Real Value	Rational Approach

		Flow ₦000,000	₦000,000	₦000,000	₦000,000	₦000,000	₦000,000			
Freehold Interest	₦41.8	₦60.4	₦60	₦48	₦18.6	₦18.2	₦6.2	44.5%	43.5%	14.8%

Source: Computed from Appendix 7

From the information gathered from Estate Surveyors and Valuers in the field in respect to their past investment method of valuations coupled with available information gathered on the rental growth, rent review period and inflation, investment valuation was carried comparing the conventional and contemporary techniques where the result showed a wide differences between the various valuations. This scenario typifies what is obtainable in the market valuation of residential property investments in Lagos metropolis. In the valuation of the freehold interest, the contemporary valuations are 44.5% (Discounted cash flow), 43.5% (Real value) and 14.8% (Rational Approach) higher than the conventional valuation. These differences arise as a result of the deficiency in the use of conventional valuation technique in handling investment valuation problems due to lack of proper reference to rental gearing, inflation and rent reviews.

5. Summary of Findings, Implication and Conclusion

The result showed that rental values of residential properties in Lagos, comprising 2-bedroom flat, 3-bedroom flat, 2-bedroom detached bungalow and 3-bedroom detached bungalow respectively increased at a phenomenal rate within the period, 2009–2018 while the differences in the rates of such increase within and between the various types of residential properties in the property market are not statistically significant and hence, rental growth in residential properties in the Lagos follows a similar trend and pattern which proves in all ramification that the investment method often used do not estimate market value of residential properties; It was confirmed that market analysis and forces are the major factor that informs investment method of valuation to be used in valuing residential properties; the result confirms that combination of investment method, comparison and cost method is often used by Estate Surveyors and Valuers for valuing residential properties. The study also proves that the investment method of valuation is not preferred for valuing residential properties in Lagos; while finding on past investment method of valuations on rental growth, rent review period and inflation showed a wide differences between the various valuations which arise as a result of the deficiency in the use of

conventional valuation technique due to lack of proper reference to rental gearing, inflation and rent review. The general implication is that the use of investment method is gradually phasing out among estate surveyors and valuers in Nigeria due to lack of confidence on the method.

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