

Sustainable Investment Appraisal of Latent Values in Undeveloped Sites in Barnawa Kaduna, Nigeria

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Abstract- Real estate investment is considered the most complex and sophisticated form of investment compared with stocks, bonds and other finance sector investment, due to the influence of such factors as location and social trends as well as obsolescence (functional/physical) on its performance. Real estate investment decisions must be guided on intuition to avoid colossal loss thus the need for employing appraisal techniques as highest and best use technique to justify resource allocation to productive and best use among competing opportunities. Comparative analysis technique of yields from investment potentials of some selected sites was adopted. The study revealed there exist some vacant plots along AliyuMakama Road Barnawa Kaduna, having untapped latent value for investment but were left vacant thus termed vacant for speculation even though speculation is statutorily discouraged in the land use act 1978 with no visible machinery of enforcement to deter offenders. This has not only thwarted the aesthetics of the area but bred security threat as being a rearing ground for criminals, rodents and reptiles thus jeopardizing sustainable city growth enshrined in the city master plan.

Keywords- Sustainability, latent value, Development Potentials and Valuation

I. INTRODUCTION

Investment is simply the act of prudent engagement of resources on a carefully selected medium to achieve future stream of income (Olayonwa 2006) ranging from savings account, stocks, bonds, to real estate. It involves some degree of risk taking thus requiring investors to exercise cautions and explore mitigation measures towards securing their investment to achieve income/capital sustainability. Achieving income/capital sustainability depends on satisfactory answer to pertinent question as "How and When to invest"? and "What will be the return"? How secured is the investment and income there from?

Real estate investment is considered the most complex and sophisticated form of investment compared with stocks, bonds and other finance sector investment, for influence of such factors as location and social trends as well as obsolescence (functional/physical) on its performance (Scribner 1997). Real estate investment decisions must be guided for decision based on intuition to avoid colossal loss (Oguefi 2002) thus the need for employing appraisal techniques as highest and best use technique (Dotzour et al 1990) to justify resource allocation to productive and best use among competing opportunities.

Kremer et al (2013) Ogbuefi (2002) and USPAP (2001) concurred on the assertion that highest and best use concept does not only consider future income accruable to investment but with certainty and sustainability of investment as well as value for investment. Investment

decisions are made on two facets namely the type of use and density of use. Conversely, highest and best use concept weigh options on physically possible, legally permissible, financially feasible and maximally productive (Fanning 1994) while Boddy (2002) sees highest and best use concept as the most important yet least understood concept in real estate investment regime. This is the more reason why studying highest and best use is important for underutilized properties to facilitate redevelopment and latent value realization.

Neighborhoods in urban areas are developed over decades and centuries in some cases thereby transiting from new to fully developed neighborhoods having relatively good infrastructural services/facilities provision stimulating development and consequential demand for developed properties. It is reasonably expected that lands in settled neighborhoods are fully developed and utilized so that owners or investors could enjoy income from their investment in form of return through maximum productivity. However, the researcher observed the contrary in Barnawa district along AliyuMakama road been a developed neighborhood.

There exist pockets of land with latent value and development potential but are left fallow and subjected to less economic uses and have gradually become a source of nuisance to others in addition to value-degrading especially to neighboring properties in line with (Kremer et al 2013). Consequently, real values are not explored leaving the owners with little or no return from/on their capital invested

in acquiring the land. This article seeks to explore underlying reasons and contributing factors to land following in the area.

II. VACANT LAND

United States environmental protection agency defined vacant lots/lands as a neglected parcel of property that has no buildings on it. While Vacant and derelict land audit committee (Duff & Ellis 2011) defined vacant land as “an appropriate site for development but not currently used for a purpose allocated in local plan. It must have been previously developed or no previous development have been under taken to prepare the land for future development, it must be located within a settlement as defined by local authority latest local plan.

Wilkinson (2011) broadened the scope to consist of boarded-up buildings, unused vacant lots, gaps, consecutives, blocks and corridor ‘gaps are vacant lots (single) that are commonly found in residential neighborhoods between well-developed properties and where temporary use adds social and economic value while consecutive are two or more consecutive lots existing within an urban area whereas Blocks and corridor are vacant lots that run along urban and sub-urban corridors’.

III. FACTORS INFLUENCING LAND VACANCY

Kremer et al (2013) identified demographic and preference shifts, sub-urban expansion, de-industrialization and work force relocation as major factors influencing vacancy of lots contrary to Mc Pearson (2012) who attributed land vacancy to tradition, social or cultural reasons mostly traced to demand and supply factors as well as neighborhood change and changing preferences of residents based on the following considerations

- Neighborhood change is assessed on the causes, pattern of change, causes and effect of change without neglecting the hypothesis in the invasion-succession model of estate life cycle (population characteristics determine change in land use pattern).
- Competition for housing between locals and settlers in search of economies and employment patterns.
- Life cycle change as a major cause of vacancy. It involved development, transition, downgrading, thinning out and renewal where several component of a neighborhood as social status, race, age, quality and condition of housing changes and influence the shift from one stage of the life cycle to another. This is because when neighborhoods downgrades and eventually thin out, it may result in higher incidences of vacant lands as people move out of neighborhoods without incoming residents to replace them.

- Niemetz (2012) identified speculation and government policies with specific reference to role of taxation as major factors responsible for vacant land in developed neighborhoods thus the basis upon which our case studies were examined.

IV. FACTORS AFFECTING LAND USE

Urban land use is a physical manifestation of socio-economic, cultural, political and environmental forces shaping the use of land in urban areas. A show of Toronto’s land use pattern suggests four other factors to include Land value, Zoning, Technology and climate grouping them into economic and non-economic factors as reported by Adebayo (2009) in Moladun and Oduwaye (2004).

Whereas Oruonye (2014) concluded that land value changes occur as a result of economic changes, taxation to land, social and environmental impacts, this has clearly shown that land uses are products of intersections between various factors adjudged to be both internal and external, thus the need to assess every factor in-relation to subject parcel and neighborhood characteristics.

V. HIGHEST AND BEST USE CONCEPT

Although founded on paradoxical premises and lacks consensus, highest and Best use have been identified as a key concept supporting real estate investment and value decisions (Dotzour et al 2001) and further researched by (De lisle 2001, Ifediora et al 1992 and Ogbuefi 2002) who variously opined that a model/models to be used in the highest and best use as with other economic theories must derive definitions through formal models to achieve precision and analytical consistency.

VI. THE INTERACTIVE DESIGN/MARKETING MODEL

This is a multistage land use decision model. In highest and best use analysis, this model is useful in testing existing uses against optional uses enabling overcoming of the natural tendency to accept status quo as the Highest and Best use. It can also be used to cost out, quantify and determine the probability of raw /vacant land’s development potentials for various uses. (De Lisle 2001). Application of the model is in stages as thus the four stages of the model are; Problem Definition, Speculation of Alternative Uses, Estimation of Alternatives and Revenue.

VII. CASH FLOW MODEL/DISCOUNTED CASH FLOW

Discounted cash flow technique/model is applied in determining investment viability to guide decision making (Greer Kolbe 2003) while Bravi and Rossi (2001) reported

it to be the most widely used model in investment analysis and termed it “traditional DCF (Discounted cash flow) model”. whereas Bruggeman & Fisher (1993), Greer and Fanell (1993) and Corgel (2003) advocated the use of (Simultaneous) DCF models to estimate value of Real estate investments with specific consideration to holding period, Resale price, Gross income flow, Expenses (regular and periodic) Fees/taxes, target rate of return.

However, financial model are also applicable provided they satisfy three characteristics: the model must consider amount and timing of cash flows, time value of money and consistently select the use that will produce the highest financial reward Foss (1997).

VIII. OPTIMIZATION MODEL

Optimization model evolved as a mathematical supplement to highest and best use concept where monetary values are assigned to physical, legal and location factors in determining highest and best use as below.

The Lagrangian function illustrates the significance of the cost of capital and the cost of productive inputs in the identification of Highest and Best use which maximizes the net present value of the site in question (Dotzour et al 1990)

$$H = f\left(\frac{P, L, r}{U}\right) \text{ ——— Kijt-L-P-V}(r-R^*)$$

Where

H= Highest and Best Use

P= Cost of physical improvements

L= Cost of Legal Use

r= Cost if Capital of Proposed Use

U= Surrounding Uses

K subijt= Capitalization rate (market rate of Use).

f (PLr) = Production function that converts cost of input into an income return.

R* = Appraiser’s estimate of cost of capital of use.

Where

$R^* = f(r, \text{sub. } f), (r, \text{sub. } m), T, tx, (c, \text{sub. } r)$ ⁽²⁾

Where

r. sub f = risk – free rate.

r. sub. m - risk premium of specific use.

T: site specific Cost – Time delays

tx – local rate.

c. sub. r) = community cost of capital.

IX. HEURISTIC AND THEORETICAL TECHNIQUE

Most models of highest and best use are based on economic theory and are contemporary methods of determining highest and best use. However, Wilson (1995) opined that Heuristic/Traditional method is more advantageous, thus conceptualizing HBU analysis as a Heuristic model-free

cascade of decision rules in line with Appraisal institute guideline on the subject.

Heuristic method (Rule of thumb & model-free) is based on the premise that HBU is that use (probable) which an estimate of market value is based using highest and best use criteria. It is with these criteria that a conclusion of which use is the highest and best is drawn. Criteria as discussed earlier are: sequential consideration of what the physical site permits (physically possible), what the zoning permits (legally permissible), the degree of financial feasibility and which use in turn generates the greatest net return (maximally productive) Scribner (1997). This technique is also not without strength and weaknesses as declared by Wilson (1995), it is applied generally to every situation of HBU without violating rigid assumption of a theory/model, It reflects an investor’s thinking especially the projects worth and much money can be made from the project using limited information to work thus making it much simpler and cost effective. The method is weak in certain consideration as Limited analytical consistency in case of uncertainty in use resulting to varying outcome from different analysis due to unavoidable biases and possible omission of institutional impacts.

X. PRESENTATION OF FINDINGS

Table1. Showing Potential Uses and Return Prospects.

	Use	Effective demand	Supply	Rent (#)	Feasible
1.	Shops	✓	✓	7,500/m ²	✓
2.	Office space	X	✓	4000/m ²	✓
3.	Banking hall	X	✓	X	✓
4.	Department	✓	x	12000/m ²	✓
5.	Bakery	✓	✓	8000/m ²	✓
6.	Estate	✓	X	300,000/flat	✓
7.	Duplex	X	X	700,000	x
8.	Bungalow	X	X	500,000	✓
9.	Tenement	X	X	X	x
10.	Block of flats	✓	x	250,000/flat	✓
11.	Mixed use	x	x	500,000/annu m	x
12.	Warehouse	X	✓	12000/m ²	x

Source: Field Survey 2018

Table 2. SWOT Analysis of various uses.

	STRENGTHS				WEAKNESSES				OPPORTUNITY				THREATS			
	Residential land use	Cons. cost	Return	Demand supply	Viability	Const. cost	Return	Demand	Viability	Future forecast	Prov. Land uses	Future policies	Shift in demand			
Residential land use	H	L	L	H	L	H	L	H	L	H	L	H	L			
Apartments					✓			✓		✓		✓	✓			
Bungalow	✓	✓		D	S					✓	✓	✓	✓			
Commercial land use										✓	✓	✓	✓			
Department store	X	✓		✓	✓					✓	✓	✓	✓			
Warehouse		✓	✓	✓	✓				X	✓	✓		✓			

Source: Field Survey 2018

AliyuMakama Road is gradually witnessing succession in land use and becoming saturated as commercial properties are succeeding residential land uses with some subjected to mix uses as block of flats mixed with department stores, gas station and others. Consequently, dominant uses found in the area were subjected to test using SWOT analysis as shown above while a discounted cash flow technique was utilized in the analysis of most viable option from the legally permissible probable uses

Use type 1(shops)

Table 3. Discounted Cash Flow Analysis for Site 1

Year	Cash inflow	Cash outflow	Discount rate @ 10%	Discounted cash inflow	Discounted cash outflow
0	-	73,559,100			73,559,100
1	6,000,000		0.9091	5,454,600	
2	6,000,000		0.8264	4,958,400	
3	6,000,000		0.7513	4,507,800	
4	6,750,000	100,000	0.6830	4,098,000	68,300
5	6,750,000		0.6209	4,191,075	
6	6,750,000		0.5645	3,810,375	
7	6,750,000		0.5132	3,464,100	
8	6,750,000	125,000	0.4666	3,148,875	58,313
9	6,750,000		0.4241	2,862,675	
10	8,250,000		0.3855	3,180,375	
11	8,200,000		0.3505	2,891,625	
12	8,250,000		0.3186	2,628,450	
13	8,250,000		0.2897	2,390,025	
14	8,250,000		0.2633	2,172,225	
15	8,250,000		0.2394	1,975,050	
				51,733,650	73,559,100

Source: Field Survey 2018

NPV = - 21,825,450

Conclusion: A negative NPV signifies non viability thus declared not viable

THREATS

Use type II (Departmental store)

Table 4. Discounted Cash Flow Analysis for Site I.

Year	Cash in flow	Cash outflow	Discount rate 12.5%	Discounted cash inflow	Discounted cash outflow
0	-	105,598,500	1		105,598,500
1	13,000,000		0.8889	11,555,700	
2	13,000,000		0.7901	10,271,300	
3	13,000,000		0.7023	9,120,900	
4	13,000,000	100,000	0.6243	8,115,900	62,430
5	13,000,000		0.5550	7,215,000	
6	14,000,000		0.4933	6,906,200	
7	14,000,000		0.4385	6,139,000	
8	14,000,000		0.3897	5,455,800	
9	14,000,000		0.3464	4,849,600	
10	14,000,000		0.3079	4,310,600	
11	15,500,000		0.2737	4,242,350	
12	15,500,000		0.2433	3,771,150	
13	20,000,000		0.2163	4,326,000	
14	20,000,000	250,000	0.1922	3,844,000	48,050
15	100,000,000		0.1709	17,090,000	
				107,222,500	105,708,980

Source: Field Survey 2018

NPV = N107, 222,500 – N105, 708,980= N1, 513,520

Conclusion: A positive NPV signifies viability

XI. DISCUSSION ON SITE 1

Use type I (residential hostel)

Table 5. Discounted Cash Flow Analysis for Site II

Year	Cash inflow	Cash outflow	Discount rate 12.5%	Discounted cash inflow	Discounted cash outflow
0	-	18,916,200	1		18,916,200
1	2,700,000		0.8889	2,400,030	
2	2,700,000		0.7901	2,133,270	
3	2,700,000		0.7023	1,896,210	
4	2,700,000	150,000	0.6243	1,685,610	93,645
5	2,700,000		0.5550	1,498,500	
6	3,000,000		0.4933	1,479,500	
7	3,000,000		0.4385	1,315,500	
8	3,000,000	100,000	0.3897	1,169,100	38,970
9	3,000,000		0.3464	1,037,200	
10	3,600,000		0.3079	1,108,440	
11	3,600,000		0.2737	985,320	

12	3,600,000		0.2433	875,880	
13	3,600,000		0.2163	778,680	
14	3,600,000		0.1922	691,920	
15	3,600,000		0.1709	615,240	
				19,672,800	19,048,815

Source Market survey 2018

NPV = N19,672,800 – N19,048,815 = N623,985

Conclusion: Use is returned Viable.

It measures 2225m² and was assessed for two potential uses even though of the same classification (shops & departmental store). The two forms were conceptualized on the same basic facility as parking space, landscaping amenities and infrastructure. While the second option on the same site was for department store which turned out to require more capital in construction than the first option but with higher net return than the earlier thereby reducing the period within which to recoup investment.

Use type II (residential bungalow):

Table 6. Discounted Cash Flow Analysis for Site II

Year	Cash inflow	Cash outflow	Discount rate @8%	Discounted cash inflow	Discounted cash outflow
0	-	15,369,413	1		15,369,413
1	700,000		0.9259	648,130	
2	700,000		0.8573	600,110	
3	700,000		0.7938	555,660	
4	700,000	50,000	0.7350	514,500	36,750
5	900,000		0.6806	612,540	
6	900,000		0.6302	567,180	
7	900,000		0.5835	525,150	
8	900,000	100,000	0.5403	486,180	54,030
9	900,000		0.5002	450,180	
10	900,000		0.4632	416,880	
11	1,200,000		0.4289	514,680	
12	1,200,000		0.3971	476,520	
13	1,200,000		0.3677	441,240	
14	1,200,000		0.3405	408,600	
15	30,000,000		0.3152	9,406,000	
				16,673,640	15,460,193

Source: Field Survey 2018

NPV = 1,213,447

Conclusion: A positive NPV makes the investment a viable one thus declared viable

Site 2

The site measures 465m² at upward southern part of the road away from the busy hub of activities within the area facing the popular Narayi Junction. The sites and situates of the site constitutes hindrance to flexibility in use thus limited to residential use analysis, the two options were

adjudged feasible on the site and were found to be financially viable due to market requirement.

Commercial and Residential land uses were tested on the two sites using above captured parameters in the tables to analyze potentials of the sites as well as immediate possible and future threats without neglecting the prospects for the two sites. Those uses met the HBU criteria of legal permissibility, physical possibility, financial feasibility, maximum productivity and reasonable probable use.

XII. CONCLUSIONS

There exist some vacant plots along AliyuMakama Road Barnawa Kaduna, having untapped latent value for investment but were left vacant thus termed vacant for speculation even though speculation is statutorily discouraged in the land use act 1978 with no visible machinery of enforcement to deter offenders.

This has not only thwarted the aesthetics of the area but bred security threat as being a rearing ground for criminals, rodents and reptiles thus jeopardizing sustainable city growth enshrined in the city master plan. Achieving desired sustainable city growth may not be without difficulty but may be streamlining through modification in the zoning laws to reflect contemporary requirements on land uses and to reduce constraints to succession and gentrification capable of renewing the neighborhood to maximize economic opportunities as development dictate without neglecting other environmental attributes.

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