Analysis of Capital Values of Duplex Residential Properties in Benin Property Market Segments

[1]Raphael Oshiobugie Sado, [2]Ifeanyichukwu Valentine Nwafor, [3]Inipami Prince Johnnie
[1]Department of Estate Management, Nnamdi Azikiwe University, Awka
*Correspondence email: [2,3]Department of Estate Management, University of Nigeria

ASTRACT: *Duplexes are types of residential properties built and designed on two floors to accommodate a single family unit and these have become a trending form of residential accommodation in recent times. An investor would be interested in observing the trend of capital value of such investment to be able to appreciate his venture. The aim of this study is to analyze the capital value of duplex residential properties in Benin property market, having the objectives of determining the trend and significance of variation of capital values in the identified market segments of Benin City. The survey research design was used as the research methodology. Estate surveying and valuation firms active in property management in Benin provided responses through questionnaires, interviews and observed documented records. Tables, graphs, trend analysis, and one-way ANOVA were used to examine the data collected. The study revealed that the trend of capital values of Duplexes has been steadily increasing over time, and indicated significant variation in the respective property market segments except in Siluko. As a result, it was concluded that the trends and variations could be attributed to the level of accessibility of the property, cost of building materials, trends in the property market, cost of land, and other factors, and that prospective investors should consider these factors before investing in Duplex residential property in Benin City in order to hedge over loss or depreciation of capital value of investment.*

KEYWORDS: analysis, capital values, duplex, residential properties, property market segment

INTRODUCTION

Residential properties are one of the various types of properties which include commercial properties, industrial properties, agricultural properties, etc, that are available from property development that provide accommodation for man in different ways and for numerous purposes. Residential properties in particular, provide housing and dwelling place for human habitation. However, the investment in real estate (property) involves the expenditure of a capital sum which its value is expected by the investor to be maintained over the period of holding the property, thus the knowledge and understanding of the performance of the sector is of utmost importance in providing

a basis for better investment evaluation, decision and risk management (Fraser, 1993 as cited in Sado & Emoh, 2021).

Real estate investment is a major source of capital appreciation and a solid inflation hedge (Igbinosa, 2011). The real estate market is catching up to the money and capital markets in popularity and importance. Residential properties development as an aspect of real estate investment are of different types and require varying sums for acquisition and disposal, even as one moves from one market area to another, thereby indicating differences in the amount an individual would be able to transact for same type of residential property.

This study is aimed at Analyzing the Capital Values of residential properties in Benin property market segments with the view to ascertaining the trend and determining the level of variation of capital values of residential properties in Benin City. The study is carried out specifically on Duplex residential properties and for a period of ten (10) years spanning 2011 and 2020.

LITERATURE REVIEW

Concept of Capital Value

Capital value according to Udechukwu (2006) has been variously described as the price, which a property might be expected to realize if sold in the market by a willing seller. It was explained to be the best/highest price at which an interest in a property might be expected to be sold by private treaty at date of valuation assuming a willing seller, a reasonable period within which to negotiate the sale, taking no account the nature of the property and the state of the market, values will remain constant throughout the period, the property will be freely exposed to the market and that no account would be taken of additional bid by a special purchaser.

The Nigeria Valuation Standards (2019) defined market value to be the estimated amount for which an asset or liability should exchange on the valuation date between a willing buyer and a willing seller, in an arm's length transaction, after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion, However, capital value in this context defines the transaction market value finally agreed upon by the parties to a sale/purchase of a property and thus also termed the sale price for the sake of this study. Thus, it is the best price reasonably obtainable by the seller and the most advantageous price reasonably obtainable by the buyer in a market transaction.

The Nigeria Valuation Standards (2019) went further to define a willing buyer as one who is motivated but not compelled to buy, and is neither over eager nor determined to buy at any price. While a willing seller is seen as one who is neither over eager nor forced to sell at any price, nor prepared to hold out for a price not considered reasonable in the current market.

An Overview of the Property Market

A market is the sum of the transactions of buying and selling of a commodity, it also includes all the factors and forces of demand and supply which influence market price and which affect the rates or intensity of market activities (Salau, 2017). The market factors may be national, regional or local. He

defined the property market as the medium through which bundles of rights in landed property are being exchanged which could also be a system of transaction between a landowner, land user and estate agent, being the sum of all other smaller or larger markets operating in different types of interests in land, thus having markets for residential, commercial, agricultural, industrial and other specialized properties. The peculiarity of the property market being that the object of exchange is the bundle of rights, not the physical solum, such as freehold, leasehold, easement, profit and licence.

Udechukwu (2014) was of the same opinion further stating that the 3 principal actors to a property transaction of sale or lease are the buyer and seller or the landlord/lessor and the tenant/lessee, having the intermediary which is ideally the professional and qualified Estate Surveyor and Valuer to facilitate the transaction. Ogunba (2013) described property market as the interaction of individuals who exchange real property rights for other assets such as money stating that the property market is not a single entity; that there are a number of markets; some local, some national and some international. For example, residential properties required for occupation are normally dealt with locally. The classification of the property market is generally viewed from, property types, location, sale market, lease market and property investment market or property for occupation (Ighodalo, 2003). Therefore, the property market has a unique nature by virtue of the size and fixity of the items traded. It is therefore defined as a series of financial transactions involving the transfer of rights of ownership of the existing interest (part or whole) in landed properties. One investing in property has a choice as to which sector of the property market he should invest his money. There is the residential property market, commercial property market, industrial property market, agricultural property market, etc, and one may also be influenced by choice of location of the property market sector. But his choice of any of these is very much subjective.

Features of the Property Market
Udechukwu (2006) summarized the features of the property market as follows;
a.   The property market is an imperfect one
b.   The commodity being sold is heterogeneous
c.   Vendors/vendees are not in close contact and they lack vital information about the market
d.   It does not consist of one large market but is rather made up of series of sub markets which may be local, national or international in nature
e.   The supply side of the market cannot react very rapidly to changes in demand
f.   Cost of transfer is very high
g.   Property is illiquid, i.e. it cannot be readily converted into cash

Functions of the Property Market
Salau (2017) identified the primary functions of the property market to include the following;
1.   Allocation of existing land uses by the price mechanisms in the absence of any external pressure.
2.   It functions in the redistribution of the price of land resources by the interplay of demand and supply.
3.   Redistributing the existing land resources in accordance with changes in demand and supply.\
4.   It functions in determining the level and nature of capital improvement to be carried out on land.

5.   It functions in determining the appropriate use to which the land resources should be put.

The Residential Property Market
Residential property is one of the uses/types of property available in real estate (property) development. A residential property is a type of property wholly or partly used for dwelling, in as much as people live in the building. Such properties occupy about three-quarter (3/4) of the total space of any city, as they provide any form of shelter (Ajayi, 1998). Kuye, (2009) defined residential properties as properties used as dwelling accommodation, and are also referred to as houses. According to Ighodalo (2003), the residential property market is the most active among the types of property market with respect to use. The market involves transactions in residential properties which can be sub-divided into: Duplex, block of flats, bungalow, tenement, etc, property market. It is also sub-divided according to locality, price range, whether for sale or renting or for investment or occupation.

Duplexes as Types of Residential Properties
According to Kuye (2009), Duplexes which are also known as maisonettes are buildings designed on two floors for a single family unit, usually with a sitting room, kitchen and every convenience located downstairs. They are variants of flats but with another floor as all facilities and accommodation are shared between two floors. Duplexes may also be in detached or semi-detached forms having two units or sections, with one being the mirror image of the other. Or even in terrace forms having several units with or without fence demarcations between them.

Market segmentation
Market segmentation is the process of dividing or sub-dividing a homogenous market into identifiable segments or parts having similar needs, wants or demand characteristics. Its goal is to create a marketing mix that closely matches the customer expectations in the target categories (Gupta 2007). Market segmentation is described by the Internet Centre for Management and Business Administration (ICMBA), as quoted by Kuye (2009), as the split of a market into separate homogeneous groups of consumers. Rather than offering the same marketing mix to a wide range of customers, market segmentation allows businesses to customize their marketing mix to a specific target market, better meeting their demands. A target segment should be,

   i.   Measurable and identifiable
  ii.   Accessible by communication and distribution channels
 iii.   Different in its response to a marketing mix (uniqueness)
 iv.   Durable (Not changing too quickly)
  v.   Substantial enough to be profitable.

The best basis for segmenting the market is established by marketing research, market trends, and managerial judgment, and it varies depending on the situation. Internally homogeneous segment members, that is, as similar as possible inside the segment and as diverse as possible between segments, are the consequence of good market segmentation. A market can be segmented by various bases or strategies which include geographic, demographic, psychographic and behavioural

segmentations However, this study is based on the Geographic segmentation of the Benin (residential) property market.

RESEARCH METHODOLOGY

Survey research design was employed in this study. It entails data collection from a specific sample with the aim of exploring and describing the behaviour of such data, and is mostly adopted in social and psychological research (Check and Schutt 2012), The required data for the study which majorly comprised of capital values of Duplex residential properties in the various Benin property market segments over the study period, were obtained from a purposive sample of forty (40) representing 74% of the total fifty-four (54) firms of registered and practicing Estate Surveyors and Valuers in Benin, through the instruments of questionnaires, direct oral interview and observation of documented records. Data collected were presented using tables and analyses were carried out using Trend analysis which according to Omotoso (2002) as cited in Sado, Nwafor and Nwaogu (2022) is a method that captures the average path which data follows over time in a Time series graph, displaying the general trend of movement despite seasonal or cyclical variation over a length of time, thus resulting in the generation of a Trend model of the path, and Oneway Analysis of Variance (ANOVA) with an adopted decision rule at $p{\leq}0.05$ level of confidence, according to Pallant (2011), to determine if there is a significant variation among the mean scores on the dependent variable.
The Trend Model as adopted from Sado, Nwafor & Nwaogu (2022) is analyzed as follows:

Trend Model: $\qquad$ **Y = a + bt**
Where: $\qquad$ Y = Dependent variable (Capital value to be projected)
$\qquad$ a = Intercept (the value of Y- Capital value when t = 0, that is 2011)
$\qquad$ b = Slope of the line (of Capital value)
$\qquad$ t = Explanatory variable (Period - Year to be projected)
The formula for One-way ANOVA is mathematically summarized as follows:
$F = \dfrac{\text{MST}}{\text{MSE}}$ $\qquad$ Where: $\quad$ F $\quad$ = ANOVA Coefficient
$\qquad$ MST $\;$ = Mean Sum of squares due to Treatment (Group)
$\qquad$ MSE $\;$ = Mean Sum of squares due to Error (Within)
$MST = \dfrac{\text{SST}}{k-1}$ $\qquad$ SST $\quad$ = Sum of Squares Treatment (Group)
$\qquad$ k $\qquad$ = No. of Groups (Degree of freedom for treatment)
$MSE = \dfrac{\text{SSE}}{n-k}$ $\qquad$ SSE $\quad$ = Sum of Squares Error (Within)
$\qquad$ n $\qquad$ = Total number of observations
$\qquad$ k $\qquad$ = Degree of freedom for error (Within)
Source: One-way ANOVA: Comparing means of more than two samples (Verma 2013)

MATERIALS AND DISCUSSION

The study is aimed at analyzing the Trend of Capital Values of Duplex residential properties in various property market segments of Benin City. The responses retrieved through the various research instruments employed for the study are presented and analyzed a s follows:

Capital Values of Duplex Residential Properties in Various Property Market Segments of Benin over the Period of 2011 to 2020

The capital values of Duplexes in various property market segments of Benin comprising: GRA, Sapele road, Airport road, Ekenwan, Siluko, Ugbowo, Sakponba road, Ikpoba Hill and Aduwawa, generated from Estate Surveying and Valuation Firms in Benin City are presented in Table 1 as follows:

Table 1: Average Capital Values of Duplexes in Various Market Segments between 2011-2020

Year	2011 – 2013	2014 – 2016	2017 – 2019	2020
Residential location (Duplex)	Capital (sale) value (₦,000)	Capital (sale) value (₦,000)	Capital (sale) value (₦,000)	Capital (sale) value (₦,000)
GRA	33,800	38,000	42,500	48,500
Sapele road	28,000	33,000	37,000	41,800
Airport road	33,800	38,300	42,500	47,800
Ekenwan	20,000	23,000	26,500	31,000
Siluko	18,000	20,000	22,000	25,000
Ugbowo	20,000	25,000	31,500	36,000
Sakponba road	18,000	22,000	26,000	30,000
Ikpoba Hill	20,000	25,000	28,000	36,000
Aduwawa	20,000	30,000	34,000	38,500

From Table 1 it is observed that capital values have generally increased for Duplexes over the study period of 2011 to 2020 in all the property market segments, however, GRA and Airport road displayed the highest averages of ₦33,800,000 respectively in 2011 to 2013, ₦38,000,000 and ₦38,500,000 respectively in 2014 to 2016, ₦42,500,000 respectively in 2017 to 2019 and ₦48,500,000 and ₦47,800,000 respectively in 2020 followed by Sapele road, Aduwawa, Ikpoba Hill and Ugbowo, having lower averages in Ekenwan and Sakponba road, and lowest indicated in Siluko having ₦18,000,000 in 2011 to 2013, ₦20,000,000 in 2014 to 2016, ₦22,000,000 in 2017 to 2019 and ₦25,000,000 in 2020.

Discussion of Opinions of Factors that Affect Capital Values of Residential Properties in Benin City

According to responses from Estate Firms in Benin City, the major factors that affect the capital values of residential properties include; Accessibility to properties, cost of building materials, Urbanization and population explosion, availability of infrastructural facilities demand and supply factors and trends in property market, location of the property, inflation and other economic conditions, cost of land acquisition, quality of environment/neighbourhood attributes, standard of finishes, and age and condition of such properties. Other factors identified by fewer respondents include; Home size and usable space, Urban renewal by Government (particularly between 2008 and 2016), availability of parking lot, interest rate on loan/access to loan for property development, fall in purchasing power of the Naira (₦), and local agents (Real estate agents) inability to determine proper capital values. It is also opined that Benin City being centrally located geographically, hence attracting economic growth along its boundaries leading to expansion of the City, and old properties

trying to meet up with new standard ones have tremendously affected the trend of capital values of residential properties in the area.
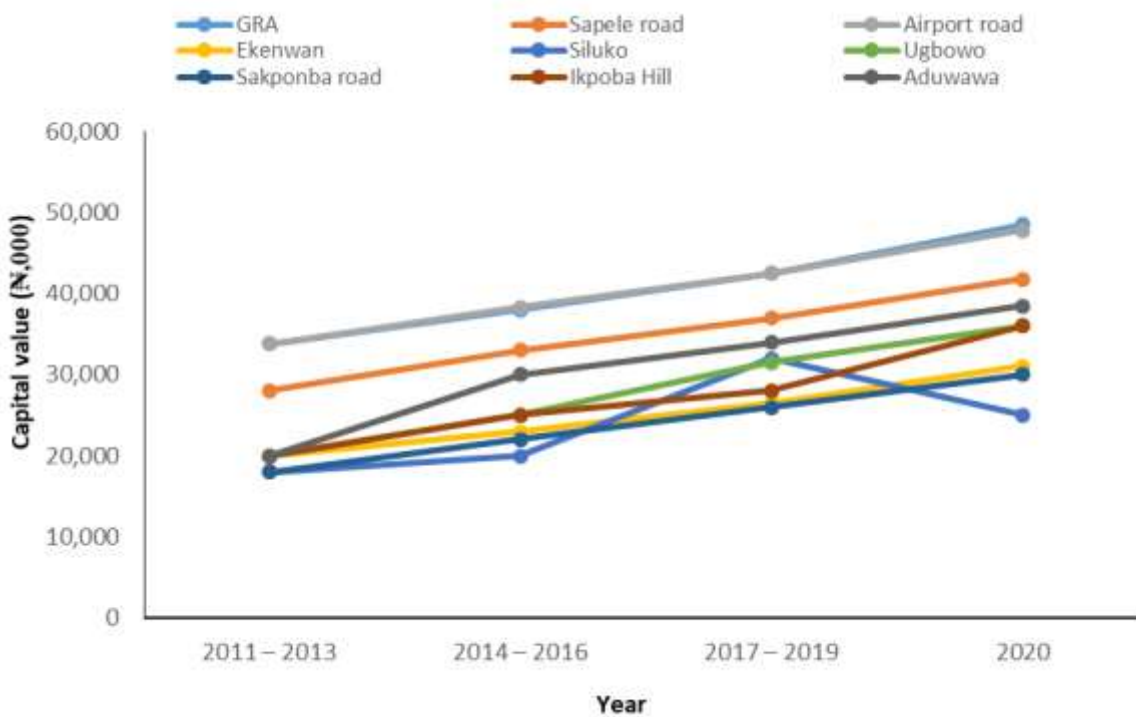

Figure 1:   Trend of Capital Values of Duplexes in Benin Property Market Segments

Trend Analysis and Model of Capital Values of Duplex Residential Properties in the Property Market Segments of Benin City

Table 2 to Table 10 present the Trend results of the analysis of the Capital values of Duplexes in the respective property market segments of Benin adopting three year intervals between 2011 and 2020, with their corresponding Trend Models indicated as follows:

Table 2: Trend Analysis of Capital Values of Duplexes in GRA Market Segment

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	28550.000	813.327		35.103	.001
	t	4860.000	296.985	.996	16.364	.004

a.   Dependent Variable: GRA
b.   Predictors: (Constant), t

Trend Model of Capital values for GRA: Y = ₦28,550,000 + ₦4,860,000t

Table 3: Trend Analysis of Capital Values of Duplexes in Sapele Road Market Segment

Coefficientsª

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	23600.000	359.166		65.708	.000
	t	4540.000	131.149	.999	34.617	.001

a.   Dependent Variable: Sapele Road
b.   Predictors: (Constant), t

Trend Model Capital values for Sapele Road: $Y = ₦23,600,000 + ₦4,540,000t$

Table 4: Trend Analysis of Capital Values of Duplexes in Airport Road Market Segment

Coefficientsª

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	29050.000	439.886		66.040	.000
	t	4620.000	160.624	.999	28.763	.001

a.   Dependent Variable: Airport Road
b.   Predictors: (Constant), t

Trend Model Capital values for Airport Road: $Y = ₦29,050,000 + ₦4,620,000t$

Table 5: Trend Analysis of Capital Values of Duplexes in Ekenwan Market Segment

Coefficientsª

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	16000.000	656.696		24.364	.002
	t	3650.000	239.792	.996	15.222	.004

a.   Dependent Variable: Ekenwan
b.   Predictors: (Constant), t

Trend Model Capital values for Ekenwan: $Y = ₦16,000,000 + ₦3,650,000t$

Table 6: Trend Analysis of Capital Values of Duplexes in SIluko Market Segment

Coefficientsª

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	15500.000	6835.569		2.268	.151
	t	3300.000	2495.997	.683	1.322	.317

a.   Dependent Variable: Siluko
b.   Predictors: (Constant), t

Trend Model Capital values for Siluko: $Y = ₦15,500,000 + ₦3,300,000t$

Table 7: Trend Analysis of Capital Values of Duplexes in Ugbowo Market Segment

Coefficientsª

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	14500.000	711.512		20.379	.002
	t	5450.000	259.808	.998	20.977	.002

a.   Dependent Variable: Ugbowo
b.   Predictors: (Constant), t

Trend Model Capital values for Ugbowo: Y = ₦14,500,000 + ₦5,450,000t

Table 8: Trend Analysis of Capital Values of Duplexes in Sakponba Road Market Segment

Coefficientsª

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	14000.000	4187.684		4.623.	.026.
	t	4000.000	1472.413	.957	4.824.	.043.

a.   Dependent Variable: Sakponba Road
b.   Predictors: (Constant), t

Trend Model Capital values for Sakponba Road: Y = ₦14,000,000 + ₦4,000,000t

Table 9: Trend Analysis of Capital Values of Duplexes in Ikpoba Hill Market Segment

Coefficientsª

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	14500.000	1877.498		7.723	.016
	t	5100.000	685.565	.982	7.439	.018

a.   Dependent Variable: Ikpoba Hill
b.   Predictors: (Constant), t

Trend Model Capital values for Ikpoba Hill: Y = ₦14,500,000 + ₦5,100,000t

Table 10: Trend Analysis of Capital Values of Duplexes in Aduwawa Market Segment

Coefficientsª

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	15750.000	2693.743		5.847	.028
	t	5950.000	983.616	.974	6.049	.026

c.   Dependent Variable: Aduwawa
d.   Predictors: (Constant), t

Trend Model Capital values for Aduwawa: Y = ₦15,750,000 + ₦5,950,000t

From Table 2 to Table 10, the respective Trend models were extrapolated and from indications, the Capital value intercept in year 0 (2011) is highest in Airport Road with value of ₦29,090,000 with Capital value indicating highest slope line of ₦5,950,000 in Aduwawa. However, Capital value

indicted lowest intercept of ₦14,000,000 in Sakponba Road with Capital value indicating lowest slope line of ₦3,3000,000 in Siluko.

Test of Research Hypothesis

H₀: There is no significant variation in the Capital values of Duplex residential properties in Benin residential property market segments.

The data presented in Table 1 were analyzed using One-way Analysis of Variance (ANOVA) in order to test the Hypothesis of the study. This is to determine the significance of the variation between the mean capital values of Duplexes within the various property market segments (GRA, Sapele road, Airport road, Ekenwan, Siluko, Ugbowo, Sakponba road, Ikpoba Hill and Aduwawa) between 2011 and 2020 adopting three year intervals. The analysis is presented in Table 11 as follows:

Table 11: One-way ANOVA for Capital Values of Duplex in Benin Property Market Segments
ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
GRA	Regression	118098000.000	1	118098000.000	267.796	.004[b]
	Residual	882000.000	2	441000.000		
	Total	118980000.000	3			
Sapele Road	Regression	103058000.000	1	103058000.000	1198.349	.001[b]
	Residual	172000.000	2	86000.000		
	Total	103230000.000	3			
Airport Road	Regression	106722000.000	1	106722000.000	827.302	.001[b]
	Residual	258000.000	2	129000.000		
	Total	106980000.000	3			
Ekenwan	Regression	66612500.000	1	66612500.000	231.696	.004[b]
	Residual	575000.000	2	287500.000		
	Total	67187500.000	3			
Siluko	Regression	54450000.000	1	54450000.000	1.748	.317[b]
	Residual	62300000.000	2	31150000.000		
	Total	116750000.000	3			
Ugbowo	Regression	148512500.000	1	148512500.000	440.037	.002[b]
	Residual	675000.000	2	337500.000		
	Total	149187500.000	3			
Sakponba Road	Regression	112660000.000	1	112660000.000	10.393.	.043[b]
	Residual	21680000.000	2	10840000.000		
	Total	134240000.000	3			
Ikpoba Hill	Regression	130050000.000	1	130050000.000	55.340	.018[b]
	Residual	4700000.000	2	2350000.000		
	Total	134750000.000	3			
Aduwawa	Regression	177012500.000	1	177012500.000	36.592	.026[b]
	Residual	9675000.000	2	4837500.000		
	Total	186687500.000	3			

The result of the ANOVA presented in Table 11 which tests the null hypothesis that states; there is no significant variation in the Capital values of Duplex residential properties in Benin residential property market segments, indicates that we reject the null hypotheses for GRA, Sapele Road, Airport Road, Ekenwan, Ugbowo, Sakponba Road, Ikpoba Hill and Aduwawa as they generated calculated p-values of 0.004, 0.001, 0.001, 0.004, 0.002, 0.043, 0.018 and 0.026 respectively which are all less than the 0.05 level of significance. However, we accept the null hypothesis for Siluko with p-value of 0.0317. It is therefore concluded from the foregoing that there is significant variation in Capital values of Duplex in Benin residential property market segments except in Siluko.

FINDINGS, CONCLUSION AND RECOMMENDATIONS

Findings

The study revealed that Capital values of Duplexes in Benin have demonstrated various trends within different property market segments of GRA, Sapele road, Airport road, Ekenwan, Siluko, Ugbowo, Sakponba road, Ikpoba Hill and Aduwawa. These trends of capital values are graphically presented in Figure 1 over their respective period intervals. Corresponding trend models of the growth of capital values over the period of study are generated from the analysis of respective capital values in Table 2 to Table 10, with 2011 as the base year having highest value in Airport road and lowest value in Sakponba road, and corresponding highest unit change in capital value per year in Aduwawa with lowest unit change in value in Siluko.

It was further revealed from analysis in Table 11 with the use of Oneway ANOVA at p-value 0.05 level of significance, that there is significant variation in capital values of Duplex residential properties in Benin property market segments with particularly strong variation in GRA, Sapele Road, Airport Road, Ekenwan, Ugbowo, Ikpoba Hill and Aduwawa, and relative variation in Sakponba road, however, Siluko indicated no significant variation in capital values of Duplex residential properties over the study period of 2011 to 2020.

The factors responsible for the variation of capital values of residential properties in Benin were objectively opined by respondents to majorly include: accessibility to properties, cost of building materials, Urbanization and population explosion, availability of infrastructural facilities, demand and supply factors and trends in property market, location of the property, inflation and other economic conditions, cost of land acquisition, quality of environment/neighbourhood attributes, standard of finishes, and age and condition of such properties among other factors.

Conclusion

In conclusion, there is variation in the capital values of Duplex residential properties in the various Benin property market segments comprising; GRA, Sapele Road, Airport Road, Ekenwan, Ugbowo, Sakponba Road, Ikpoba Hill and Aduwawa, except in Siluko. These variation is as a result of differing trends of capital values over the years in the respective property market segments. This can be attributed to numerous factors, such as; accessibility of property, cost of building materials, etc

Recommendations

Being that Duplex residential properties in Benin tend to maintain rising variation in the trend of capital values in virtually all the property market segments, particularly Airport road, apart from in Siluko which though indicates variation but not significant enough, and thus making Duplex investment in Benin an attractive one in terms of capital value maintenance, the study posits such investment as having a hedge against inflation which is a major factor in the current economic situation. It is also recommended that professionals in the real estate practice who advice on the capital values of properties, consider the factors that affect capital values, such as, property accessibility, cost of building materials, etc, in determining their values.

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