

Analysis of Road and Electricity Maintenance on Rental Payments and Economic Growth in Nigeria

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Abstract:

The state of infrastructure is an important parameter for modeling, assessment and simulation of developmental status of any urban system. It has been a quest to know if infrastructure makes any contribution to rental values. This is one of the purposes of carrying out this research to identify and analyze what happens to rental value if some aspects of the infrastructural facilities are ill maintained or poorly managed society. This work evaluates the effects of infrastructural decay on rental values based on the assessment of the availability of basic amenities and the level of depreciations caused in the economic and standard of living of the society. This research work identified the different commercial and residential properties in a given residential area together with the amount of decayed infrastructure. In pursue of these objectives, the simulation and relationship between the decayed infrastructure and rental value was ascertained and used to compare the conditions of the existing infrastructure. It was obvious that good road, electricity and water supply are the major infrastructural facilities required for a housing estate to function efficiently. There is significance relationship between the rental values, economic values of societal housing estates and infrastructural availability. The research offered solutions to questions of infrastructural decay and vivid insight into overall effect to rental value. It was discovered that infrastructure is an indicator in accessing the living standards and economic growth of a country. Extensive view of the effects of infrastructural decay on rental values was assessed proffering solutions to deficiencies in the quality of life expected in a residential society.

Keywords:

Infrastructure, Rent, Properties, Estates, Residential Areas, Maintenance, Property, Utilities, Accommodation

1. Introduction

This study will be restricted to the appraisal of the effects of infrastructural decay on rental values and housing estates by determining the relationship between infrastructure and rental values of residential accommodation in housing estates.

These housing estates Ehimiri, Isieke and Agbama, are located in Abia state and are designed by government of Abia state. Data sourced from the occupiers of both residential and commercial properties who have lived in the estates for a considerable period of time were used to carry out the basic analysis of this research. The study was embarked upon with the intention that its outcome will be beneficial to several interested groups in the society - research scholars, property developers, landlords, infrastructural maintenance departments and governments. The literature review, findings and recommendations will enrich the scanty literature on this topic. It will be of future benefit for scholars whose interest is in a study of this kind. The contribution of this study to property owners and developers can hardly be overemphasized especially when one considers the fact that it serves as a guide to an authentic simulation and assessment of the indispensability of infrastructures on the functionality and efficiency of housing estates. An explicit exposure of areas void of infrastructural maintenance will result to quick response of government towards providing infrastructural facilities and maintaining or fixing up the deteriorated ones. In this word, rental value and infrastructural decay were assessed to check if a change in one causes same in the other.

The efficiency of any form of human activity system including urban area largely depends on provision of efficient infrastructure and services [1]. It can therefore be concluded that the significance of infrastructure in the proper functioning of an urban area cannot be over-emphasized. The quality and coverage of infrastructure services have a major impact on living standards and economic growth, yet it is estimated that two billion of the world's poor people lack access to electricity, one billion lack access to clean water United Nations [2]. However, according to [3], infrastructure is the system of land-based physical assets and technology which collectively provide the enabling environment and deliver the services required to enhance economic growth and the quality of human life in the society.

Food, shelter and clothing constitute the most important needs of man. Shelter, though second in the hierarchical needs of man, implies having a roof over one's head; serve as protection from harsh weather and attack. Shelter is often construed to mean housing but housing has a broader horizon. According to [4] housing comprises immediate accommodation, environment and facilities like roads, water, electricity and host of other facilities that make living comfortable to the dwellers. However, [5] and [6] contended that the Federal Housing Authority of Nigeria have concentrated their energies mainly on the provision of numbers of housing units without giving adequate attention to adequate infrastructure provisions and maintenance to these developed housing estate units. And this is reflecting on the poor physical outlook of most of these housing estates across Nigeria housing sector Fortune [7], NHP Report, [8]. Even where some of these infrastructures are provided to the housing estates, their maintenance and sustenance have been problematic since there is no post-construction management framework adopted for the maintenance management of the provided infrastructures in Nigeria [9]. But, the inadequate infrastructures provision problems are not just typical to a particular reason rather it cuts across several reasons. Urban infrastructure apart from being a major pointer of environmental quality is a critical agent of the socio-economic development of an urban area [10]. It plays an important and indispensable role in the economic, social and environmental aspects of life. Urban infrastructure covers a wide range of services and facilities such as water, road, waste disposal, drainage, communication, primary health services, schools and housing. Where urban infrastructure is

adequately provided and efficiently managed, productive and profitable land uses are usually attracted towards such area. The uses of these infrastructural facilities compete less with productive uses through either sales or rentals [11].

Considering the relevance of infrastructure to this dissertation, it is pertinent to trace the history of infrastructure in Nigeria as it will give an insight into this research. Nigeria emerged as a country in 1914 when the British Colonial administration amalgamated the southern and northern protectorates. The country was administered with three regions in 1946-1963, four regions in 1964-1966, 12 states in 1967-1975, 19 states in 1976- 1986, 21 states in 1987- 1990, 30 states in 1991-1995, and 36 states in 1996 respectively [12]. The country has also been divided into six geo-political zones and 774 local government areas since 1999-1996 respectively. The Nigerian population was over 140million during the 2006 census. Nigeria was primarily driven by agriculture from 1914 up till the 1960s, whereas with a decline in agricultural production, the petroleum resources became a major source of Nigeria's revenue in the 1970s [13]. But the collapse of the prices of petroleum products in the early 1980's as followed by macroeconomic imbalances, leading to adoption of Structural Adjustment Programme (SAP) prescribed by the international monetary fund(IMF) and the World Bank. The SAP led to the increase in the gap between the rich and the poor and intensification of poverty in Nigeria. The foregoing sets a stage for the discourse on infrastructure in Nigeria. The original efforts geared towards provision of Infrastructure in Nigeria were quite impressive whereas the efforts nose-dived since the advent of imperialism and its triplets named slave trade colonialism and neo-colonialism. In the view of [14], the neo-colonialism is recognized as the last stage of imperialism. Experience with slave trade and colonialism cannot be forgotten in Nigeria.

Following the abolition of slave trade, the Nigerian kingdoms were colonized. This overshadowed the distinctive artifacts and colonialism of skilled artisans and Iron workers among the Nok people. Subsequently traditional infrastructure found among the Nok, Igbo- Ukwu, Benin, Yoruba was modernized in the context of colonialism. Colonialism resulted to the establishment of new institutions such as armed forces, public service, hospitals and energy factor. The major infrastructure established during the colonial era included electricity, tarred roads, pipe borne water, railways, ports, communication networks, health centres and schools. However, these colonial infrastructures served a few elite who lived in cities where the infrastructures could only be accessed. The crop of Nigerian leaders who succeeded the colonial governors attempted to maintain and extend the inherited colonial infrastructure but failed due to official negligence and mismanagement of resources. This act of mismanagement set in decay which has generally affected every infrastructure built in recent times including ones situated in housing estates in Nigeria.

Real property is defined as land, buildings and other improvements thereon and the legal rights relating to the asset - land [15]. However, this definition is somewhat confusing as there is always a distinction between real property and real estate, though both terms are sometime used interchangeably in real estate profession literature and practice [16]. Real property is defined as only the interests, benefits, and rights inherent in the ownership of real estate, while real estate is defined as only the physical land and the improvements thereon [17]. This distinction clarify that real property cannot be both land and rights and that is the reason why most appraisers are concerned in the interests substituting in the property than the property per se. At the same, the classification is according to their forms of ownership, use, etc., and which

could be classified into possessory real property and non-possessory real property [18]. The real property in any of its investment sector has the characteristics which are distinguishable from other investments, and to this, [19] typically identified as including heterogeneity, risk, liquidity, and indivisibility. Others are: high cost of transfer; holding cost; income and capital growth; special ownership gains; imperfect knowledge; perpetuity; and leverage or gearing [20]. However, the discussion above is not out of place, but the study context is on property value. Therefore, property value according to [21] is the amount of money which can be obtained for the interest on a property at a particular time from persons able and willing to purchase it. Value in this case is not intrinsic but results from estimates made subjectively by able and willing purchasers of the benefits or satisfactions they will derive from ownership of the interest [22]. This applaud that value does not exist on its own but is created by certain condition and circumstances such as: its utility; scarcity; desirability; and effectiveness or effective purchasing power [23]. There must be a strong association between these conditions in relation to the property demand and supply otherwise the property value would be inherent. The work of [24] contended that there are only two well know forms of property value such as capital value and rental value. But, [25] clarified that real property value comprises of the: market value, value-in-use, going concern value, investment value, liquidation value, assessed value, and insurance value.

Therefore, these values should be sustained in any real property through availabilities of adequate infrastructural provisions such as those earlier mentioned. But, where these infrastructural projects are not provided in the housing estates, the consequences should bring a reduction on the combined values of what the properties ordinarily should have being when these infrastructures are completed and provided in the area. This is in a similar agreement with the assertion of [26] and [27] that infrastructural projects abandonment would always affect property values in the vicinity.

Housing accessibility and utilities the intangible services available to a particular building by a community or any activity or groups of activities operated within the community. Every dwelling unit must have an access route. Transportation system must connect the dwelling to other services and activity areas. The more accessible a dwelling is relative to other activity areas, the more useful will the dwelling be. Adequate accessibility is a fundamental value factor in any residential housing estate. Sometimes, urban dwellers especially the upper classes tend to seclude themselves in want of privacy. This does not rule their need for adequate accessibility. Accessibility is simply a matter of distance in time, space and expanse from points within the urban areas, which are useful to the household. Generally, utilities include such goods and services as the provision of potable water, electricity, sewage, telephone, gas roads, etc. the provision of these utilities is not without cost and this cost is usually included in or forms part of the cost of housing. Accessibility and utilities are usually provided at a cost that is recouped from households in the form of taxes, rates, premium, etc. They constitute a package of services related to housing and tied closely to a particular dwelling.

Public sector intervention in housing in Nigeria began in the colonial era [28]. The colonial era could indeed be referred to as the period of the white man's quarters or the period of housing reservation. It could be seen that in the colonial era, the prevailing policies were modest, bereft of any attempt to tackle the housing problem on a national scale [29]. The housing policy of the government focused on the

provision of quarters for the expatriate staff members of the colonial government and for selected indigenous staff in specialized occupations, like the railways and the police [30]. This marked the advent of Government residential areas (GRAs) in Nigeria. The basic idea in the GRA policy was to provide habitable housing and housing environment for those expatriate administrators comparable to the best in their respective countries. Their housing quarters were well planted, with all the possible comfort, services and amenities; including water, closed sewers, electricity, and abundance of open space and recreational areas. The idea of housing reservation was thus initiated and implemented in Lagos and in regional and provincial capitals throughout the country. In 1955, revived concern for slum clearance brought the central Lagos slum clearance scheme into effect. The scheme opened up Apapa and later Victoria Island as high and low density areas of Lagos. The Surulere housing scheme in Lagos, which was established in the late 1950s, was partly designed to provide temporary residential housing for the displaced people from the slum areas of central Lagos. The scheme however became permanent housing for such families as a result of problems associated with the re-allocation of redeveloped land in central Lagos Abiodun, (1985). Efforts by the Lagos Executive Development Board (L.E.D.B.) at solving public housing problems in the Lagos metropolis thus resulted in the existence of regulation schemes such as workers housing estate and re-housing estate; Akinsemoyin and Eric Moore housing estate, Surulere; workers housing estate (phase ii), surulere; freehold housing scheme and site-and-services estate at Surulere, Apapa, Southeast and Southwest Ikoyi, Lupe and Isolo Estates.

Public sector intervention in Nigeria in the colonial era was largely limited to the provision of staff housing units in the GRAs in the regional capitals [31] and the African Quarters [32] noted that besides the housing programmes in Lagos, one housing programme that was introduced to benefit Nigerians during the colonial period was the African Staff Housing Scheme. It was, however, a token effort as conditions for granting the scheme was not substantial, and on the whole, only a few officers benefited from the scheme. In 1958, the Western Regional Government pioneered the establishment of housing corporations. Other regions soon followed suit. The main function of the housing corporations was the construction of housing units for sales to members of the public and the issuance of loans to whoever wished to build their own houses on their land [33]. As [34] argued, the corporations were largely irrelevant to the needs of the poor majority. Their efforts had no significant impact on the housing situation of the urban poor and this was due partly to inadequacy of funds, the stringent conditions attached to the issuance of the loans and technical expertise. Post-independence public intervention in housing did not fare significantly better than during the colonial era in terms of housing provision for the generality of the urban settlers [35]. The subsidized housing reservations that used to be reserved for the colonialists became, after independence, a reservation for the new Nigerian administrative and political elites. Moreover the increase in the number of civil servants that qualified for government quarters at both federal and state level increased the demand of housing units in GRAs.

The reservation scheme had little or no impact neither on the housing stock nor on the housing problems. Nevertheless, the government reservations raised the horizons of housing expectation and values of the newly emerging cadre of middle and upper class Nigerians. The African Staff Housing Scheme and Nigerian Building Society (NBS, established in 1956) were continually fortified to provide mortgage loans and to encourage savings. Little was achieved because of limited financial resources

coupled with the poor response of the public to the savings scheme. The Nigerian Building Society did very little in solving the housing problems of the country as conditions for granting the mortgage loans favoured only the upper and middle income people. Thus, the urban poor did not benefit from the operations of the N.B.S. nevertheless the purpose of establishing a Building society was defeated which resulted to Federal government proposing on the constitution of National Development Plans. These plans include: The First National Development Plan (1962-1968), The Second National Development Plan (1970-1974), The Third National Development Plan (1975-1980) and The Fourth National Development Plan (1981-1985)

Up till now Government has been inconsistent in its approach at resolving the seemingly intractable housing problem of the country. This is evident from ever-changing strategies aimed at achieving the goal of the National Housing Policy, and the institutional framework for it. Housing matters are constantly transferred to different government ministries from one government regime to the other. For instance the housing reforms embarked upon by the Federal Government (1999 – 2007) involved the establishment of the Federal Ministry of Housing and Urban Development. The ministry was, inter alia, to supervise the Federal Mortgage Bank of Nigeria, especially in the disbursement of loans from contributions into the National Housing Trust Fund. The ministry has now been scrapped and in its place a new Federal Ministry of Works and Housing has recently been created by the present Federal Government.

The literatures reviewed in the preceding sections have clearly revealed an awesome gap. The existence of this gap is basically on the fact that few literatures centered on infrastructure and did not treat the evaluation of infrastructural decay on housing estates by placing emphasis on Ehimri, Isieke and Agbama housing estates. The work of [36] centered on the impact of public infrastructure on productivity. His work concentrated more on the role of infrastructure in facilitating the production of goods and services, and also the distribution of finished products to end- users. In their study [37] opined infrastructure services have a direct bearing on economic growth and reduces the cost of production, which in turn affects productivity, level of output and employment. The work of [38] had a different dimension as his work was centered on the challenges of infrastructural development in democratic governance. He identified the challenges to include: Dearth of Visionary leaders, procurement method, political, economic, demand and supply, capital flight, capital sink and capital stagnancy. This study is therefore geared towards filling the gap and by so doing will establish the effects of infrastructure decay on rental values in Abia State. It is further expected that this study will highlight areas of further study in future.

2. Research Methodology

Research instrument used for this research was questionnaire. A questionnaire is a device for securing answers to questions by using a form which the respondent fills himself. According to [39], it helps to obtain a measure of accuracy and complete data. The questionnaire was designed to obtain information relevant to the aim of the research from each population group namely Enugu Electricity Distribution Umuahia, Physical Infrastructure maintenance and development, practicing Estate Surveyors and valuers in Umuahia and landlords/tenants.

Questionnaires were distributed in the respective housing estates on questions arising from the state of infrastructure in the estates. A different questionnaire was sent to EEDC Umuahia to determine the cost involved in maintaining the installed transformers in the estates and also to determine the average number of times it damage monthly. These, altogether were used in analyzing the extent of decay of these transformers in the estates. For road infrastructure the amount incurred by government in maintaining the dilapidated roads in the housing estates annually was used for the analysis. This invariability means that answer to the research questions raised under section 1.6 above was proffered based on data generated for the purpose of this work. In addition to the above, the data revealed more facts about the problems raised under section 1.2. The researcher expects that by so doing, the aim and objectives of this dissertation stated under section 1.3 was achieved.

The major statistical tool used in the analysis of the data collected during the research was regression. This is due the level of dependency of the rental value with infrastructure. Since there is a huge correlation between the two indices, efforts were made to identify the predictor variable and relates the two in form of a linear regression model for future predictions and decision making. The parameter estimates of the rate of infrastructural decay among the three housing estates was analyzed using linear trend analysis $Y = a + bx$ where Y and x are dependent and independent variables respectively. This analytical tool/software (R console version 3.2.3) with SPSS statistical package helped us to achieve the aim of this dissertation which centered on the evaluation of effects of infrastructural decay or depreciation on rental values in housing estates from 2004 to 2013 which forms the crux of this research endeavour. Descriptive statistics such as frequency distribution and percentages were used in the analysis. It was also expedient to use analysis of variance for linear regression model of infrastructure and rental values.

3. Results and Discussion

Comparative analysis of the rate of infrastructural depreciation in terms of electricity and road were studied from 2004 to 2013. The analysis shows a relative percentage increase across the years. In 2004 the rate of decay which was measured in terms of the cost of maintaining the damaged and depreciated transformers, the cost of repairing and patching road network and the expenses incurred in getting these facilities in order was 5.45 percent. The amount increased to 14.77 percent in 2013. Based on the analysis, there is an urgent need to check and harness the factors associated with this percentage increase in infrastructure devaluation otherwise, it will affect the economic growth and development of this country.

Table 1. Infrastructural Decay among the Housing Estates.

S/N	Year	Infrastructural Decay						Percentage
		Road (₦)			Electricity (₦)			
		Ehimiri	Agbama	Isieke	Ehimiri	Agbama	Isieke	
1	2004	2780500	3260500	3548500	278750	326750	355550	5.47
2	2005	2780500	3260500	3548500	334080	391680	426240	6.02
3	2006	3062400	3590400	3907200	403680	473280	515040	6.98
4	2007	3619200	4243200	4676000	445440	522240	568320	7.93
5	2008	4176000	4896000	5328000	542880	636480	692640	9.44
6	2009	4454400	5222400	5683200	584640	685440	745920	10.12
7	2010	5568000	6528000	7104000	696000	816000	888000	12.31

8	2011	5568000	6528000	7104000	737760	864960	941280	12.72
9	2012	6681600	7833600	8524800	779520	913920	994560	14.23
10	2013	6681600	7833600	8524800	835200	979200	1065600	14.77

Ascertaining whether or not there is a significant difference between the selected housing estates, we used the data obtained from rental values. Since it was already noted from the previous analysis done above that there exist strong correlation among rental values and infrastructure, we decided to determine if there exist uneven level of infrastructure in the rental value of the selected housing estates (Agbama, Ehimiri, and Isieke) in Abia State. In the evaluation of the effects of infrastructural decay on the housing estates, we used to further examined if there exist a significant change among the rental value of the estates. The essence is to ascertain if the variation in infrastructure affected the rental value. If it does, to what extend has it affected each of the housing estates. We checked the housing estate that is mostly affected by decline in infrastructure. It was observed that Isieke, on average is mostly affected by decrease in infrastructure. As a result, the rental value and the values of landed properties in that region decreased.

Table 2. Rental Value Comparison in the Estates.

S/N	Year	Rental Value Per Annum (₦,000)			Total	Mean
		Ehimiri (Y ₁)	Agbama (Y ₂)	Isieke (Y ₃)		
1	2004	120	90	78	288	96
2	2005	126	96	90	312	104
3	2006	144	126	120	390	130
4	2007	162	144	144	450	150
5	2008	180	150	174	504	168
6	2009	216	180	180	576	192
7	2010	240	192	201.6	633.6	211.2
8	2011	264	210	198	672	224
9	2012	288	216	216	720	240
10	2013	300	240	216	756	252
Total		2040	1644	1617.6	5301.6	530.16
Mean		204	164.4	161.76		

The Values are in multiples of 1000 which denotes that every value on the table was multiplied by 1000. Observing the figure below, there is a positive increase in the level of infrastructural decay in the housing estate. The increase in infrastructural decay leads to reduction in the standard of living. As this happens, the rental values and the value of other real properties in the estates are adversely affected.

Table 3. ANOVA for Comparison of the Housing Estates.

Source of Variation	Sum of Squares	Degree of Freedom	Mean Squares	Fcal
SSH	11197.8	2	5598.9	30.2
SSY	84317.6	9	9368.6	50.5
SSE	3340.5	18	185.6	
SST	98855.9	29		

The analysis was based on test hypothesis $H_0: H_j = 0$ for all $j = 1,2,3$, which simply means there is no significant difference between the three housing estates. The test

statistics $F = \frac{MSH}{MSE} \sim F_{(0.05,2,29)} = 3.3$ for the test of $H_0: H_i = 0$ for all $i = 1, 2, 3, \dots, 10$ and $F = \frac{MSY}{MSE} \sim F_{(0.05,9,29)} = 2.2$. On the basis of the above result, we reject the null hypothesis for the housing estates across the years since the values of F-calculated were greater than the critical values of F-tabulated. We therefore concluded that there is significant difference between the housing estates across the years. Rental values for the three estates increase across the years as shown in Figure 1.

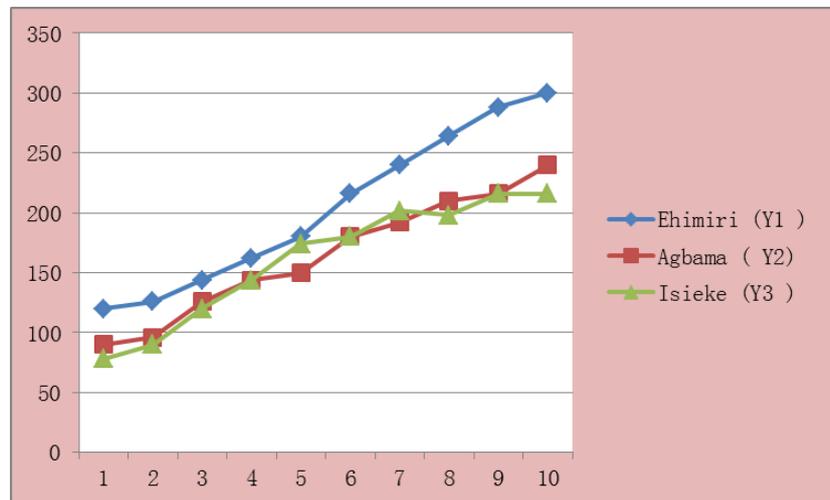


Figure 1. Trend Analysis of the Housing Estates.

Analyzing the trend that exists between percentage increased in cost of infrastructural dwindling across the years, the model parameters was designed to be $P = 3.876 + 1.113T$ where P is the percentage of infrastructural decay and T is the years. Percentage of infrastructures is the dependent variable while the years are the independent variables. The correlation coefficient value of 0.994 indicates a high level of positive relationship between infrastructure and rental values. It means that a variation in electricity and road either positively or negatively is explained up to 99.4 percent variation in the rental value.

Table 4. Coefficient of Depreciation.

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.876	.267		14.492	.000
	VAR00001	1.113	.043	.994	25.826	.000

Where P and T represent percentage decrease in infrastructure with time (measured in years) respectively. The predicted percentage cost of infrastructural decay in year 2020 shows approximately 22.78 percent, and there is every tendency that such will cause a huge decline to the Nigerian Mission 2020 of economic growth and development. Figure 2 shows the state of damages, depreciation and cost of decay in Ehimiri, Agbama and Isieke. The analysis shows 29 percent, 34 percent and 37 percent for Ehimiri, Agbama and Isieke respectively. The emphasis lied on suspected outflow of infrastructural decrease in Isieke more than the other two estates. This adversely affected the rental value of the housing estate. The higher the percentage increase in the level of the decay, the lower the rental value and other landed properties in the region.

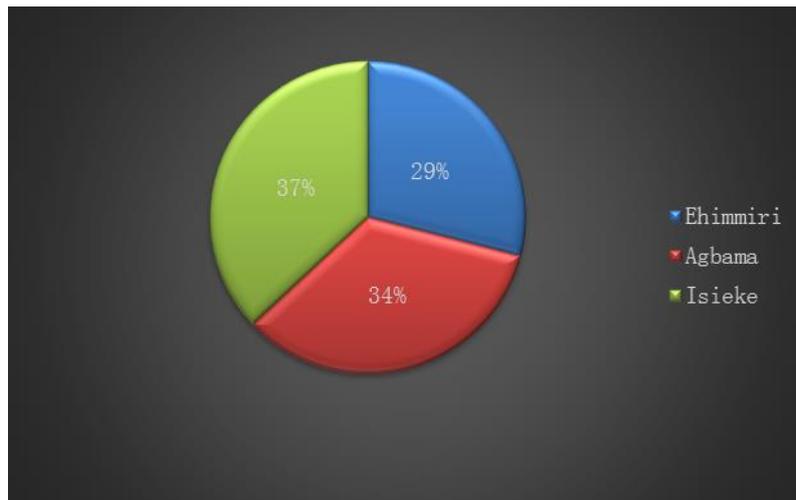


Figure 2. *Infrastructural Deterioration among the estates.*

The housing estate with the highest amount of decay is Isieke with 3 percent worse than Agbama while Agbama is 5 percent more deteriorated than Ehimiri. The model summary was made and it indicated a true representative of the real live situation because 99.4 percent of the situation could be explained by the model parameters.

Table 5. *Model Summary.*

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.994	0.987	0.986	537.07460

Furthermore histogram is used to assess the system’s current situation and to study the result of the improvement action. The rate of infrastructural decay and its effect on landed properties by property developers was organized and displayed below to show the range of values for each factor. In the regression analysis of the dependent variable in place of the rental values and infrastructure, there shows a normal standardize residual.

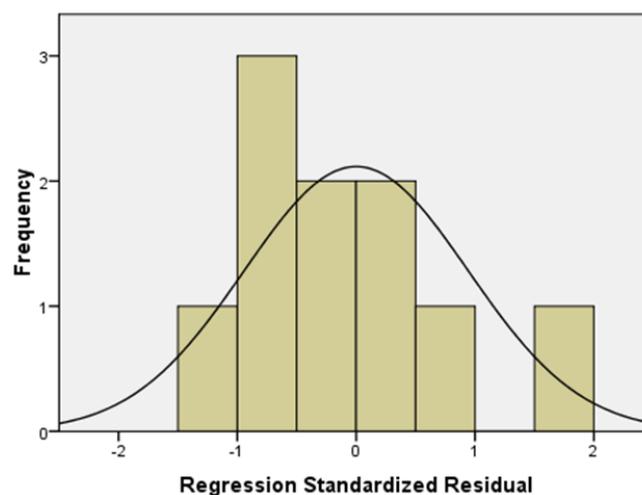


Figure 3. *Regression Standardized Residual.*

This implies the levels of variability that exist among the rental values are normally distributed. It increases in a definite pattern as the infrastructure declined across the period. The distribution shape achieved by our histogram is bell-like, which denotes that the statistical data is in proportion based on the specific limit.

4. Conclusions

In this research, there is evidence that provision and maintenance of infrastructure are vital for an estate to function effectively. In that vein, there is existence of positive relationship between Infrastructure and rental values across the years. Isieke Housing Estate tops the chart of area where infrastructural maintenance is accorded a low priority followed by Agbama and Ehimiri Housing Estate. On the strength of the findings, the study recommends that facilities within the estate need serious upgrade to further enhance the living conditions of the residents.

In consideration of the findings made, the following recommendations are offered to provide solutions to the problems raised. Based on the sharp increase of decay from 5.45 percent in 2004 to 14.77percent in 2013, the researcher advocates for quick response by government towards maintaining and fixing back the damaged or decayed facilities to avoid retarding the pursuit of vision 2020 of economic growth and development of this country. Infrastructure maintenance should be accorded a high priority in all the housing estates. The road and transformers should be adequately maintained to avoid slack. A relief transformer should be brought into areas confirmed to be problematic. It was observed that Ehimiri housing estate enjoys a better infrastructure amongst other housing estates in study. This positively affected the rental value positively more than others. Government through its relevant agencies should see to it that approved building plans are strictly adhered to both during and after construction. In the long run, this will ensure that the beauty of these housing estates will be restored and maintained adequately. Housing should be provided with necessary infrastructural facilities to enhance its functions as a place of habitation and this would increase the rental values, which the property developers would enjoy on their residential properties. Since there is shortfall in infrastructure provision and maintenance by government in Isieke housing estate, property developers should divert their residential property investments to where they could derive the highest rental values.

Finally there is the need for researchers to carry out more researches on other forms of infrastructure as they affect property values in Nigeria. A work can also be done on the effects of Infrastructure on investments in Nigeria so as to determine how it affects different investment options.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

References

- [1] Igbuzor, O. C. Corruption in Nigeria, a Challenge to Sustainable Development in the 4th Republic. *European Scientific Journal*, 2013, 9, 32-36, DOI: <http://dx.doi.org/10.19044/esj.2013.v9n4p%25p>.
- [2] Ihua, B. Urban Residential Satisfaction and the Planning Implications in a Developing World Context, the Example of Benin City Nigerian. *International Planning Studies IPS*, 2010, 7(1), 37-53, DOI: <http://doi.org/10.1080/13563470220112599>.
- [3] Ihuah E. C. Sustainable construction, Green building design and delivery. New York: John Wiley & Sons, Incorporation. 2013, 45-60.

- [4] Ihuah, F. Evaluating Tenant's satisfaction with Public Housing in Lagos, Nigeria. *Town Planning and Architecture TPA*, 2013, 33(4): 239-247, DOI: <https://doi.org/10.3846/13921630.2009.33.239-247>.
- [5] Kalu, I.U. Property valuation and appraisal. Bon Publications, Owerri, 2001
- [6] Kalu, A.I.; Chima, G.N. Housing development in Nigeria: Paulinton press Limited, 2006.
- [7] Kath M. The effects of Infrastructure development on growth distribution. The word Bank policy research working 2009, paper 3100.
- [8] Kemmerling, A.; Stephan, A. The Contribution of Local Public Infrastructure to Private Productivity and its Political Economy: Evidence from a Panel of Large German Cities." *Public Choice*, 2002, 113(34), 403-424. Available online: <https://link.springer.com/article/10.1023/A:1020821624682> (accessed on 22 August 2018).
- [9] Lawal A. The National Housing Programme -The Way Forward. Housing Today. *Journal of the Association of Housing Corporations of Nigeria*, 2002, 11 (2), 16-19.
- [10] Lean, W.; Cadwall, B. Aspect of land economics, London: Estate Gazette Limited 1966, 4, 23-30.
- [11] Keller, W. Infrastructure investment and economic growth: *Edmonton Journal* 2007, 7, 43-50.
- [12] Luck, D.J.; Ronald, S.R. Marketing research. New Delhi Prentice hall of India 1992, 4, 23-45
- [13] Mabogunje, O.R. Critique of Official Housing Policy in Nigeria” Proceedings of the National Symposium, Obafemi Awolowo University (O.A.U.) Ile – Ife 2002, 23 – 24 July, 284-288
- [14] Macellus, A. The theory and practice of housing sector development for developing countries, 1950-99. *Housing studies*, 2009, 16(4), 399-423.
- [15] Mandelker, M. Is public infrastructure productive, A metropolitan perspective using new capital stock estimates: *Regional Science and Urban Economics* 1995, 25, 607-630.
- [16] Mastomarco. P. Maintenance and quality management (the missing link) *Journal of Quality in Maintenance* 2004,.
- [17] Melosi, M. V. The sanitary city Urban infrastructure in America from colonial times to present. Baltimore: John Hopkins University press 2000, 6, 32–36.
- [18] Morenji, W. Research and analytical methods for social scientists planners and environmentalists. Jos: University press limited, 2006, 13-105.
- [19] Nubi, O.T. Affordable Housing Delivery in Nigeria: The South African Foundation International Conference and Exhibition. Cape Town, 2008, 1-18.
- [20] Obateru, O.I. Housing and Urban Infrastructure in Nigeria. *Journal of social Sciences*. 2003, 5, 32-34.
- [21] Odenyinka and Yusuf “Sustainable housing Delivery: lesson from international experience”. A paper presented at the national workshop on sustainable housing

- delivery in Nigeria: Challenges for public/partnership, Sheraton Hotel, Abuja, 31st July-1st August 1997.
- [22] Ogbonna, S.O. Has the Habitat for Humanity Housing Scheme Achieved its Goal? A Nigerian Case Study: *Journal Housing and the Built Environment*, 2009, 24, 67-84.
- [23] Olaseni, A. Vision 20:2020 The challenges of infrastructural development in Nigeria. *Journal of sustainable development*, 2012, 5, 45-52.
- [24] Omole, J. Mortgage Facilities: A Panacea for Mass Housing Development. A paper presented at Nigerian Institute of Building conference, Lagos, November, 2007, 13, 9-16.
- [25] Okpara .O. Research for academic purposes. Enugu: EL Demark 2005.
- [26] Oladimeji, O. Maintenance of residential building practices in Nigeria: *Journal of Emerging Trends in Economics and Management Sciences*, 2006, 3, 74-78.
- [27] Olotuah, A. “Sustainable Housing Provision for the Urban Poor: A Review of Public Sector Intervention in Nigeria” *The Built & Human Environment Review*. 2000, 2, 51-63
- [28] Oni I.A. Coping with Infrastructure Deprivation through Collective Action among Rural People in Nigeria. *Journal of African Studies*. 1989, 16, 30-46.
- [29] Onyedele, O. Challenges of Infrastructural provision on democratic governance: *The Town Planning Review*. 2012, 47, 339-347.
- [30] Otite, F.O. Ethnic Conflict in Nigeria: A case Study of Ife-Modakeke in historical perspective. 2000, 5, 75-50.
- [31] Sturm, J. A Sustainability Evaluation of Government-Led Urban Renewal Projects. *Journal of Facilities Emerald Group Publishing Limited*, 1995, 26, 526-541.
- [32] Sulivian and Sherrif. Evaluating the Sustainability of Urban Housing in Nigeria through Innovative Infrastructural Management. *International Journal of Housing Markets and Analysis*, 2003, 2, 334-346.
- [33] Raji, O. Public and private developers as agents in Urban Housing Delivery in Sub-Saharan Africa, The situation in Lagos State: *Humanity of Social Sciences Journal*, 2008, 3, 143-150.
- [34] Ratcliff, J. An introduction to urban land management administration, London: The Estate Gazette Limited 1978.
- [35] Onibokun A. G. “Urban Housing Conditions” In Onibokun A. G. (Ed.) *Urban Housing in Nigeria*, Nigerian Institute of Social and Economic Research (NISER), Ibadan, 2004, 89-140.
- [36] Ukoha, O.M.; Beamish, J.O. Assessment of Residents Satisfaction with Public Housing in Abuja, Nigeria: *Habitat International* 1997, 21(4), 445-460.
- [37] A United Nations Report on Human Settlement: The changing Shelter Policies in Nigeria. 2002, 71, 32-34.
- [38] Van V. W. *International Handbook of Housing Policies and Practices*, Westport, CT: Greenwood Press 1990.

[39] Yanusa, A. Road Infrastructure and economic Development: The World Bank Policy Research Working Paper 2011, 9:21.



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