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AN ASSESSMENT OF THE RELATIONSHIP BETWEEN OFFICE RENT AND VACANCY RATE IN ABUJA, NIGERIA

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Abstract

This study assessed the relationship between office rent and vacancy rate in Abuja, Nigeria. Data for the study was obtained from estate surveying and valuation firms which are active in the commercial property market in the city through field survey. The data utilised for the study comprised office rental values and office space data in the city for the period, 2001-2012. Results of data analysis revealed a statistically significant negative relationship between vacancy rate and office rent in the various commercial sub-markets in Abuja for the period, 2001-2012. This implies that office rent is inversely related to vacancy rate in the city. The study concludes that economic activities which are capable of creating office employment in the city should be encouraged as such activities could contribute to reducing office vacancy rate, thereby boosting office rental performance in the city.

Keywords: Office properties, rents, vacancy rates, Abuja

1. INTRODUCTION

The basis for the existence and growth of urban areas is found in the gregarious nature of mankind and also in the cultural, economic and political advantages that stem from the agglomeration or clustering together of people (Barlowe, 1986). From the standpoint of intensity of use, rent-paying capacity and land values, the areas occupied by central business districts in urban areas represent some of the most valuable lands (Lean & Goodall, 1966; Barlowe, 1986 and Harvey, 1992). In urban areas where the central business district has retained its attractiveness, economic strength and viability, the central business district is almost always found near the hub of the city's traffic and transportation system and at sites both accessible and convenient to large numbers of people. This creates a potential for high volumes of retail and other commercial activities, which in turn justifies intensive land use practices, high rents and high land values (Lean & Goodall, 1966; Barlowe, 1986; Harvey, 1992 & Ighalo, 2002). In other words, sites closer to the central business district often offer greatest opportunities for profitable use and these sites have the highest site values and command the highest rents.

Thus, due to the business opportunities available to firms at the central business district, there is considerable bidding and counter-bidding between firms and operators for the choice of locations. This process often results in commercial land use patterns in which office and retail spaces are allocated in accordance with the rent-paying capacities of the various operators. This pattern is

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seldom stable as new adjustments are always taking place, including rental adjustments. The basic premise of most office rental studies as summarised by [Sivitanides \(1997\)](#) is that, rent changes in the commercial real estate market are triggered by excess demand or excess supply, as measured by the deviation of the prevailing vacancy rate from a “natural” or “structural” vacancy rate. In addition, the preponderance of evidence from previous empirical studies suggests that vacancy rate is a crucial determinant of office rental performance in cities ([Hekman, 1985](#); [Shilling *et al.*, 1987](#); [Glascock *et al.*, 1990](#); [Wurtzbach *et al.*, 1991](#); [Sivitanides, 1997](#); [Hui & Yu, 2006](#); [Boon & Higgins, 2007](#) & [McCartney, 2012](#)). It is on this basis that this study examines the relationship between vacancy rate and office rent in Abuja, Nigeria’s capital territory and the implication on office rental performance in the city.

2. LITERATURE REVIEW

[Rosen and Smith \(1983\)](#) defined natural vacancy rate in a manner analogous to the natural unemployment rate as the vacant stock required to facilitate the search needs of tenants looking for office space as well as the search needs of landlords looking for tenants. According to [Shilling *et al.* \(1987\)](#), it is defined as the optimal inventory of vacant units that maximizes landlords’ anticipated profits and, as such, it depends on their expectations with respect to office space demand and the marginal cost of holding vacant units.

Vacancy rates have been identified by numerous researchers as a key variable linked to rent cycles and building cycles. [Wheaton \(1987\)](#) analysed national office building construction activity and vacancy rates in a post-World War II era and identified a strong relationship between office employment changes and both supply and demand variables and observed that supply responded more quickly than demand during the period. Other empirical studies which have examined the cyclic movement of the commercial property market include [Kling and McCue \(1987\)](#).

In their study, [Voith and Crone \(1988\)](#) analysed office market vacancy rates in seventeen large metropolitan areas in the United States for the period, June 1980 through June 1987. They identified clear indications of cyclic vacancy rates and market differences between metropolitan areas, both in cycle frequency and amplitude. Also, they found that the natural (structural) vacancy rate was upward sloping in thirteen metropolitan areas, almost constant in two metropolitan areas and slightly downward sloping in two metropolitan areas during this period, which included two recessions. They concluded that inter-market variations were significant.

[Wheaton and Torto \(1988\)](#) examined national office data for the period between 1968 and 1986 and found a clear indication that office vacancy rates and real rents were cyclical. The peaks and troughs of the real rent cycle lagged the trough and peak, respectively, of the vacancy rate cycle by about one year. They suggested that both tenants and office managers apparently recognized the need for real rent adjustments in response to vacancies above and below the structural (natural) vacancy rate.

In the United States, the natural vacancy rate was about 7.5% in 1968, but by 1988 it had increased to nearly 12%. [Wheaton and Torto \(1988\)](#) extensively documented evidence of real estate cycles, but cited the failure of existing explanations to provide a satisfactory answer for the boom-and-bust behaviour in real estate markets. The severity of the boom-and-bust cycle has been attributed to developers lagging optimum timing, building too late in the boom, and continuing to build into the bust ([Wheaton & Torto, 1988](#)).

In his study, [Chinloy \(1996\)](#) established the linkage between production and absorption of apartment units to prices and rents of both existing units and new construction in a theoretical construct. His model showed that when builders’ under-forecast rent increases, unexpected excess returns trigger construction. He argued that apartment market rents depend on the behaviour of the vacancy rate cycle, which affects new supply and concluded that rent adjustments were sluggish to return to equilibrium after a macroeconomic shock.

In their study, [Gordon et al. \(1996\)](#) examined office market volatility in the commercial property market in the United States using office rental data from thirty-one metropolitan areas over the time period 1978 through 1995, and the change in vacancy rate over time as its measure of the real estate cycle. They found that different metro areas behave differently over time and that some office markets have longer cycles or less volatility than others. Their study also focused on identifying economic factors to determine the underlying causes of office market cyclicity. Their analysis suggests that movements in vacancy rates are likely to be affected by different factors at different stages of the cycle.

3. METHODOLOGY AND DATA

This study focused on office properties in Abuja, Nigeria which are owned strictly for the purpose of investment and which are expected to produce benefits in the form of direct monetary return and are said to have income - earning potential or rent or income - earning capacity or generates rental income through letting. As used in this study, an office is an accommodation provided for advisory and service sectors of commerce, industry and related economic activities. The study covered office properties in Abuja, for the period, 2001-2012. The study utilised mainly primary data. The primary data basically comprise rental and space data of office properties in the city for the study period.

The rental data include annual data on rental levels for office properties under study for the period 2001 – 2012 and their specific characteristics. The office space data include data on the total lettable space and occupied space of the properties under study for the study period, 2001 – 2012. A total of 723 office properties were selected for the study from the various commercial districts in Abuja Municipal Area Council using systematic random sampling technique. The sample size for each of the commercial zones was determined quantitatively using the [Frankfort-Nachmias \(1996\)](#) model for sample size determination as follows:-

$$n = \frac{Z^2 pqN}{e^2 (N-1) + Z^2 pq} \dots\dots\dots (1)$$

Where N = population size

n = sample size

p = sample population estimated to have characteristics being measured (In this study, 95% confidence level of the target population)

q = 1 – p

e = Acceptable error

Z = 1.96(The standard normal deviation at 95% confidence level)

The various commercial districts, number of commercial properties with required data and number of commercial properties sampled are presented in Table 1. These districts are Garki (Areas 1 – 11), Wuse (Zones 1 – 7), Central Area, Asokoro, Maitama and Utako as shown in Figure 1.

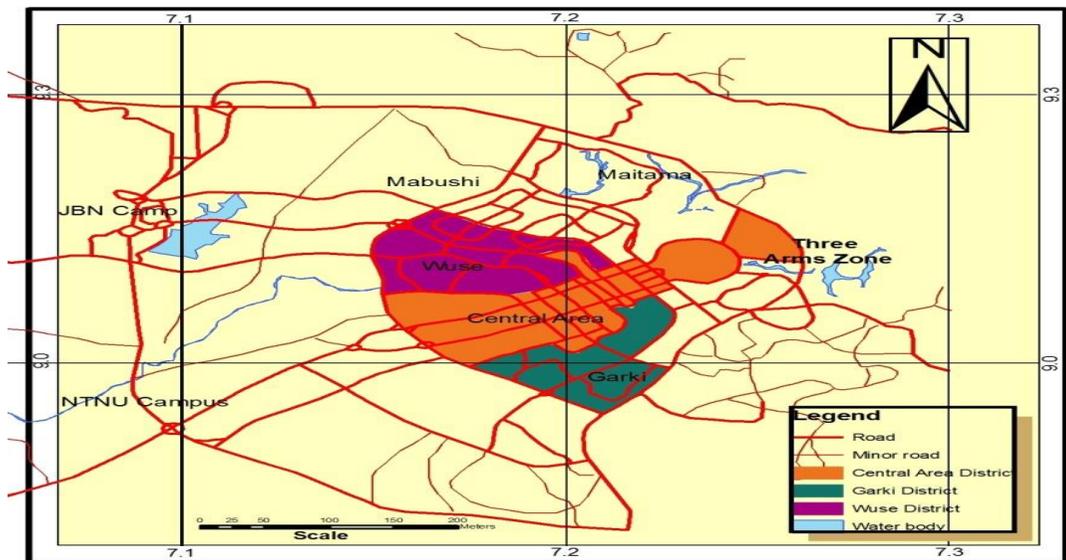


Figure 1: Abuja: Study site

Source: Federal Capital Territory Development Authority (2012)

4. RESULTS AND DISCUSSION

Office space data for the properties were utilised to determine the occupied space -to- stock of office space ratio in each year for each commercial sub-market in the city within the study period. The occupied space -to- stock of office space ratio was further used to determine the vacancy rate of office properties in each year for each commercial sub-market in the city within the study period as presented in Table 2, using the vacancy rate model as follows:

$$\text{Vacancy Rate} = 1 - \frac{\text{Occupied Space}}{\text{Stock of Office Space}} \dots\dots\dots (2)$$

Generally, there are differences in vacancy rates for office properties in the commercial property sub-markets in Abuja. A single factor Analysis of Variance was used to determine whether such differences are statistically significant. The result is presented in Table 4. The calculated F-ratio is 4.37. This is significant at p-value less than 0.05. This implies that differences in vacancy rates of office properties between and within the commercial property sub - markets in the city are statistically significant. Thus, office vacancy rates in commercial property sub - markets in the city do not follow the same pattern. Based on office rental data obtained for the study, rental index was constructed based on the weighted rent/m² of office properties in the commercial property sub-markets in the city. The rental index was constructed to assess office rental trend in the city, using 2001 as the base year as presented in Table 3. A correlation analysis was performed to examine the relationship between vacancy rate and office rent in the various commercial property sub-markets in the city for the study period. The result revealed a statistically significant negative relationship between vacancy rate and office rent in the various commercial sub-markets in Abuja for the period, 2001-2012. As presented in Table 5, the coefficient of correlation ranges from -0.81 to - 0.996 and was found to be statistically significant at p-value less than 0.05 for all the commercial property sub-markets under study. This implies that vacancy rate is inversely related to office rent in the city.

5. FINDINGS AND CONCLUSION

Office vacancy rates in the various commercial property sub-markets in Abuja do not follow the same pattern. This is explained by the statistically significant differences in office vacancy rates in the city as the calculated F-Ratio (4.37) was found to be significant at a p-value less than 0.05. The

study also found that office vacancy rate is inversely related to office rent in the study area during the study period. This finding is consistent with those of previous empirical studies such as Hui and Yu (2006) and Boon and Higgins (2007). In conclusion, economic activities which are capable of creating office employment in the city should be encouraged as such activities could contribute to reducing office vacancy rate, thereby boosting office rental performance in the city.

Table 1: Commercial zones, number of commercial properties with required data and number of commercial properties sampled in Abuja

Commercial District	Area/Zone	No. of Commercial Properties with Required Data	Sampling Ratio	No. of Commercial Properties Sampled
Garki	1	128	2	47
	2	79	2	38
	3	96	2	42
	7	106	2	43
	8	98	2	42
	10	131	2	47
	11	108	2	44
Central Area		101	2	43
Wuse	1	87	2	40
	2	92	2	41
	3	104	2	43
	4	133	2	47
	5	126	2	46
	6	110	2	44
	7	81	2	39
Asokoro		34	1	23
Maitama		47	1	29
Utako		37	1	25
Total		1,698		723

Table 2: Vacancy rates for office properties in the study area, 2001-2012

Commercial Property Market	Office Vacancy Rates											
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Garki Area 1	42.35	39.93	35.41	29.57	24.73	21.50	22.23	19.25	12.61	9.46	7.81	4.23
Garki Area 2	32.57	33.73	33.52	27.19	23.03	21.84	18.56	17.08	15.25	12.48	11.45	4.92
Garki Area 3	49.01	47.04	44.33	38.31	28.95	24.16	19.30	13.76	14.65	11.81	7.95	5.22
Garki Area 7	51.43	47.23	49.39	39.86	35.97	29.27	24.78	22.35	19.56	17.12	16.69	14.44
Garki Area 8	57.95	55.44	51.35	46.36	38.9	30.11	21.72	18.45	13.76	11.05	9.32	5.5
Garki Area 10	48.21	47.52	45.23	37.03	36.63	30.30	27.55	22.38	14.12	14.59	9.69	2.93
Garki Area 11	69.13	61.44	55.31	46.23	43.45	35.8	31.16	24.74	19.21	17.4	12.27	6.53
Central Area	18.24	15.8	12.34	11.76	9.24	12.82	10.36	8.84	9.35	5.59	3.76	3.62
Wuse Zone 1	41.89	34.77	32.00	25.43	19.84	16.88	12.98	9.57	12.23	10.45	7.51	4.49
Wuse Zone 2	35.5	29.69	24.98	18.96	17.07	17.73	13.48	11.27	13.00	8.78	10.18	6.77
Wuse Zone 3	35.46	32.42	28.85	26.31	23.84	25.30	21.00	16.44	15.47	10.91	8.43	6.49
Wuse Zone 4	42.47	34.57	29.70	24.53	20.33	16.33	13.72	13.52	12.07	9.26	7.89	6.26
Wuse Zone 5	9.95	5.84	4.85	6.29	5.21	6.36	3.87	2.84	2.30	3.48	3.02	2.10
Wuse Zone 6	34.05	32.98	34.03	28.33	30.56	24.64	23.21	19.41	16.15	15.17	11.24	5.7
Wuse Zone 7	31.24	29.52	20.51	15.89	15.06	14.38	10.42	7.81	6.7	6.35	6.07	6.76
Asokoro	46.65	38.62	32.93	28.31	24.07	18.51	14.71	13.05	11.26	9.05	6.48	4.03
Maitama	28.7	23.65	34.89	23.18	26.79	23.63	17.44	16.06	14.07	11.98	11.46	9.87
Utako	28.86	36.48	38.87	29.11	23.93	24.85	21.68	20.3	18.87	17.86	16.31	11.99

Source: Computed from Field Data (2014)

Table 3: Rental index for office properties in the study area, 2001 - 2012

Commercial Property Market	Office Rental Index											
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Garki Area 1	100	106.68	127.52	143.97	159.51	192.55	207.44	220.85	243.67	267.28	293.79	311.43
Garki Area 2	100	109.38	123.62	143.22	169.67	200.63	220.60	243.35	263.81	282.61	298.02	310.63
Garki Area 3	100	111.23	123.57	132.34	170.82	182.81	208.16	231.51	265.67	279.86	295.84	307.39
Garki Area 7	100	104.93	134.96	140.67	152.11	188.70	189.08	212.67	229.06	234.64	251.77	282.04
Garki Area 8	100	104.44	126.21	131.11	147.61	171.49	186.22	195.93	218.71	223.11	230.17	269.83
Garki Area 10	100	104.86	125.23	132.43	148.57	174.32	187.96	199.94	220.47	227.54	243.01	302.04
Garki Area 11	100	104.96	125.65	132.87	149.06	174.89	188.58	200.60	220.31	226.25	238.67	295.97
Central Area	100	106.90	120.91	132.75	161.31	171.53	186.03	203.02	213.06	216.51	220.14	245.35
Wuse Zone 1	100	112.08	124.21	133.34	170.96	183.44	207.76	232.04	265.58	280.22	301.04	334.92
Wuse Zone 2	100	125.90	161.74	185.60	234.04	245.97	264.90	290.00	303.73	307.31	316.04	346.67
Wuse Zone 3	100	135.85	156.45	169.64	206.60	219.34	239.08	259.32	273.97	278.40	283.29	314.17
Wuse Zone 4	100	108.63	127.88	143.74	158.14	190.89	205.66	218.95	241.57	264.98	292.40	332.03
Wuse Zone 5	100	106.3	120.63	130.53	158.67	168.76	182.50	199.00	210.95	214.22	219.93	240.68
Wuse Zone 6	100	105.51	126.31	133.57	149.85	175.81	189.58	201.66	221.47	227.44	242.70	312.73
Wuse Zone 7	100	130.90	153.13	170.56	203.35	216.36	232.34	255.65	269.07	273.31	277.65	311.80
Asokoro	100	104.77	108.85	115.04	128.46	163.69	180.27	200.66	213.90	230.26	246.13	269.56
Maitama	100	119.27	135.55	135.97	142.75	182.25	182.74	203.12	222.14	225.87	242.63	290.71
Utako	100	115.20	125.86	141.80	144.37	156.01	166.23	176.66	180.45	192.46	198.80	241.72

Table 4: Analysis of variance in vacancy rates in the study area, 2001-2012

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-Ratio	p – Value
Groups	10908.435	17	641.673	4.37	< 0.0001
Residual	29062.364	198	146.780		
Total	39970.798	215			

Source: Computed from Data in Table 2

Table 5: Results of the test of the relationship between office rent and vacancy rates in the study area, 2001 – 2012

Commercial Property Market	Correlation Coefficient	Number of Observations	Degree of Freedom	t-statistic	p -Value (2-tailed)
Garki Area 1	-0.81	12	10	-4.33	0.0015
Garki Area 2	-0.88	12	10	-5.83	0.0002
Garki Area 3	-0.96	12	10	-10.46	<0.0001
Garki Area 7	-0.97	12	10	-12.70	<0.0001
Garki Area 8	-0.96	12	10	-11.02	<0.0001
Garki Area 10	-0.90	12	10	-6.66	<0.0001
Garki Area 11	-0.96	12	10	-10.34	<0.0001
Central Area	-0.84	12	10	-4.93	0.0006
Wuse Zone 1	-0.97	12	10	-12.64	<0.0001
Wuse Zone 2	-0.95	12	10	-9.38	<0.0001
Wuse Zone 3	-0.85	12	10	-5.16	0.0004
Wuse Zone 4	-0.996	12	10	-36.70	<0.0001
Wuse Zone 5	-0.87	12	10	-5.64	0.0002
Wuse Zone 6	-0.91	12	10	-7.11	<0.0001
Wuse Zone 7	-0.96	12	10	-11.02	<0.0001
Asokoro	-0.97	12	10	-13.66	<0.0001
Maitama	-0.90	12	10	-6.62	<0.0001
Utako	-0.91	12	10	-6.95	<0.0001

Source: Computed from Data in Tables 2 and 3

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