DETERMINANTS OF COMMERCIAL PROPERTY RENTAL GROWTH IN MINNA, NIGERIA

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Abstract: ***Rent is the economic return to land resources. Key property market participants such as investors and developers often use rental value as an indicator to appraise the viability of their real estate development and investment schemes. On this basis, understanding the nature and basic features of rental movements provides a better comprehension of the dynamics of the commercial property market. This study examined the determinants of commercial property rental growth in Minna, Nigeria. Primary and secondary data were utilized for the study. Primary data obtained for the study include office rental levels and office space data in the study area for the period, 2001-2012. Secondary data obtained for the study are mainly macroeconomic variables in Nigeria for the period, 2001-2012. Appropriate statistical techniques were used for data analysis. The study revealed that real GDP growth and vacancy rate are the major determinants of rental growth in the office property market in the city as they account for about 83% of the variation in office property rents in the commercial property market in the city. Also, Rental index for office properties in Minna using 2001 as the base year indicates progressive upward movement in rental values of office properties in the city within the study period.***

Keywords: Commercial property market,office properties,rental growth, Minna, Nigeria

TİCARİ GAYRIMENKUL KİRA BEDELLERİNDEKİ ARTIŞIN BELİRLEYİCİLERİ

Kira, arazi kaynaklarının ekonomik getirisi olarak bilinmektedir. Gayrı menkul piyasasında kilit role sahip olan yatırımcılar, yatırım kararlarını oluşturuken ve emlak piyasasındaki gelişmeleri değerlendiririken kira değerlerini esas almaktadırlar. Bu nedenle kiralama ile ilgili gelişmeleri etkileyen temel özellikleri ve kiralamanın doğasını anlamak,ticari gayrimenkul piyasa dinamiklerini anlamada önem taşımaktadır. Bu çalışma, Nijerya, Minna bölgesinde ticari gayrımenkul kiralamanın büyüklüğünü belirleyen unsurları araştırmaktadır. Çalışmada birincil ve ikincil veriler kullanılmıştır. Birincil veriler 2001-2012 yılları arasında gerçekleşen ofis kiralama bedelleri ile ofis hacimleri verilerini içermektedir. İkincil veriler ise 2001-2012 yılları arasında Nijerya makroekonomik verilerini kapsamaktadır. Veriler uygun istatistiki tekniklerle analiz edilmiştir. Çalışma, Minna'daGSYİH'nın (Gayri Safi Yurtiçi Hasıla) ve boş

gayrımenkul oranı, ofis gayrımenkul piyasasında kira artışlarını açıklayan en önemli iki belirleyici olduğunu ortaya koymuştur. Ancak, bu artış ofis gayrımenkul değeri ile ticari gayrımenkul değeri arasında %83'e kadar değişebilmektedir. Çalışma 2001 yılı sabit yıl alındığında 2012 yılına kadar geçen sürede ofis gayrımenkul kiralama değerlerinde yukarıya doğru bir hareket olduğunu ortaya koymuştur.

Anahtar Kelimeler: ticari gayrımenkul piyasası, ofis gayrımenkulleri, kira bedellerindeki artış, Minna, Nijerya

1. INTRODUCTION

According to Boon and Higgins (2007), rental value is a key parameter for measuring real property performance. It is also a major cost for tenants and an important source of income for the landlord. Key property market participants such as investors and developers often use rental value as an indicator to appraise the viability of their real estate development and investment schemes. On this basis, understanding the nature and basic features of rental movements provides a better comprehension of the dynamics of the commercial property market. Also, rental growth indices are often incorporated into discounted cash flow analysis for the appraisal of real property investments (Boon and Higgins, 2007). Thus, professionals in the real estate industry in Nigeria require better knowledge of commercial property rental dynamics as well as the key determinants that influence commercial property rents in the country. However, the property market is one of the major segments of the investment market. The commercial property market is an important sector of the property market. Investors in the commercial property market expect return on their investments in the form of rent (Barlowe, 1986; Hargitay and Yu, 1993; Boon and Higgins, 2007). Also, the commercial property market is defined by some fundamental concepts. These concepts provide the basis for the determination of commercial property rental values. Contributors to the early conceptualization of rent theory believed that rent is a differential caused mainly by distance and cost of transportation and attributed differences in rent-earning capacity of land to differences in location and transport cost. Archer and Ling (1997) established a three market framework, illustrating the relationships between the space market, the property market and the capital market. Thus, in the commercial property market, rental value is a function of demand and supply factors.

That is, Rent = f (demand + supply) + e

The composition of the individual characteristics of these demand and supply factors varies in the context of national, regional and local commercial property markets.

2. LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

Some examples in existing literature suggest that real estate market performance in one geographic area is different from market performance in another area. Thus,

local market analysis is required to accurately assess real estate investment performance, including rental trend analysis (Born and Pyhrr, 1994). Hekman (1985) found that office market rents change in response to changes in economic conditions at the local, regional and national levels and are strongly affected in both the Central Business Districts (CBD) and the suburbs by vacancy rates. Grissom, Hartzell and Liu (1987) identified that regional markets exist for industrial real estate. They further suggested that constructing real estate indices, including rental growth indices according to property type may be valid since each city has a unique economic base. Hartzell, Shulman and Wurtzebach (1987) established eight regions in the United States based on similar underlying economic fundamentals and evaluated regional real estate returns. They found significant differences between correlation coefficient of returns among the areas. This suggests that there are real estate market differences between locations and local real estate market research is a significant element in real estate performance analysis. In their study, Corgel and Gay (1987) examined the potential for the diversification of regional investments in the thirty largest metropolitan areas in the United States and found significant differences in their economic vitality. Corcoran (1987) established the "economic relationships between office rents, vacancy rates, asset prices, user costs and reproduction cost and found that the linkages between the rental market (tenants) and the asset market (investors) are through opportunity cost (user cost) of competing investments and replacement cost of real property". He argued that rising vacancy rates in the face of strong growth in demand in the asset market for rental properties in the 1980s was due to extra incentives in the asset market. He further explained that office building acquisition prices rose more rapidly than reproduction costs and that encouraged new construction that led to overbuilding and high vacancy rates in the study areas. 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. Pollakowski, Wachter and Lynford (1992) in their study tested for structural differences among metropolitan areas by office market size based on rental data for twenty-one metropolitan areas over the time period 1981 to 1990 .They argued that it was inappropriate to assume a single structure for demand and supply relationships in all commercial property markets and concluded that real estate cycles are clearly not uniform across markets. The results of their study suggest that property market outcomes vary by city size. Clapp (1993) examined office markets nationally in the United States. The study involved the analysis of four metropolitan areas in the north eastern United States compared with the nation. He "quantitatively validated the relationships between cyclical economic factors, including employment, location factors of supply and demand, and office market performance variables of absorption and vacancy rates and also explored measurement of the natural vacancy rate in office market cycles". The results of the study indicated that in the 1990s, the four metropolitan area office property markets studied were highly

correlated with the national office market. This suggests that in the long-run, investment grade office properties in metropolitan areas held in institutional portfolios tend to perform like the national office market during periods of national economic prosperity. Shilton (1995) evaluated "office market cycles in a framework designed to promote an understanding of the cyclic characteristics of office employment demand. He found that the economic base of a city influenced the rate of overall growth in office employment. He also established the link between cyclic office employment and market volatility and concluded that markets experiencing higher volatility in office employment are more likely to experience higher levels of office vacancy". In their study, Gordon, Mosbaugh and Canter (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 cyclicality. Their analysis suggests that movements in vacancy rates are likely to be affected by different factors at different stages of the cycle. In the long run, their analysis showed that capital flows have the strongest effect on the volatility of vacancy rates, while employment growth and market conditions (e.g., size and economic diversification) were also major contributing factors". They concluded that during the recovery phase of the office market cycle, demand-side factors such as employment growth and economic diversification appeared to be the dominant influence on office market behaviour in the study areas. McCartney (2012) examined the short and long-run rent adjustment in the Dublin office market in Ireland. The study estimated a rent determination model for the office market in Dublin based on a two-stage error correction mechanism which involved estimation of a long-run equilibrium rent equation and a short-run rent adjustment process. The result of the long-run analysis indicated that office demand is relatively inelastic in Dublin while the short-run model indicated a relatively slow rate of rent adjustment in the Dublin office market. The preponderance of findings from contemporary empirical studies suggests that different locality is subject to different rental growth factors (Gardiner and Henneberry, 1988; Giussani et al, 1993; Yusof, 2001; Tonelli, Cowley and Boyd, 2004; Hui and Yu 2006; Boon and Higgins, 2007 and McCartney, 2012)). Rental growth determinants provide information to make a decision about investment and development and can be used to predict the cyclical behaviour of commercial property development (Born and Phyrr, 1994). In addition, rental growth forecast parameters are often incorporated into discounted cash flow models for property appraisals (Boon and Higgins, 2007).Consequently, direct application of rental growth parameters developed elsewhere to the analysis of the commercial property market in any city in Nigeria would produce spurious results due to variations in key rental determinants. Thus, there is need to identify leading rental growth indicators which are representative of the Nigerian economy and the commercial property markets in the country.

3. COMMERCIAL PROPERTY INVESTMENTS AND RENTAL GROWTH EXPECTATIONS OF INVESTORS

Real property is an important component of the wealth of nations (Karakozova, 2005). Real property also constitutes nearly one-half of the wealth in the world, and thus, in terms of value, represents the most significant investment class. According to Corgel, Smith and Ling (2000), real property comprises 49% or $21.41 trillion of the world's wealth ($44 trillion) whereas stocks and bonds comprise 25.5% and 18.8% respectively. Real property has a number of characteristics which make it different from other investment assets including fixed location, heterogeneity, high unit value, illiquidity and the use of valuations to measure performance (Hoesli and MacGregor, 2000). Commercial property investments constitute a substantial proportion of real property investments worldwide. There is about £762 billion worth of commercial property in the United Kingdom (IPF, 2007). Also, the commercial property sector is of considerable importance to the British economy (Scott and Judge, 2000). McWilliams (1992) asserted that real property forms a substantial element of the cost-base of the service and manufacturing sectors, accounting for around 44% of the nonfinancial assets of UK companies. The character and quality of commercial property also has an important influence on the technological and organizational flexibility of the work environment which in turn has a substantial impact on efficiency in many service sector industries (Scott and Judge, 2000). Houlder (1992) concluded that real property constitutes a major source of collateral security for loans. He further estimated that three quarters of all UK bank lending is dependent on real property. Scott and Judge (2000) argued that real property represents a substantial slice of the investment portfolios of long-term institutional investors in the UK. In Finland, most institutional investors mainly invest in offices and retail properties (Karakozova, 2005). In a study conducted by Jones Lang LaSalle and the Institute for Real Estate Economics on prime office yields in selected cities in the world, the actual rate of return on office property investments was found to be lowest in London and highest in Moscow.

The Nigerian economy is a developing economy and so is its property market. The Nigerian commercial property market in particular has remained relatively under-researched in the past five decades due to the absence of reliable and standard property market database. Most of the property market studies in Nigeria within this period have been focused on the residential property market with little empirical relevance to the commercial property market in the country. In 1992, the Nigerian Institution of Estate Surveyors and Valuers (NIESV) sponsored a research on the valuation methods in Nigeria with special reference to the years purchase. This study also analysed yields on major classes of real properties in the country, including commercial properties. Commercial property investment yields in major cities in Nigeria analysed as part of the findings of the study and updated by NIESV (2013) are presented in Table 1.

Table 1: Commercial Property Yields in Nigeria

City	Commercial Property Yield (Offices and Shops)
Lagos	10-12%
Abuja	12-18%
Abeokuta	3-6%
Ibadan	3-8%
Akure	3-7%
Ilorin	3-7%
Benin	3-8%
Port-Harcourt	5-9%
Enugu	4-8%
Owerri	4-8%
Uyo	5-8%
Calabar	4-8%
Maiduguri	3-7%
Bauchi	3-7%
Yola	4-7%
Jos	4-7%
Makurdi	3-7%
Katsina	5-8%
Kaduna	5-10%
Kano	8-10%
Minna	4-7%
Sokoto	4-7%

Source: Igboko (1992) and updated by NIESV (2013).

On the average, commercial property yields in Nigeria are comparable to that obtainable elsewhere in the world. Generally, commercial property investments are associated with low yields globally. These low yields have been found to imply rental growth (Baum and Mackmin, 1989; Baum and Crosby, 1995; Kalu, 2001; Karakozova, 2005; Wyatt, 2007 and IPF, 2007). This rental growth expectation substantiates one of the important characteristics of commercial property investments which is income (rental) and capital growth (Morley, 1983; Richmond, 1993; Ifediora, 1993; Baum and Crosby, 1995; Johnson et al, 2000; Karakozova, 2005; Udo, 2003; Kivilahti and Vitanen, 2006 and IPF, 2007). Rental growth itself has been a major expectation of property investors from 1960 onwards after the appearance of the reverse-yield gap, due to the advent of inflation into the property markets worldwide (Crosby, 1983; Crosby, 1984; Baum and Crosby, 1995 and Wyatt, 2007).

4. METHODOLOGY AND DATA

This study utilised primary and secondary data. The primary data basically comprise rental data of commercial properties in the study area. These include annual data on rental levels for office properties under study for the period 2001 – 2012 and their specific characteristics, occupancy levels and property floor stock. Secondary data for the study are mainly data on macro-economic indices in Nigeria for the period 2001 – 2012. These macro-economic indices are inflation rate, interest rate on real estate loans, interest rate on commerce, Monetary Policy Rate (MPR), Gross Development Product (GDP), unemployment rate, and employment rate. Based on the aim of the study, only commercial investment properties were selected for data collection for the study as they constitute the only class of commercial properties which rents are paid to occupy them and such rents undergo changes in form of rental adjustment or rental growth. These properties are mainly office properties in Minna. The rental data were obtained from estate surveying and valuation firms which are active in the commercial property market in the city. The research objectives and data requirements for the study are presented in Table 2.

Table 2: Research Objectives and Data Requirements for the Study

Research Objectives	Data Required	Data Source
1. To assess the influence of interest rate, inflation rate, monetary policy rate, unemployment rate, exchange rate, real GDP growth, employment and vacancy rates on commercial property rental movements in Minna, Nigeria.	Annual data on rental levels for commercial properties under study for the period 2001-2012 and their specific characteristics, occupancy levels, property floor stock, inflation rate, interest rate on real estate loans, interest rate on commerce, Monetary Policy Rate (MPR), Gross Domestic Product (GDP), Unemployment rate, and Employment Rate.	Field Survey, Annual statistical bulletins of the National Bureau of Statistics (NBS) and the Central Bank of Nigeria (CBN) for the period, 2001-2012.
2. To ascertain the size of rental movements in commercial properties in Minna	Annual data on rental levels for commercial properties under study for the period 2001 – 2012 and their specific characteristics	Field Survey
3. To determine the extent of variation in commercial property rental values in Minna caused by the variables responsible for commercial property rental growth assessed in (i) above	Annual data on rental levels for commercial properties under study for the period 2001 – 2012 and their specific characteristics, occupancy levels, property floor stock, inflation rate, interest rate on real estate loans, interest rate on commerce, Monetary Policy Rate (MPR), Gross Development Product (GDP), Unemployment rate and Employment Rate	Field Survey, Annual statistical bulletins of the National Bureau of Statistics (NBS) and the Central Bank of Nigeria (CBN) for the period, 2001-2012.

5. RESULTS

Macroeconomic data collected for the study were based on the macroeconomic variables identified from the existing literature reviewed for the study. These variables include interest rate on general commerce, interest rate on real estate loans, inflation rate, monetary policy rate, unemployment rate, exchange rate, real GDP growth rate and change in employment level. Macroeconomic variables in Nigeria for the period, 2001-2012 are presented in Table 3. This Table summarizes the state of the Nigerian economy during the study period. The fluctuating nature of the nation's macroeconomic statistics depicts the unstable nature of the Nigerian economy. The real GDP growth rate which measures the overall performance of the economy was unstable during the period, although it improved significantly in 2003(7.1%) and 2010(8.4%). Inflation rate, another major macroeconomic index rose to an all-time high of 23.84% in 2003, declined to the lowest level in 2007(6.56%) and fluctuated thereafter each year to 12.24% in 2012. Interest rates have also been unstable during the period as presented in Table 3. In 2008, the Central Bank of Nigeria (CBN) decomposed interest rates based on the major sectors of the Nigerian economy. Before then, a single interest rate figure was used for the entire economy as a measure of the cost of capital. This explains why interest rates on general commerce and interest rates on real estate loans were the same from 2001 to 2007. Unemployment rate in the country declined from 13.6% in 2001 to 4.8% in 2003 and increased progressively each year to 23.9% in 2011. This implies that although the economy is growing positively, given the current real GDP growth of 6.75%, such growth has not been translated into significant reduction in the nation's unemployment level. The Monetary Policy Rate (MPR) was also unstable during the period. It rose to its highest level in 2002 (19%) and declined progressively each year to 6.13% in 2010. It further increased to 8.9% and 12% in 2011 and 2012 respectively.

The unstable nature of the MPR during the period also affected interest rate regime in the country as it is the minimum cost of funds granted by deposit money banks to the investing public, including real estate investors and developers. Employment level in the country within the period changed based on unemployment rate fluctuations. Moreso, exchange rate movements in the country within the period was unstable and inconsistent. The official exchange rate of the Naira to 1$ was N 111.5166 in 2001 and depreciated to N 133.0010 in 2004. The Naira appreciated further to N 117. 7772 in 2008 and depreciated the following year to N 147.2718 and continued to depreciate progressively each year to N 157.4983 in 2012. Office rents increased progressively in Minna during the study period. The weighted rent/m2 for office properties in the city in 2001 was N 1, 715.7. This increased to N 2,462 in 2007 and N 3, 126.7 in 2012. Rental index for office properties in Minna using 2001 as the base year indicates progressive upward movement in rental values of office properties in the city within the study period as presented in Table 4.

Table 3: Macroeconomic Variables in Nigeria, 2001-2012

Year	Interest rate on general commerce	Interest rate on Real estate loans	Inflation Rate	Monetary Policy Rate	Unemp. Rate	Exchange Rate	Real GDP Growth rate	Change in Emp. Lev.
2001	18.29	18.29	16.49	14.31	13.6	111.5166	3.5	22.8
2002	24.85	24.85	12.14	19.00	12.6	120.4700	3.0	-9.6
2003	20.71	20.71	23.84	15.75	4.8	129.2230	7.1	8.96
2004	19.18	19.18	10.01	15.00	13.4	133.0010	6.2	4.09
2005	17.95	17.95	11.57	13.00	11.9	131.1004	6.9	4.55
2006	17.26	17.26	8.57	12.25	12.3	128.1420	5.3	-14.76
2007	16.94	16.94	6.56	8.75	12.7	125.0660	6.4	1.86
2008	15.94	17.01	15.10	9.81	14.9	117.7772	5.3	-0.75
2009	18.36	19.12	13.90	7.44	19.7	147.2718	5.6	-12.50
2010	17.59	17.14	11.80	6.13	21.1	148.3085	8.4	0.33
2011	16.02	16.25	10.85	8.90	23.9	153.8583	7.2	4.09
2012	16.79	17.86	12.24	12.00	22.5	157.4983	6.75	-3.80

Table 4: Weighted Rent, Rental Index and Annual Rental Growth for Office Properties in Minna, 2001 – 2012

Year	Weighted Rental Value/m^2 in ₦' 000	Rental Index	Annual Rental Growth (%)
2001	1.7157	100	-
2002	1.715733	100.002	-
2003	1.7318	100.94	0.94
2004	2.013269	117.34	16.25
2005	2.027194	118.16	0.69
2006	2.347688	136.84	15.81
2007	2.462125	143.51	4.87
2008	2.576063	150.15	4.63
2009	2.675676	155.95	3.87

2010	2.836676	165.34	6.02
2011	2.9526	172.09	4.09
2012	3.126736	182.24	5.90

The rental growth factor for office properties in Minna for the period, 2001-2012 is 1.056. This represents an average rental growth rate of 5.6% for the study period as presented in Table 5.

Table 5: Office Rental Change, Rental Growth Factor and Average Rental Growth Rate for Office Properties in Minna, 2001 – 2012

Rental Change	0.6001
Slope	0.05455
Rental Growth Factor	1.056
Average Rental Growth Rate	5.6%

The office space data obtained from estate surveying and valuation firms in the city were analysed to determine the vacancy rates for office properties in the city during the study period as presented in Table 6.

Table 6: Office Space Data and Vacancy Rates in Minna, 2001 – 2012

Year	Total Available Office Space (m^2)	Occupied Office Space (m^2)	Vacancy Rate
2001	9246	2968	67.9
2002	9246	5022	45.68
2003	9246	5666	38.72
2004	14089	8310	41.02
2005	18798	10549	43.88
2006	19033	11745	38.29
2007	19033	12549	34.07
2008	19033	13385	29.67
2009	19919	15187	23.76
2010	19919	16448	17.43
2011	20315	17974	11.52
2012	20817	19159	7.96

The Augmented Dicker Fuller (ADF) unit root test was carried out on all the data series to examine the extent of their stationarity. The ADF result showed that all the variables are stationary at first-order difference, except changes in office rent and office vacancy rate that are stationary at second-order difference as presented in Table 7.

Table 7: Result of Stationarity Test for Data Series

Variable	Computed ADF Statistic	Critical ADF Statistic at α = 0.05
ΔInterest Rate on General Commerce	-6.000	-1.9791
Δ Interest Rate on Real Estate Loans	-5.8631	-1.9791
Δ Inflation Rate	-5.4785	-1.9791
Δ Monetary Policy Rate	-2.8953	-1.9791
Δ Unemployment Rate	-4.9116	-1.9791
Δ Exchange Rate	-3.1905	-1.9791
Δ Real GDP Growth Rate	-4.4665	-1.9791
Δ Employment Level	-6.4692	-1.9791
Δ Δ Office Vacancy Rate	-2.4057	-1.9835
Δ Δ Office Rent	-7.5459	-1.9835

The implication of this is that, the time series data on the variables utilised for the study are suitable for regression analysis. Similarly, based on the stationary nature of the time series data utilised for the study, Granger causality test was applied to the data to assess the causal linkage between the explanatory variables explored for the study and office rental movements in the commercial property market in the city. The result of the Granger causality test revealed that among all the explanatory variables explored for the study, only real GDP growth, vacancy rate and employment level have statistically significant causal linkage to office rental movements in Minna and as such Granger causes office rental movements in the commercial property market in the city as presented in Table 8.

Consequently, explanatory variables with no statistically significant causal linkage were dropped while those with statistically significant causal linkage were utilised to develop regression model for office property rents in the commercial property market in the city. The regression analysis was based on the theoretical framework of the commercial property rent equation in which commercial property rent is assumed to be a linear function of demand and supply factors in the commercial property market. This was modified to capture the lags required for the rental adjustment process in the office property market in Minna.

Table 8: Result of Granger Causality Test between the Suggested Explanatory Variables and Office Rental Movements in Minna, 2001-2012

Null Hypothesis	F-Statistics	p- Value
INTGC does not Granger cause Office Rent	0.24328	0.86176
INTREL does not Granger cause Office Rent	0.07593	0.96730
INFR does not Granger cause Office Rent	0.19324	0.89347
MPR does not Granger cause Office Rent	0.11097	0.94609
UNEMP does not Granger cause Office Rent	6.28899	0.14027
EXCHR does not Granger cause Office Rent	0.34749	0.79943
Real GDP does not Granger cause Office Rent	6.59364	0.03963

EMP does not Granger cause Office Rent	27.9135	0.03478
VACR does not Granger cause Office Rent	84.1431	0.01177

INTGC= Interest Rate on General Commerce; INTREL = Interest Rate on Real Estate Loans; INFR = Inflation Rate; MPR = Monetary Policy Rate; UNEMP = Unemployment Rate; EXCHR = Exchange Rate; EMP = Changes in Employment Level; VACR = Office Vacancy Rate.

The result of the regression analysis is presented in Table 9. The Durbin-Watson Statistic for the model is 1.97. This exceeded its critical value at 0.05 level (1.575) and indicates that residual serial correlation was not statistically significant in the model. The collinearity statistics, that is, Tolerance and Variance Inflation Factor (VIF) are within acceptable statistical limits and this suggests that the predictor variables for the model have no problem of multicollinearity.

Table 9: Result of the Regression Analysis

Term	**Coefficient**	**t- Statistics**	**p-value**	**Tolerance**	**VIF**	**R^2**	**SE**	**DW-Statistic**
Intercept	4.658	30.50	□0.0001			0.83	0.15623	1.97
ΔEMP_{t-2}	0.03565	1.15	0.2835	0.6463	1.5473			
$\Delta RGDP_{t-1}$	0.7351	5.68	0.0005	0.3911	2.5569			
$\Delta VACR_{t-1}$	- 0.2159	-3.27	0.0114	0.4147	2.4114			

As presented in Table 9, real GDP growth and vacancy rate are the major determinants of rental growth in the commercial property market in Minna as they account for about 83% of the variation in office property rents in the commercial property market in the city. Although change in employment level Granger causes office rental movements in the city within the period under study, its influence in predicting office property rents in the city is not as significant as those of real GDP growth and vacancy rate. Thus, a unit increase in real GDP growth will produce 0.7351 increase in office rents in Minna while a unit increase in vacancy rate will produce 0.2159 decrease in office rent in the city. Also, a unit increase in employment level will produce 0.0357 increase in office rents in the commercial property market in the city. The significance of the regression models was tested using F-test. In terms of the model for office property rents in the office property market in Minna, the computed F-statistic (13.35) is significant at p=0.0018. This indicates that the office rent model for the city fits the data utilised and as such can be used as a basis for prediction of office property rents in the commercial property market in the city.

6. CONCLUSION

Real GDP growth and vacancy rate are the major determinants of rental growth in the office property market in Minna as they account for about 83% of the variation in office property rents in the commercial property market in the city. Also, Rental index for office properties in Minna using 2001 as the base year indicates progressive upward movement in rental values of office properties in the city within the study period. The implication of this progressive upward rental movement is that office rent in the city has the capacity to perform as a hedge against inflation, particularly in fluctuating economic environment.

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