An evaluation of the relationship between neighbourhood quality and property value in Minna, Niger State, Nigeria

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An evaluation of the relationship between neighbourhood quality and property value in Minna, Niger State, Nigeria

U.J. Adama [1*], A.M. Jinadu [2]

[1] *Department of Estate Management, Federal University of Technology, Minna, Niger State, Nigeria*
[2] *Department of Urban and Regional Planning, Federal University of Technology, Minna, Niger State, Nigeria*

Abstract

The primary data collected for this research included neighbourhood quality attributes and annual rental values of properties in the different neighbourhoods in Minna. Methods of data analysis included, Analysis of Variance (ANOVA) to determine the neighbourhood quality index at all neighbourhoods, correlation analysis to determine the relationship between average neighbourhood quality and average property value at all neighbourhoods, and regression analysis to compare neighbourhood quality and property value at all sampled locations. Assessment of property values by correlation analysis revealed that property values measured as average rent (avre) differ across all six neighbourhoods sampled. This is because the coefficient of determination (R^2) observed was 76%. Regression analysis also provided evidence of a statistically significant relationship between property values and neighbourhood quality, measured across all sampled locations with an R^2 value of 0. 070. These results meant that there is statistically significant relationship between neighbourhood qualityand property value in Minna. It was recommended that there is need for an urgent upgrade of the facilities in our neighbourhoods to become big agents of value creation for property investors as it is in most developing and developed economies.

Keywords: Neighbourhood Quality Index, Property Value, Locational Influences, Housing

* Corresponding author. *E-mail address:* jonathan_adama27@yahoo.com

1. Introduction

The essence of neighbourhood quality studies is to appraise and judge against the potential of different housing neighbourhoods. The outcome of such analysis will not only attractive to the researchers but also residents, workers, business managers and policy makers as opined by (Blomgist et al*.,* 1988).

Different studies have been carried out basically on the issue of neighbourhood quality, and studies about neighbourhood quality measurement have been around for a very long time, it has not begun to permeate all practical applications. For instance, if you look at the method of measurement, the geographical scope of the measurement and their indicators cannot be generalized. This is because researchers have used different methods and indicators to measure the quality of neighbourhood and available evidence have been collected for a range of cities and in a variety of time periods (Kamp et al*.,* 2003).

Studies also exist where the effect of neighbourhood attributes on housing price or property values have been carried out. However most of the studies are explorative and mainly focused on neighborhood quality impact on house prices. For instance in the study of Rosiers et al*.,* (2007), the researchers defined environmental features as neighbourhood attributes and wanted to know what effect they have on the house price. They found out that all neighbourhood and landscaping attributes are significant and have positive effects on housing prices. Not forgetting that property value is dependent on many characteristics associated with property such as the physical characteristics, location of the property in relation to recreational facilities and employment centers. Each of these attributes is fundamental to the house price and the value that the property owners derive is based on the property characteristics.

According to Norman (1982), physical attributes and locational influences can be described as "Fundamental factors" of the property because all users of such property get utility or disutility from these fundamental factors over their expected tenure. While physical attributes include building area, type of structure and all that is attached thereof, locational influences are off-site neighbourhood attributes like healthcare facilities, parks, schools etc. Therefore property price will be locational dependent due to the attributes with respect to specific desirable services. Since locational influences on the value of residential property can come up from a number of sources such as accessibility to shopping centre, air quality, drainage system availability, pollution, noise, security, and availability of refuse disposal facilities etc. This research work examined how each of these locational factors affects residential property value determination in Minna.

2. Statement of the problem

Different authors have found relationship between neighbourhood quality and property value, and they opined that high density can be detrimental to urban environmental quality and thus to economic attractiveness. Fan (2009), observed that the quality of housing environment is an increasingly important research objective in the demand side consideration. This situation may not be the same everywhere and in

all cases. Hence, this research examines the relationship in Minna in order to isolate the relative contribution of neighbourhood quality on property value. In doing this, the research will answer the following questions.

    i.   What are the neighbourhood qualities of the various housing densities?

    ii.   Are there any differences in property values in the different neighbourhoods as a result of variations in their qualities?

    iii.   Is there any relationship between neighbourhood quality and property value?

2.1. Hypothesis

This research is based on the following hypothesis:

- H_0 - There is no statistically significant relationship between neigbourhood quality and property value in Minna.
- H_1 - There is statistically significant relationship between neigbourhood quality and property value in Minna.

3. Research context and scope

Niger state is located between latitude 8°20'N and 11°30'N and longitude 3°30'E and 7°20' E. The state is one of the 36 states in Nigeria and was created on 3rd February, 1976 from the defunct North- Western state by the Late Head of State, General Murtala Ramat Mohammed. The state however, came into being on 1st April, 1976. The state has a population of about 3,950,249 and covers a land area of about 76,000km^2 (population census 2006) or about nine percent of Nigeria's total land area, which makes the state the largest in the country. Minna the state capital is located between Latitude 8°20'N and Longitude 6^0 33'N. Minna town is almost a linear settlement with a major road running through it. In addition to the township roads, the East and West bye passes were also constructed to divert traffic from the city.

This research is focused on issues of neighbourhood quality and residential property value. The scope covers only residential properties and is restricted to Minna Township. The study examines the quality of neighbourhoods and the value they command. Since Minna the study area is basically a rental market, the study examined trends in rental values from 2003 to 2008. Baba and Jinadu (2000), zoned Minna town into twelve areas namely Bosso I, BossoII, GRA, F- Layout, Minna East central, Minna West Central, Tunga I Tunga II, Minna South West peripheral, Minna North West peripheral, Maitumbi, and 123 Quarters/Oduoye Estate (Table 1).

These zones are further classified as high density area, medium density area and low density areas respectively. The study covered only six of the twelve zones. Data on the trend in residential property value and neighbourhood quality in each of the zones were collected and analyzed.

Table 1. Residential zones used for the study

ZONES	DESCRIPTION
ZONE 1: Bosso I	High
ZONE 2: Bosso II	Medium
ZONE 3: ORA	Low
Zone 4: Minna East Central	High
Zone 5: Minna West Central	High
Zone 6: Tunga I	Medium
Zone 7:Tunga II	Medium
Zone 8: Minna South West Peripheral	High
Zone 9: Minna North West Peripheral	High
Zone 10: Maitunbi	High
Zone11 :F-Layout	Medium
Zone 12: 123 Quarters	Medium

Adopted from Baba and Jinadu (2000)

4. Research methodology

Six neighbourhoods were selected in Minna based on the classification of Baba and Jinadu (2000) on the ratio of 1:2:3 giving rise to one low density, two medium densities and three high densities respectively. In deriving the neighbourhood quality index (nqi), all the variable in the questionnaire were summed up to 22 in number and put on a 5 point likert scale with 1 representing very poor and 5 representing very good. A summation of all scores in a particular neighbourhood was made and divided by the total possible score of an ideal neighbourhood (110) to derive a neigbourhood quality index number whose rating can be read off from Table 2 below. Analysis of Variance (ANOVA) was done to determine the neighbourhood quality index at all neighbourhoods. In order to establish a relationship between neighbourhood quality index and property value, correlation and regression analysis were done. The correlation revealed the relationship between average neighbourhood quality and average property value at all neighbourhoods, regression analysis was used to compare neighbourhood quality and property value at all sampled locations.

Table 2. Neighbourhood condition rating

Condition status	General description	Neighbourhood Quality Index	Condition rating
Bad	The neighbourhood has deteriorated badly with building and facilities having structural problems. The neighbourhood presents a generally poor outlook.	0.00 to 0.19	1

Poor	Conditions of neighbourhood attributes are poor, deteriorated road network, functional but often failing facilities, and blocked drains.	0.20 to 0.49	2
Fair	Conditions of neighbourhood attributes are average, services are functional but requires attention	0.50 to 0.74	3
Good	Conditions of neighbourhood attributes shows minor wear and tear requiring some upgrades but not major maintenance	0.75 to 0.95	4
Very good	Conditions of neighbourhood attributes can be described as perfect with no wear and tear	0.95 to 1.00	5

Source: Adapted from Guidelines for Strategic Asset Management (2000)

5. Literature review

5.1. Relationship between neighbourhood quality and property value

Neighbourhood generally refer to a geographic entity comprising physical attributes such as roads, parks, rivers and rail ways and with a homogeneity of housing within an area. Elif (2009) opined that researchers on neighbourhood quality has focused on three board headlines to arrive at their findings. They include examining the relationship between environmental quality and housing areas and user's well being, focused on housing and its environment via user satisfaction and perception and finally concerning neighbourhood quality as a factor in housing price structure.

This research will consider how neighbourhood quality helps in the determination of house prices.

5.2. Residential property value determinants

Several factors ranging from accessibility, physical characteristics of the neighbourhood services and facilities, social environment, individual site and dwelling characteristics all forms part of what informs the selection of new residence (Brown and Moore, 1970). They further stated in the work that besides all the above mentioned attributes, location is also one key determinants of house price. Location is a time – distance relationship or linkage between a property or neighbourhood and all other possible origins and destinations of people going to or coming from the property or neighbourhood. Herold and Leonard (1991) opined that more distance location with more attractive features and amenities despite long community will command more value than closer locations lacking attractive features and amenities. In the opinion of Adesoji (2010), good quality housing provides the foundation for stable communities and social inclusion. This presuppose to say that people will go any length to get good value for their money.

With this development in many metropolitan areas, upper income households tend to live outside the centre of the city while lower income families continue to reside in the cities, close to employment centres.

However, in Minna a trend seems to be occurring where the lower income families are now living farther away from the city center and the city is increasingly in demand with new expensive apartments being constructed. This may not be unconnected to the fact that more distance locations in Minna lack attractive features and amenities.

5.3. Relationship between neighbourhood quality and housing prices

In the work of Palma et al. (2007), they undertook an analysis of disproportion in the spatial distribution of accessibility and neighbourhood quality in Paris metropolitan region, they found out that local amenities are generally capitalized into the housing market. Cobb (1984) explained that the variation in rent rates in housing area is dependent on housing area related uniqueness. In that line of thought, Elif (2009) opined that housing sales price depends on the neighbourhood amenities associated with the residential area and that urban migration progress towards amenity rich area despite the high housing cost.

Elif (2009) was in agreement with Basil and Michael (2004) when he posited that empirical analysis confirms that neighbourhood variables have a strong positive impact on house value. Rogerson (1999) on his submission said characteristics that increase neighbourhood quality are simultaneously significant ones which have positive impact on either housing price or rent. All these studies are explorative and focused on relationship between neighbourhood quality levels and housing prices rather than determine the price effect of neighbourhood quality on housing price.

In this study, neighbourhood quality is measured on the bases of housing and neighbourhood characteristics.

6. Results and discussions

6.1. Assessment of neighbourhood quality

This assessment was done to describe and compare neighbourhoods in terms of physical condition of the built and natural environments as well as provision of infrastructure and services. To standardize the comparison of neighbourhoods, a neighbourhood quality index (n.q.i) was derived from twenty-two (22) aspects of the neighbourhood condition. The n.q.i was measured on a scale of zero (0) poor to one (1) best. The neighbourhood variables for measuring quality include power supply, drainage system, and security, refuse disposal facilities, water supply, road condition, condition of houses and noise level.

Analysis of variance (ANOVA) (Table 3) provided evidence that all of the six neighbourhoods sampled differed with respect to the condition of natural and built environment, infrastructure and services, as measured by the n.q.i of the neighbourhoods. The sampled neighbourhoods were ranked in order of decreasing quality index as in Table 4.

Table 3. Result of ANOVA of neighbourhood quality index at all neighbourhoods

Variables (Mean values)							Observations		
Bosso 1	GRA	Maitumbi	Tunga	Bosso2	Minna NW Peripheral	Parameter tested	F	$F_{0.05}$	P_{value}
0.5239	0.6460	0.4588	0.6275	0.5650	0.5372	Neighbourhood quality index	37.537	2.21	0.000

Table 4. Showing decreasing order of neighbourhood quality index

Neighbourhood	Quality Index	Rank	Quality
GRA	0.646	1st	fairly good
Tunga	0.628	2nd	fairly good
Bosso 2	0.565	3rd	fair
Minna NW peripheral	0.537	4th	fair
Bosso 1	0.524	5th	fair
Maitumbi	0.459	6th	poor

The variations in the quality of the neighbourhoods (as measured by the n.q.i) was found to be statistically significant. This was because the F statistics, as computed, exceeded the critical value of $F_{0.05}$ 37.537 compared to 2.21 as in Table 3. This finding meant that real differences exist in the quality of the neighbourhoods that people live in.

6.2. Assessment of property value

Property values measured as average rent (avre) differed across all six neighbourhoods sampled. Arranged in order of decreasing property values, the neighbourhoods could be ranked as in Table 5 below.

Table 5. Showing Property Value in Decreasing Order

Neighbourhoods	Rank
GRA	1
Bosso	2
Tunga	3
Minna North West Peripheral	4
Bosso 1	5
Maitumbi	6

Analysis of variance (ANOVA) carried out and reported in Table 6 provided evidence that the disparities between the property values observed in the six neighbourhoods was not due to chance. This inference was based on the observation that the calculated value of the F-statistics exceeded the critical value of $F_{0.05}$ degree of freedom (21.778 compared to 2.21).

Table 6. Result of ANOVA of property values at all neighbourhoods

Variables (Mean values)						Parameter Tested	Observation		
Bosso **N73,529.41**	GRA N39,525 0	Maitumbi N23,460.32	Tunga N178,206.9	Bosso N210,428.6	Minna NW Peripheral N133,823.5	Property value	F 21.778	$F_{0.05}$ 2.21	P_{value} 0.000

The fact that property values vary amongst neighbourhoods within an urban area such as a town or city has been well documented in the literature by Harold and Leonard (1991). In addition, the reasons that underlay such variations in property value across spatial units as observed from the field was that, as the attribute under consideration (power supply, drainage system, security, refuse disposal facilities, water supply, road condition, condition of houses and noise level) improved, the rent in such locations witnessed increases.

6.3. Relationship between neighbourhood quality and property values

The findings on neighbourhood quality and property value variations provide the basis for further analysis on the relationship between the two variables. Analysis of correlation between the average neighbourhood property value and the average n.q.i in all neighbourhoods provided evidence of a strong and significant association. (See Table 7). The coefficient of determination (R^2) observed was 0.76. This meant that variations in average n.q.i were responsible for about 76% of variations in property values. In addition, the Pearson Correlation (r) value was positive. This implied that, as average n.q.i improved, the average property value appreciated.

Table 7. Result of correlation analysis of average neighbourhood quality index and average property values at all neighbourhoods

Variables		Pearson Correlation (R)	R² value	P$_{value}$
X	**Y**			
Neighbourhood Quality index	Average annual rent	0.871	0.76	0.024

The findings agree with the result of earlier research works such as that of Cobb (1984) which demonstrated the link between environmental and housing quality and the cost of rented accommodation.

6.4. Neighbourhood quality and property value at all sampled neighbourhoods

Regression analysis provided evidence of a statistically significant relationship between property values and neighbourhood quality, measured across all sampled locations (Table 8). This was because the value of the F-statistics was observed to be higher than the critical value of $F_{0.05}$ (21.977 compared to 3.84). However, some important features of this relationship were observed.

First the influence of neighbourhood quality on property value was real but not significant, because the regression equation gave an R^2 value (coefficient of determination) of 0.070. This meant only 7% of the variations in property values could be attributed to variations in neighbourhood quality across the sampled neighbourhoods. It must be pointed out that the predictive power of the derived regression equation (equation 1) fell far below any acceptable level of significance. This was because of the very low R^2 value observed. It may not be used for any predictions. However, Basil and Michael (2004) opined that empirical analysis confirmed neighbourhood attributes in general to have a strong positive impact on house values. This is in contrast with the weak association discovered within the study area.

Table 8. Regression analysis of neighbourhood quality and property value at all sampled locations

Variables		Type of		R^2	F	F$_{0.05}$	P$_{value}$
X	Y	Model	Regression Equation				
nqindex	avre	linear	Avre= -86461.5 + 428573.(nqindex)	.070	21.977	3.84	.000

Key:

nqindex = Neighbourhood Quality index

avre = Average rent (property Value)

7. Summary of findings, conclusion and recommendations

The findings of the research show a variation in quality across the neighbourhoods studied in Minna. (The GRA and Tunga neighbourhoods scored relatively high in the quality index ranking, Bosso 1, Bosso 2 and Minna North West peripheral are categorized as fair neighbourhoods while Maitumbi is rated as a poor quality neighbourhood. It was also found that there is a direct relationship between neighbourhood quality and property values. GRA and Tunga command higher rent and have higher property value while Maiturnbi commanded lowest rent and have lowest property value.

The findings of the research have implication for property investment returns in the area. It is therefore recommended that neighbourhood improvement through facilities upgrade be carried out in the low quality areas in order to ensure high property value and improved investment returns.

References

Adesoji, D.J. (2010), "Evaluating the pattern of residential quality in Nigeria: The case study of   Oshogbo township", *Architecture and Civil Engineering*, Vol. 8 No. 3, pp. 307- 316.

Baba, J.M. and Jinadu, A.M. (2000), "Analysis of spatial variation in the occurrence of Housing Environment -Related Diseases in Minna Metropolis", Being a research submitted to the university Board of research, Federal University of Technology Minna.

Basil, S. and Michael, K. (2004), "Measuring Environmental Effects on Property Values: Analysis of Spatially Variable Relationships", *Investment and Finance,* Vol. l7 No. 1, pp. 11.

Blomquist, G.C., Berger, M.C. and Hoehn, J.P. (1988), "New estimates of quality of life in urban areas", *The American Economic Review,* Vol. 78 No. 1, pp. 89-107.

Brown, L. A. and Moore, E. G. (1970), "The Intra-Urban Migration Process: A Perspective", *GeografiskaAnnaler,* Vol. 52 No. 1, pp. 13.

Cobb, S. (1984), "The impact of site characteristics on housing cost estimates", *Journal of Urban Economics,* Vol. l5, pp. 26-45.

Elif, A. (2009), "The relationship between environmental quality level and housing sales prices in the Istanbul Metropolitan Area", *Instanbul Technical University, Faculty of Architecture, Instanbul Turkey*, Vol. 6 No. l, pp. 60-76.

Fan, W. (2009), "An analysis of quality attributes of housing environment in Guangzhou China, using expert judgments", Dept. of Real Estate and Construction, the University of Hong Kong.

Herold, W.E. and Leonard, V.Z. (1991), "Tenure choice, housing demand and residential location", *Journal of Real Estate Research,* Vol. 6 No. 3, pp. 341-356.

Kamp, I., Leidelmeijer, K., Marsman, G. and Hollander, A. (2003) "Urban environmental quality and human well-being. Towards a conceptual framework and demarcation of concepts; a literature study", *Landscape and Urban Planning,* Vol. 65, pp. 5-18.

Lansing, J.B. and Marans, R.W. (1969), "Evaluation of neighborhood quality", *Journal of the American Planning Association,* Vol. 35 No. 3, pp. 195-199.

Norman G.M. (1982), "Residential property hedonic pricing models", *.Research in Real Estate,* Vol.2 pp. 31-35

Palma, A., Kiarash, M., Picard, N. and Waddell, P. (2007), Accessibility and environmental quality: Inequality in the Paris housing market. THEMA Working Papers, No. 2007-16. Retrieved November 26,2009, from http://www.u-cergy.fr/artic1e9307.html 6.30pm

Rogerson, R. J. (1999), "Quality of life and city competitiveness", *Urban Studies*, Vol. 36 No. 5, pp. 969-985

Rosiers, F., Theriault, M., Kestens, Y. and Villeneuve, P. (2007), "Landscaping attributes and property buyer's profiles: Their joint effect on house prices", *Housing Studies*, Vol. 22 No. 6, pp. 945-964.