

Review Article

# Factors Contributing to Peri-Urban Residential Land Prices near Growing Cities in Developing Countries

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**Abstract** - The mass exodus of people into the cities of developing countries due to urbanization, and the consequential land scarcity is escalating. This has forced many urban dwellers into the peri-urban areas in a bid to beef up the residential land shortage. The scenario has, over time, heightened the rapidity in the peri-urban land price increase. The purpose of this paper is hence, to explain the factors that contribute to residential land price in a typical peri-urban area in developing countries. To achieve this, the Oda community, near Akure metropolis in Ondo State, Nigeria, was the focus. Questionnaires are distributed to 320 landowners in the case study areas based on a housing survey conducted on residential properties. Data on land price was obtained from property valuers. Data gathered was analyzed using a 3 stage hierarchical semi-log hedonic price regression to analyze the factors that contribute to residential land price. The findings show that peri-urban land prices are influenced by a combination of attributes. At 1 km radius away from Akure, road network contributed 32.8% to land prices, while accessibility and distance to children school contributed 30.2% and 27.6% at 2km and 3km radius respectively.

**Keywords** - Emerging Cities, Peri-Urban, Residential Land Price, Urban Dwellers, Urbanization.

## I. INTRODUCTION

Land in most of the African urban areas is pressurized in view of the growing urbanization [1]. The consequential effect of the rising urbanization, is an upsurge in demand for residential land among the several contending urban land use [2]. This is becoming a serious concern to the urban dwellers, particularly in developing countries, including Nigeria. The ever-increasing urban population has occasioned several land changes and the proliferation of peri-urban areas. The existing urban land is, however, not commensurate with demand for residential land usage. This has, as a result, exposed peri-urban areas to ceaseless push and pull pressure owing to their strategic locations. According to Reference [3], the impacts of economic growth and physical expansion of the urban area are not

confined within urban frontiers, but the wider areas surrounding urban centers are often described as peri-urban areas.

Peri-urban has been defined as a center of sudden tenure transformation [4]. [5], further described peri-urban areas as an indigenous or customary tenure area that are being subjected to strong demand pressures because of urbanization, which may be in close proximity to the city or further away from the city. [6], equally viewed peri-urban as land inside, or at the fringes of urban areas and lands farther away from the city, which may, in turn, include both urban and rural land that is formally or informally occupied. For this discussion, peri-urban is referred to as surrounding settlements around the study area.

Furthermore, increasing land values in the peri-urban have been attributed to the rising urban population [7]. Generally, peri-urban land in view of their locations has no marketable value. However, because of the high demand for serviced land inside the cities, residents, particularly the urban poor, are often pushed into the peri-urban areas to search for residential land. Hence, with the increasing demand for land and the changing nature of customary peri-urban land tenure, an increase in land price is inevitable [8].

In the context of Akure, the state capital of Ondo State, Nigeria, the case is not different. Rapid growing population density and increased pressure on land tenure change in the peri-urban environments due to rising demand for land have greatly influenced land prices. Due to this, land in the peri-urban area of Akure metropolis in Nigeria has gained a transferable value, and rights in them became more completely commercialized. However, there is a relatively scarce research gap in this direction. Therefore, to contribute to the knowledge gap and to empirically examine this, this particular study is embarked upon, with a specific focus on Oda community, a peri-urban area of Akure within Ondo State in Nigeria, as a case study of what may be applicable in other developing countries' cities.



Section 2 provides a summary of the literature review. Section 3 discusses the study's methodology. Section 4 presents the sample area, analysis of data, and interpretation of the results. Finally, Section 5 concludes.

## II. LITERATURE REVIEW

### A. Features of the Peri-Urban Area

Peri-urban are fringe areas around the city that are neither strictly rural nor urban ([9], [10], [3]), where colossal changes are taking place over space and time [11], since they bear the spill-over of urban expansion [10]. Originally, peri-urban land was primarily for agricultural use but later bore the heterogeneous conglomeration of rural-urban features [12]. According to [13] and [14], peri-urban are also suburbs in waiting, where the supposition is that they will be built up in due course, or an interplanetary between urban and rural with typical features (including an unbalanced mixture of urban and rural functions). [15], asserted that peri-urban is usually 30-50km away from urban boundary in the developed countries, while the distance could vary as far as 150km to 300km in the developing countries.

There is, however, no universal connotation of the peri-urban areas or a holistic approach to describing its nature, changing dynamics, and the factors impelling its change and challenges [16]. Discussions around peri-urban are characterized by diverse perspectives. While some schools of thought believed that it posed great challenges for resource use and management, several others believed that peri-urban is an area of potential, social, economic, and environmental conflicts. [5], for instance, perceived peri-urban as an area that experiences social forms and evolution conflict. [9] considered peri-urban from the scenario of physiognomies and functions using proximity to the city, rural values and tradition, proximity to highways, industrial developments, commercialization, urban vices, and changing agricultural practices features of the peri-urban. [17], presented peri-urban areas in diverse forms. To the poor, it is the place where it is easier to build shelter and to occupy the land for cultivation. To the industrial sector, it provides sources of materials essential for urban life. To the middle class, it provides the potential zone for houses in a rural setting with recreational facilities.

In addition, a dearth of safe and sound tenure supported by titling systems is a key feature in the peri-urban land market [18]. Consequent to this, peri-urban areas are characterized by uncertain land tenure and a lack of recognition by governments. According to [19], this poses a major challenge for the urban poor in securing a safe land for housing. Oftentimes, peri-urban areas are not officially zoned for residential land use nor developed with complementary infrastructures and amenities (Oduro, 2010 cited in [20]).

[21], noted lack of environmentally friendly infrastructure and basic services as one of the significant

features of peri-urban resulting from the increasing urbanization of metropolises. [22], also maintained that peri-urban lands are used for numerous activities, and as such, sometimes contain a collection of higgledy-piggledy residential, commercial, rural-residential, and often different agricultural uses. This state of affairs has enfeebled operational management of peri-urban lands.

Moreover, land use and lifestyle in peri-urban oftentimes clash as tensions arise between farmers and non-farmers; since the peri-urban area is being dominated by agriculture at the outset [23]. [24], also established peri-urban areas in the developing countries as been opposed with many hiccups including un-intensive use of land, low level of services and infrastructure, limited employment prospects, awkward development and high cost of providing services, lack of clear jurisdictions between the customary landowners and the government as well as weak development apparatus. In consonance with the issue of infrastructure, [16] observed a lack of basic infrastructure and employment opportunities in Lafia, a peri-urban area of Nasarawa, Nigeria. The study attributed this to the poor linkage of the area to the main town by transportation facilities.

### B. Driving Forces of Resident's Settlement in the Peri-Urban

The rising urban population is the principal driving force of the demand for peri-urban land use. This became imperative as there is the need for shelter for the increasing population as well as excessive pressure on urban services [25]. A study by [12], corroborates the need for shelter, which the main metropolis could not offer as necessitating the desire to settle in the peri-urban area in Ghana. Equally, [26], ascribed the incursion from the rural areas as being responsible for the sudden expansion of the peri-urban areas of Lagos, Nigeria.

Additionally, [27] revealed that the price of land in peri-urban areas is relatively small compared to the main metropolis, and as such, varieties of income groups are attracted to the area. A study by [28], confirmed cheap rent as a driver of settlements in the peri-urban areas of Lagos and Ibadan in Nigeria. Apart from population growth in cities and reasonable land prices, negative aspects of the city, including poor environment, social problems, congestion of living environment and pollutions in the city core, are features driving residents to settle in the peri-urban areas. In a study conducted by [24] to identify the factors that inform household's decision to live in Kumasi's peri-urban settlements and location preferences, findings revealed that relatively low land price and house rents, and proximity to the workplace were the most significant factors influencing household's choice of peri-urban land. In the same vein, [29], equally observed low-priced land as the major driver of growth and development in Ibeju-Lekki, a peri-urban area of Lagos in Nigeria.

**C. Factors Contributing to Peri-Urban Land Price**

A wide body of study on the various contributing factor of land prices in the urban areas abounds, while only a few studies exist in the peri-urban. Few of the efforts in the peri-urban include the work of [30], who established accessibility and distance as having a positive significance on the unit price of land around peri-urban areas of Jos in Nigeria. [31], in a study exploring the factors affecting residential property value in the Magodo area of Lagos, Nigeria, found that quality of the neighborhood, employment opportunities as well as access to facilities and services impact land price.

[32], appraised land prices in six selected peri-urban areas of Jos, Nigeria. Location was found to be an important contributing factor to land prices. [12], examined the effects of urbanization on peri-urban land-use change patterns in the Bosomtwe district of the Asante region of Ghana. The study found that the increasing rate of peri-urbanization is caused by increasing demand for residential, recreational, and commercial land uses at the expense of agro-forest land uses. This was confirmed in a study by [33] that multiple land use and frequent land transactions often occasioned incipient rises in land prices in the peri-urban areas.

According to [34], the continuous expansion in urban areas has given rise to important physical and socio-economic changes, including increasing land prices in Peri-urban areas.

**III. METHODOLOGY**

Akure has the largest percentage of the urban population in the Ondo State area of Nigeria due to the presence of economic activities, being the state capital. As a consequence of the high population density, Akure is beleaguered with the associated problems of rapid urbanization, including scarcity of land. The limited supply of land as a consequence of the high spate of urbanization has resulted in the push and pull effects towards the peri-urban areas of Akure. For the purpose of this study, the Oda community was considered a case study peri-urban area of the Akure metropolis. Oda was focused due to its relative closeness to Akure and the rate at which it was fast growing as well as the way in which the developmental changes in Akure are fast bumping into the community. With the present rate of development in Akure, one can hardly delineate the boundary of the two places.

Oda, is a developing community in the South-Eastern part of Akure, the Ondo State capital in Nigeria. It is about ten kilometers away from the capital city and shares boundaries with Idanre and Owo local government areas of Ondo State, Nigeria. It lies on Latitude 7°N 10' 6" N to 7° 10' 43" N of the equator and longitude 5° 13' 6" E to 5° 14' 18" E of the Greenwich meridian. The map showing Akure and the case study peri-urban area is as shown in figure 1.

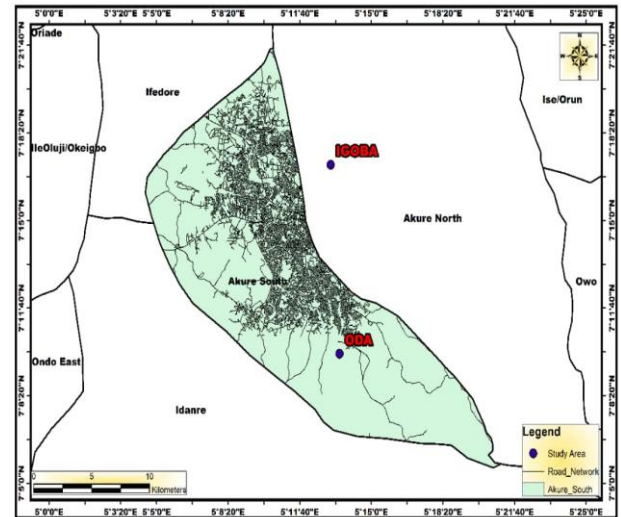


Fig. 1 Map Showing Akure And The Case Study Peri-Urban Area.

Cross-sectional survey research design was adopted for the study. For the purpose of this, the questionnaire survey method was employed. The research population was household heads in the Oda community within the first three kilometers from Akure, as well as valuation firms within the Akure metropolis, and were about 26. Valuation firms were required to supply land prices. The sampling frame of the household head was 1,600.

However, with the use of the Taro Yamane formula, 320 household heads were obtained and were further distributed within the first 3 kilometers radius from the Akure boundary in proportion to their respective population. A total of 148 questionnaires were distributed in the first kilometer, 109 in the second km, and 63 in the third km. The housing distribution survey sample map of the Oda community within the first 3km is further shown in figure 2.

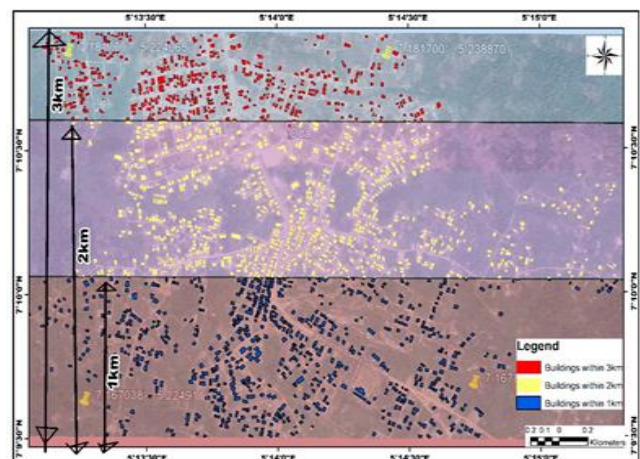


Fig. 2 Distribution of Housing Research Sample in Oda Within 3km Away From Akure

Data gathered was analyzed using a 3 stage hierarchical semi-log form of hedonic price regression to analyze the factors that contribute to residential land price.

The semi-log form of the hedonic price analysis was adopted as it either accommodates the dependent variable in log form and independent variable in linear, or dependent variable in a linear and independent variable in log form. According to [35], the semi-logarithmic form is the more predominant among the other functional forms in hedonic literatures. It is easy to interpret the semi-logarithmic form coefficients as the proportionate change in price arising from a unit change in the value of the attribute. In addition, unlike log-log models, the semi-log model accommodates dummy variables for attributes that are either present or absent (0 or 1). The 3 stages

hierarchical semi-log hedonic price regression adopted in this study imbue 8 variables (distance to workplace, distance to children school, accessibility, plot size, level of security, affordability, road network, monthly income, and increasing population) into the 3 stages of the hierarchical hedonic regression model with each stage representing different radius away from Akure within Oda community to see their contributions to land residential land prices.

**IV. RESULTS AND DISCUSSION**

This section deals with the analysis of data collected from the study area and a discussion of the results. The data analysis was based on the responses to the questions which were received from the respective respondents based on the factors that influenced their choice of peri-urban land and the determining factors of peri-urban land price.

**Table 1. Distribution of Questionnaire Amongst Respondents**

Respondents	Distance (km)	No of questionnaire administered	No of questionnaire retrieved
Oda Community	1km	148	122
	2km	109	86
	3km	63	52
		320	260

The results of the questionnaire administered and retrieved are presented in Table 2. The questionnaire distributed in the Oda community was 320, while 260 was retrieved, representing a total of 82.54%, which was used for the analysis.

**Table 2. Operationalization of Hedonic Variables**

S/N	Variable Code	Definition of variable/ Measurement
1.	Leland	Log of land price (dependent variable) in Naira
2.	LnDISWPL	Log of distance to the workplace in Km
3.	LnDISTCS	Log of distance to children school in Km
4.	ACCESS	Accessibility (1 if accessible, 0 otherwise)
5.	LnSIZPLT	Log of plot size in M <sup>2</sup>
6.	LEVEL	Level of security in (1 if secured, 0 otherwise)
7.	AFFORD	Affordability (1 if affordable, 0 otherwise)
8.	ROAD	Road network (1 if tarred, 0 otherwise)
9.	nothing	Log of monthly income in Naira
10.	INCRPP	Increasing population (1 if high, 0 otherwise)

**Table 3. Factors Influencing Household's Choice of Peri-Urban Land**

Parameters	Factor loadings	Eigenvalue	% of Variance
<b>Factor 1: Neighborhood factors</b>		<b>11.753</b>	<b>8.608</b>
Neighborhood amenities such as (schools, Health Centers, Portable water)	0.728		
Less traffic congestion	0.385		
Availability of power supply	0.624		
<b>Factor 2: Security factors</b>		<b>8.670</b>	<b>8.581</b>
Adequate security and safety	0.661		
Low crime rate	0.780		
<b>Factor 3: Land characteristics/Environmental factors</b>		<b>7.909</b>	<b>8.195</b>
Size of plot	0.597		
Physical condition of the environment (density, pollution, and neighborhood condition)	0.717		
<b>Factor 4: Locational factors</b>		<b>7.128</b>	<b>8.005</b>
Distance from children's school	0.700		
Distance from place of worship	0.653		
<b>Factor 5: Socio economic factors</b>		<b>6.870</b>	<b>7.525</b>
Reduced transportation cost	0.617		
Household income	0.707		
<b>Factor 6: Accessibility factor</b>		<b>6.788</b>	<b>6.686</b>
Accessibility in terms of getting to site and less traffic congestion	0.874		

Factor analysis was carried out in Table 4, on the influencing factors of household's choice of residential land in the peri-urban areas. The variables that loaded adequately are neighborhood amenities, availability of power supply, adequate security and safety, size of the plot, distance from children's school, distance from the workplace, distance from the place of worship, accessibility in terms of getting to site, household income, reduced transportation cost, and physical condition of the environment. These factors were further categorized into six major groups by factor analysis loading, which are neighborhood factors (neighborhood amenities such as schools, health centers, portable water), environmental factors (Size of plot, the physical condition of the environment such as density, pollution, and neighborhood condition), locational factors (distance from children's school and distance from the place of worship), socio-economic factors (reduced transportation cost, and household income), accessibility factors (accessibility in terms of getting to the site and less traffic congestion) and security factors (adequate security and safety as well as low crime rate).

Table 4. Stage Hierarchical Semi-Log Hedonic Price Regression

Parameters	$\beta$ Coefficient	<u>1km</u> t-stat.	p- value	$\beta$ Coefficient	<u>2km</u> t-stat.	p- value	$\beta$ Coefficient	<u>3km</u> t-stat.	p- value
<b>Constant</b>		0.548	0.601		-3.625	0.000		5.040	0.000
<b>INCPPL</b>	-0.059	-0.807	0.000	0.065	-0.782	0.054	-0.065	-0.462	0.252
<b>DISTSC</b>	-0.170	6.032	0.020	-0.306	5.041	0.502	0.276	4.141	0.019
<b>DISWPL</b>	0.358	4.402	0.432	0.143	2.853	0.000	0.124	3.553	0.006
<b>MTHINC</b>	-0.264	2.474	0.015	-0.120	-2.375	0.366	-0.119	-1.375	0.000
<b>ACCESS</b>	0.091	7.491	0.003	-0.302	-0.995	0.030	-0.224	-0.895	0.322
<b>LEVSEC</b>	-0.010	-0.102	0.009	-0.043	-0.309	0.000	-0.053	-0.247	0.758
<b>AFFORD</b>	-0.111	-1.116	0.268	-0.025	-0.508	-0.022	-0.085	-0.652	0.613
<b>RDNTWK</b>	0.328	-3.957	0.004	-0.264	-2.532	0.013	-0.204	-1.552	0.024
<b>R</b>	0.742			0.628			0.564		
<b>R<sup>2</sup></b>	0.464			0.617			0.582		
<b>Adjusted R<sup>2</sup></b>	0.274			0.146			0.260		
<b>F. statistics</b>	3.450			2.993			4.471		
<b>Std. error of estimate</b>	1545191.80			1318632.76			836461.00		
<b>Durbin-Watson</b>	1.675								
<b>p-value</b>	0.000			0.000			0.000		
<b>Observation</b>	148			109			63		

Table 5 shows the result of the regression analysis with respect to the first three kilometers radius away from Akure within the Oda community. The data met the assumption of independent errors with the Durbin-Watson value of 1.675. The p-value of the F-test (3.450, 2.993, and 4.471) in the first, second, and third kilometers radius was significant at 0.05 (since  $0.000 < 0.05$ ), showing that the overall model is statistically significant. The R-squared in the 1km is 0.464, indicating that approximately 46.4% of the variability of land prices is accounted for by the variables at a 1km distance from Akure. 61.7% and 58.2% of the variability of standardized coefficients. Beta by 1km away from Akure. Of all the variables employed within 1km away from Akure, RDNTWK made the largest contribution to land prices with the largest Beta coefficient of 0.328. Thus, a one standard deviation increase in distance to the place of work leads to a 0.234 standard deviation increase in land prices within 1km away from Akure.

Furthermore, at 2km away from Akure, five variables, including; distance to the workplace (DISWPL), accessibility (ACCESS), level of security (LEVSEC),

land prices is accounted for by the variables at 2km and 3km distance from Akure, respectively. At 1 km distance away from Akure, six variables, namely; increasing population (INCRPP), distance to children school (DISCS), monthly income (MTHINC), accessibility (ACCESS), level of security (LEVSEC), LEVSEC, and road network (RDNTWK) significantly contributed to the residential land price at p-value  $< 0.05$ . Additionally, INCRPP, DISCS, MTHINC, ACCESS, and RDNTWK contributed to land price within the Oda community at 5.9%, 17%, 26.4%, 9.1%, 1%, and 32.8%, respectively, based on their affordability (AFFORD), and road network (RDNTWK), are also statistically significant at p-value  $< 0.05$ . The variables (DISWPL, ACCESS, LEVSEC, AFFORD and RDNTWK) contributed to land prices at 14.3%, 30.2%, 4.3%, 2.5%, 26.4% respectively. Accessibility made the largest contribution to land prices with the standardized coefficients Beta of -0.302. Therefore, a one standard deviation decrease inaccessibility to land leads to a -0.302 standard deviation decrease in land prices, with the other variables held constant.

Moreover, at 3km away from Akure, only four variables comprise; distance to children school (DISCS), distance to the workplace (DISWPL), monthly income (MTHINC), and road network (RDNTWK), are statistically significant at  $p$ -value  $< 0.05$ . The variables, as evident by their standardized coefficients Beta, contributed to land prices by 27.6%, 12.4%, 11.9%, and 20.4%, respectively. However, off all the variables, distance to children's school (beta value = -0.276) made the largest contribution to land prices within the 3km away from Akure. This suggests that a one standard deviation decrease in distance to children's schools leads to a 0.276 standard deviation increase in land prices. Though, diverse factors contributed to land price in the peri-urban area, the finding of this study is in consonance with [24] and [30], who had earlier confirmed distance and accessibility as statistically significant to peri-urban land price.

## V. CONCLUSION

This study has examined the factors contributing to peri-urban residential land prices near growing cities in developing countries, with a special focus on the Oda community, near Akure metropolis in the Ondo State area of Nigeria. The study was limited to factors influencing households' choice of peri-urban land as well as factors that contributed to residential land price in the peri-urban area. The major findings are that peri-urban residential land prices are influenced by a combination of attributes. At 1 km distance away from Akure, road network contributed 32.8% to land prices, while accessibility and distance to children school contributed 30.2% and 27.6% at 2km and 3km respectively. The findings of this study have added to the existing body of knowledge that borders on peri-urban residential land prices.

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