

# THE CONTRIBUTORY EFFECT OF EXTERNALITIES TO THE VOID PERIODS FOR RESIDENTIAL BUILDINGS IN MINNA, NIGERIA

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A number of residential buildings have been observed to suffer longer void periods in recent times despite the increasing demand for residential accommodation across urban areas. Landlords and real estate investors are sometimes faced with the challenge of replacing tenants within the shortest possible time, thus being unable to adequately recoup the invested capital on residential properties developed in particular neighbourhoods. This study provides evidence on the contributory effect of externalities on the void period for residential buildings in Minna. The sample for the study constituted a total of 207 three bedroom bungalows which fell into void at any point between January 2014 and December 2016 – covering a three year period. Adequate data were provided for 144 of these dwellings which spread across nine neighbourhoods, representing 70% response rate. Data were sourced from practicing estate surveyors & valuers, and estate agents in the study area, as well as occupants of housing units that fell within the sample. The sourced data provided information on the void periods of sampled dwelling units as well as required information on selected externalities. Collated data were analysed using the optimally scaled categorical regression analysis. The regression model explained 51% of the total variation in the void period of residential buildings. Findings revealed that the void periods of residential buildings reduced with closer distances to shopping centers, recreation centers, major roads, and improved electricity supply. On the contrary, educational institutions, health care centers, refuse dumps, security and sources of water supply were found not to have significant contributions to the void period of three bedroom bungalows in the study area. The study recommended that real estate investors' should be mindful of externalities in an area before embarking on real estate developments in order to ensure satisfactory returns on their investment.

**Keywords:** externalities, electricity, residential buildings, shopping Centers, void period

## INTRODUCTION

Residential property markets have received considerable attention worldwide, which may be attributed to the special role of shelter to man. Residential accommodation constitutes a basic necessity to man thus investment in residential properties is considered a major and highly profitable form of investment, as it seeks to address the growing housing demand of man. Over the years, considerable improvements in housing supply have been recorded across many urban areas. This is obviously in response to the growing demands for housing. However, despite the increasing demand for residential accommodation across urban areas, dwelling units have been observed to suffer unusually longer void periods. Also, In addition to providing descent accommodation for the teeming urban dwellers, residential real estate investors also desire timely optimum returns on their investments. It is therefore imperative that appropriate measures are taken to ensure that invested capital is profitably recouped. This can only be achieved when the void period is minimized and when the appropriate sales and/or rental values are realised from these properties. It is however important to note that appropriate values can only be realized in the absence of prolonged void periods (Ogunbajo, 2017).

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Minna, the capital of Niger State have experienced rapid urbanization and expansion over the years, which have been attributed to the proximity of Minna to the Federal Capital City, and most recently, the insurgency in parts of northern Nigeria have further necessitated the influx of people into the town. The direct implication of this is an increased need for residential accommodation which further necessitated an increase in housing supply. However, a number of residential properties are left unoccupied and suffer longer void periods despite the rising need for residential accommodation. Landlords and real estate investors are sometimes faced with the challenge of replacing tenants within the shortest possible time, (in order to ensure the timely realization/recoupment of invested capital) on residential properties developed in particular neighbourhoods. These investors often do not have detailed understanding of the unique factors that determine these delays. This research therefore, performed a study of the Minna residential property market to determine the primary drivers of void periods with particular emphasis on the externalities in residential neighbourhoods. The research employed a contemporary analytical tool in order to provide evidence on the extent to which externalities contribute in determining the void periods of residential properties or otherwise. It identified externalities sustaining residential properties in the study area and established the proximities of these externalities to tenanted dwellings.

Externalities in relation to residential real estate refers to those external factors (i.e urban infrastructure /amenities and services) that are external to the building, but are integral to and supportive of a residential environment. Bello and Yacim (2014) described it as those components of the environment that makes dwellings habitable to man. According to Babarinde (1998), the efficiency of any urban area depends largely on the provision of efficient amenities and services, thus, the significance of these externalities in the proper functioning of an urban area cannot be over-emphasised. However, a review of existing literature has shown that the true relationship and interconnection between the availability of externalities and void periods has not been fully addressed and well documented.

## LITERATURE REVIEW

### Concept of Externalities

In its simplest form, externalities as those public works that are required for an economy to function. "Externalities" in relation to residential real estate is synonymous with the term "Urban Infrastructure". Convery (1998) described it as the physical constructs provided by human endeavour which underpin the economic and social life of a community. It is a very significant determinant of the quality of life, thus plays an important role in creating comparative advantages. According to Srinivasu and Rao (2013), it has to do with the stock of basic facilities and capital equipment needed for the functioning of an area. They include the necessary services and attractions within the neighbourhood that makes life easy and comfortable for the inhabitants, and covers a wide range of infrastructural facilities which include electricity, good road network, telecommunication, street light, banks, fire service, pipe-borne water, drainage, health services, waste/refuse disposal, schools, parking spaces, transportation systems, educational services, markets, policing systems/security, recreational infrastructure and postal services (Saed, Kamariah, Mohammad & Johani, 2015). Externalities are usually provided by public authorities, private entrepreneurs, communities, or a combination of these. As observed by Cao and Zhao (2011), good quality amenities and ancillary facilities influence the progress of the society as a whole as well as the welfare of the citizens. The absence of these facilities will cause a city to lose its enterprise (Convery, 1998). They are vital elements of prosperity of any nation, hence, land has little potential for residential and other uses in the absence of externalities (Saed *et al.*, 2015). They are also essential to achieve the development targets of any urban area, thus the provision and maintenance of externalities are absolutely necessary in any urban area if rapid economic growth is to be achieved and sustained.

### The Concept of 'Void period' in Residential Buildings

Void period describes the period between tenancies when a property is unoccupied by tenants. The UK Housing Association Guide (2015) described a void as any property that is untenanted for a period of time, hence, void periods are simply those periods where a landlord does not have tenants paying rents. In other words, a void period is when a property is unoccupied with no rental income accruing to the landlord. According to Legal for Landlords - UK (2016), void periods are inevitable and will happen to most landlords during

the lifetime of their investment. However, during the lifetime of an investment, void periods can add up and become a significant loss for many landlords. Studies have shown that excessive or lengthy void periods can significantly impact on the viability of investments. Thus in order to limit the risks on investment, property experts (Property Hawk, 2012 and the UK Housing Association Guide, 2015) recommended the following to minimize void periods:

- i. **Realistic rent:** Every area has its ceiling rent. It is therefore essential that realistic rents are set for properties in accordance with what is obtainable in the particular areas where such buildings are situated. Hall (2009) believe that it is more cost effective to get a property rented quickly at a slightly lower rent than holding out for a higher rent and risking void period.
- ii. **Active marketing:** Active marketing can also help to drastically minimize void periods.
- iii. **Good Tenants:** Property agents should endeavour to get good tenants, and make further attempts to keep such tenants. Agents should not be careless in selecting tenants out of desperation.
- iv. **Building condition:** Tenants' expectations of rental properties are constantly increasing, thus, for properties to attract and retain tenants, they should be in good and decorative and state of repair.
- v. **Offering incentives:** For instance a discount for the first month's rent or including amenities can help clinch the deal for a potential tenant or help retain an existing one.

The notion of void periods has been a subject of discussion in many academic and professional circles. However, the extent to which externalities determine the void periods of residential properties lacks significant contributions from literature, hence the essence of this study.

## METHODOLOGY

The population for the study constituted residential dwellings which fell into void at any time between January 2014 and December 2016 (3 years). Of all the house types in this category, only three bedroom bungalows were sampled due to ease of access and availability of data. A total of 207 three bedroom bungalows were sampled. Data on the void periods (measured in months) of the sampled buildings were generated from the records of estate surveyors & valuers and estate agents in Minna. Other important data were collated from completed questionnaire which were administered on household heads of the sampled houses. A ten (10) item structured questionnaire was employed to obtain primary data on the proximities of the houses to six externalities, viz: Shopping centers, Educational Institutions, Health care Centers, Recreation Centers, Major Roads and Refuse Dumps. Other externalities assessed are Neighbourhood security, Electricity Supply, and Sources of Water supply. A total of 144 questionnaire were well completed and subsequently used for analysis. These represent a 70% response rate.

Proximity of dwelling units to externalities was measured using ordinal variables on a three point scale. Respondents were simply required to tick one of the three options, viz: far, fairly close, and very close. This scale of measurement was derived in accordance with the duration or time taken (in minutes) by an average adult to walk from his/her dwelling unit to the nearest of each of the externalities under consideration. Precisely, a walking distance of 0 – 15 minutes was categorized as very close, 16 – 30 minutes as fairly close, and a walking distance of more than 30 minutes was categorised as far. Similarly, security of the neighbourhoods and sources of water supply were also measured on a three point scale, while the quality of electricity was measured in terms of the number of hours of supply per day from the public mains. The impacts of these externalities on the void periods of residential buildings in the study area was established by regressing the nine externalities (independent variables) against void periods (the dependent variable) using the optimally scaled categorical regression analysis (CATREG).

## RESULTS AND DISCUSSION

### Assessment of the identified externalities

Nine (9) externalities were identified to sustain residential buildings in the study area and were assessed as follows:

**Table 1: Assessment of the identified externalities**

Externality	Measurement scale	Frequency	Percentage
Shopping centers	Far	59	41%
	Fairly close	49	34%
	Very close	36	25%
	Total	144	100%
Educational Institutions	Far	36	25%
	Fairly close	72	50%
	Very close	36	25%
	Total	144	100%
Health care centers	Far	74	52%
	Fairly close	48	33%
	Very close	22	15%
	Total	144	100%
Recreation Centers	Far	107	74%
	Fairly close	25	17%
	Very close	12	8%
	Total	144	100%
Major roads	Far	32	22%
	Fairly close	50	35%
	Very close	62	43%
	Total	144	100%
Refuse dumps	Far	62	43%
	Fairly close	59	41%
	Very close	23	16%
	Total	144	100%
Neighbourhood security	Not secured	19	13%
	Fairly secured	54	38%
	Very secured	71	49%
	Total	144	100%
Sources of Water supply	Bad	15	10%
	Fair	59	41%
	Good	70	49%
	Total	144	100%
Electricity Supply	0 - 6 hours / day	24	17%
	7 - 12 hours / day	82	57%
	13 - 18 hours / day	38	26%
	19 - 24 hours / day	0	0%
	Total	144	100%

Table 1 showed residents' description of the relative distances of their individual dwelling units to shopping centers, educational institutions, health care centers, recreation centers, major roads and refuse dumps. It further showed residents' assessment of security within their respective neighbourhoods, sources of water supply, as well as electricity supply.

### Measuring the effect of externalities on the void period of residential buildings

The model summary in table 2 showed a  $R^2$  value of 0.510 which implied that externalities explain 51% of the variability in the void periods of the sampled residential dwellings. Other factors which were unaccounted for in the model can be said to be responsible for the remaining 49%. Table 2 also showed a high multiple correlation coefficient ( $R = 0.714$ ) which translates to a good predictability of the dependent variable (void period of residential buildings) from the independent variables (externalities).

**Table 2: Model Summary**

	Multiple R	R Square	Adjusted R Square
Standardized Data	.714	.510	.490

The  $F$  ratio in table 3 tested whether the overall regression model is a good fit for the data. The table showed that,  $F(12, 131) = 11.360$  and  $p(0.000) < 0.05$ . Since the  $p$ -value (0.000) is less than the alpha level, it is an indication that the regression is a good fit for the data. The results in the table implied that externalities can significantly predict the void periods dwelling units in the study area.

**Table 3: ANOVA test for statistical significance**

	Sum of Squares	df	Mean Square	F	Sig.
Regression	73.433	12	6.119	11.360	.000
Residual	70.567	131	.539		
Total	144.000	143			

The standardized beta coefficients in tables 4 explained that the independent variables measured and tested with the regression analysis proved significant in determining the void period of the dwelling units. The probability that these attributes influenced void period purely by chance is less than 5%. Table 4 showed that the externalities which made significant contributions to the void periods of residential houses in the study area are shopping centers, recreation centers, major roads, and electricity supply. These were identified by their p-values which were less than 0.05. The table showed the standardized beta coefficients which aided a comparison of the strength of the effect of each externality to the void period of the sampled dwelling units. The standardized beta coefficients in the table revealed that shopping centers made the strongest significant contribution to explaining void periods in the study area. It recorded the highest beta coefficient (0.312). This was followed by recreation centers, which had a beta coefficient of 0.300, and electricity supply ( $b = 0.260$ ).

Precisely, results in table 4 clearly indicated that shopping centers, recreation centers, major roads and electricity supply impacted negatively on void periods. In essence, one standard deviation increase in the proximity to shopping centers (ie, closer proximities) yields 0.312 standard deviation decrease in void period, while one standard deviation increase in the proximity to recreation centers and major roads (closer proximities) yields 0.300 and 0.226 SD decrease(respectively) in the void period of this category of houses. Also, one standard deviation increase in the electricity supply (improved service delivery) yields 0.260 standard deviation decrease in the void period of three bedroom houses.

Table 4: Beta Coefficients of the independent variables

	Standardized Coefficients				
	Beta	Bootstrap (1000) Estimate of Std. Error	Df	F	Sig.
Shopping complexes	-.312	.078	2	16.215	.000
Educational Institutions	-.229	.179	1	1.624	.205
Health care Centers	-.086	.112	2	.583	.560
Recreation Centers	-.300	.099	1	9.062	.003
Major Roads	-.226	.105	1	4.644	.033
Refuse Dumps	-.195	.144	2	1.831	.164
Security of the Neighbourhood	-.150	.119	1	1.571	.212
Electricity supply	-.260	.092	1	8.053	.005
Water supply	-.037	.158	1	.056	.813

A comparison of the zero-order correlation coefficients in table 5 further revealed that the identified externalities had separate and distinct degrees of relationship with the void periods of residential buildings. In this regard, negative correlation coefficients implied that the respective externality had negative relationships with void periods, while positive correlation coefficients implied positive relationships with void periods. Negative relationships translated to a decrease in void period with closer proximity to the externalities, while positive relationships translated to an increase in void periods with closer proximity to the concerned externality.

Results in table 5 revealed significant negative relationships between void periods and shopping centers, recreation centers, and major roads. These are evidenced by their zero-order correlation coefficients which are -0.321, -0.364, and -0.219 respectively. It also revealed a significant negative relationship with electricity supply. The negative correlation recorded in these cases implied that the void periods of houses reduced with closer distances to shopping centers, recreation centers, and major roads. Void periods also reduced with improved electricity supply. Electricity supply recorded a zero-order correlation of -0.427. The table further revealed that, out of all the externalities that had significant impacts on the void periods of houses in the study area, electricity supply and recreation centers were the most important. They had the highest importance indexes of 0.218, and 0.214 respectively. The least important is major roads, which had the lowest importance index of 0.088. These findings corroborate the work of McPeake (2015) which identified low demand, resulting from a variety of neighbourhood factors as having profound impacts on the void periods of residential buildings.

**Table 5: Zero-order Correlation and Importance Index for the relationship between externalities and the void period of residential buildings**

Independent Variables	Zero-Order Correlations	Importance index
Shopping complexes*	-0.321	196
Educational Institutions	-0.258	116
Health care Centers	0.125	-0.021
Recreation Centers*	-0.364	214
Major Roads*	-0.219	088
Refuse Dumps	-0.382	146
Security of the Neighbourhood	-0.168	049
Electricity supply*	-0.427	218
Water supply	-0.182	013

\*Variables with significant impact on the void period of three bedroom houses

Data Analysis, 2017

### Other determinant factors of void period

Based on the consensus opinion of estate surveyors & valuers in the study area, other essential factors which also determine the void periods of residential buildings in the study area relates to the condition of the physical components of the house, the size of the dwelling unit, the age of the building as well as the number of toilets. Others are rental values, the demand for a particular house type, as well as individuals' tastes and preferences.

### CONCLUSION

This research is an attempt to examine the influence of the quality and proximity to externalities on the void periods of residential buildings in Minna, Nigeria. The study provided empirical evidence on the extent to which void periods are influenced positively and/or negatively by the identified externalities. Issues raised herein indicate that the impact of externalities on void period could be positive and/or negative. Findings further indicate that these externalities have varying degrees of impacts on the void periods of residential buildings. In this study, void periods were modelled as functions of externalities such as shopping centers, educational institutions, health care centers, recreation centers, major roads, refuse dumps, security, electricity, and water supply. The results as indicated by the optimally scaled categorical regression analysis revealed that the identified externalities made significant and distinct degrees of contribution to the void periods of the dwelling units. It is therefore essential that real estate investors' should be mindful of externalities in an area before embarking on real estate developments in order to ensure satisfactory returns on their investment. It is also recommended that concerned Authorities should ensure the efficient allocation of positive externalities across neighbourhoods and the elimination of negative externalities from residential areas if the void periods are to be minimized, and the invested capital is to be profitably recouped.

### REFERENCES

- Babarinde, J.A (1998) Analysis of Industrial Relocation in Relation to Housing and Infrastructural Services in Metropolitan Lagos. *The Lagos Journal of Environmental Studies*, 1 (1), 97-108.
- Bello, M.O. and Yasim, A.J. (2014). An Assessment of the Impact of Tree shade on Rental Values of Residential Properties in Maiduguri, North-Eastern Nigeria. FIG Congress 2014, Engaging the challenges-Enhancing the relevance. Held in Kuala Lumpur, Malasia from 16<sup>th</sup> – 21<sup>st</sup> June 2014.
- Cao, C. and Zhao, Z.J. (2011). Funding China's Urban Infrastructure: Revenue Structure and Financing Approaches. Final Research Report, Center for Transportation Studies, University of Minnesota, CTS 11-10.
- Convery, F.J. (1998). Challenges for Urban Infrastructure in the European Union. Published by The European Foundation for the Improvement of Living and Working Conditions, Luxembourg, Pg 15-71.
- Legal for Landlords UK (2016). Void Periods: How you can avoid them. Available at <https://www.legalforlandlords.co.uk/void-periods-can-avoid/>. And assessed on 2<sup>nd</sup> January, 2017.
- McPeake, J. (2015). Effective Void Management in Ireland. Available at <https://www.housingagency.ie> and assessed on 17<sup>th</sup> May 2017.
- Naruseon, R. (nd). Evaluating the Contribution of Infrastructure Effects on Residential Property. Available at [www.pres.net/.../Romkaew](http://www.pres.net/.../Romkaew), assessed on 17<sup>th</sup> April 2015.

- Ogunbajo, R. A. (2017). The Impact of Externalities on Rental Values and Void Periods in Minna, Nigeria. Unpublished Ph.D Thesis, Department of Estate Management, Federal University of Technology, Akure.
- Pallant, J. (2011). SPSS Survival Manual. A step by step guide to data analysis using SPSS. 4<sup>th</sup> edition, Allen and Unwin, Australia. Pp 150 – 162.
- Property Hawk (2012). Avoid the Void. Available at [www.propertyhawk.co.uk/?avoidthevoid](http://www.propertyhawk.co.uk/?avoidthevoid), and assessed on 27<sup>th</sup> June 2016.
- Saed, Y., Kamariah, D. Mohammad, M. A. and Johani, M. Y. (2015). Challenges of Co-ordination in provision of Urban Infrastructure for new Residential Areas: The Iranian Experience. *Environmental Management and Sustainable Development*, 4(1), 48-72.
- Srinivasu, B. and Rao, P.S. (2013). Infrastructure Development and Economic Growth: Prospects and Perspective. *Journal of Business Management and Social Science Research*, 2 (1), 81-91.
- Starkweather, J. and Herrington, R. (2016). Research and Statistical Support, Module 9, University of North Texas. Available online at [www.bayes.acs.unt.edu:8083/BayesContent/class/Jon/SPSS\\_SC/Module0/M9\\_CatReg/SPSS\\_M9\\_CatReg.htm](http://www.bayes.acs.unt.edu:8083/BayesContent/class/Jon/SPSS_SC/Module0/M9_CatReg/SPSS_M9_CatReg.htm), and assessed on 22<sup>nd</sup> October 2016.
- Tabachnick, B.G. and Fidell, L.S. (2007). Using multivariate statistics (5th edn). Boston: Pearson Education.
- UK Housing Association Guide (2015). Void Management. Available at [www.communities-ni.gov.uk](http://www.communities-ni.gov.uk), and assessed on 27<sup>th</sup> June 2016.