Impact of Road Transportation System on Property Development in UGEP Urban, Yakurr Local Government Area of Cross River State

Tpl.Dr. Sunday I. Bassey
Department of Urban & Regional Planning
University of Cross River State, Calabar

Mr. Salvation U. Eteng
Department of Urban & Regional Planning
University of Uyo, Uyo Akwa Ibom State

Mr. Ntami F. Agwu
Department of Urban & Regional Planning
University of Cross River State, Calabar

ABSTRACT
Road Transportation is one of the key tools of land development in Nigeria. It is used as a means of controlling developments for the achievement of sustainability, economy, and compatibility of land uses. It is on this regard that this study was deemed necessary and to assess the impact of road transportation system on property development in Ugep urban. The study was therefore conducted to identify the relationship between road construction/rehabilitation and property development in Ugep. The study employed the survey design method. Both primary and secondary data were collected for this study. A total of 400 questionnaires were distributed using stratified sampling technique, while 396 were retrieved. Data obtained were presented and analyzed using tables and percentages. One hypothesis was formulated and tested using Pearson Product Moment Correlation Coefficient technique with the application of Statistical Package for Social Sciences (SPSS). The study reveals that road construction/rehabilitation hasdirect significant impact on the rate of property development in Ugep. It also revealed that increase in rent was because of improvement in road construction and rehabilitation. Thus, the implication is that the level of accessibility has direct influence on rent or property values in the study area. The study recommended the establishment of institutional reforms that will be charged with the reorganization of the management and direction of road construction/rehabilitation and public infrastructure investment.
Key Words: Road Transportation System, Property Development, Urban Expansion, Land use Activities, Property Value, Accessibility.

I. INTRODUCTION
Transportation system and property development are important components of the urban system. For instance, property and land values tend to increase in areas with expanding transportation network. As well, property development such as housing, public places among others are likely to be developed in areas with good transportation infrastructure. Basically, transportation infrastructure remains a very important feature that developments depend. Available studies have shown that with transportation infrastructure, property development is likely to be heightened (Ajom, Eteng and Etim, 2022; Eteng, 2016). Ajom *et al.,* (2022) specifically showed the variation in the level to which housing units are developed in places due to availability of infrastructure. Eteng (2016) showed that when roads are rehabilitated, developers tend to invest on property development along the developed routes. In urban areas specifically, properties are mostly not sufficient due to the rising nature of population thus, infrastructure development remains a pointer to urban expansion.

It is on the necessity of transportation infrastructure as a tool that triggers socioeconomic development that Oyesiku (2002) noted that nations, regions, the world over could be severally limited in development without transportation. This is since transportation is a key factor for physical and economic growth (Oyesiku, 2002). Aderamo (2003) opined that road network constitutes an important element in urban development, as

roads provide accessibility to the different land-uses in the urban areas. This implies that a city road network expansion would give rise to corresponding increase to property development. That is, urban transport system influences property development. Road transportation system has significant impact on land-use patterns. Transportation and land use development are inexorably connected. The use of this term "land use" is because through development, urban space accommodates a great variety of human activities. Land is therefore a convenient measure of space and land use provide a spatial accounting framework for urban development activities or property development (Oduwaye and Adekunle, 2004).

Transportation's most significant impact on land development occurs when access is provided to land. Increase in access to land determines its potential for development, and more development generates additional travel which gives rise to increased accessibility (Oruonye, 2014). Access to major routes provides relative advantage consequent upon which attract development. Location of business and other activities depends on transportation and transportation infrastructure development for effective locational advantage.

Over the years, Ugep urban has grown in road transportation infrastructure development giving rise to expansion of the town beyond its original limit. The development has equally given rise to the development of private property to follow these lines of road network expansion. This study therefore is an empirical study to assess the impacts of road transportation system development has on property development with reference to Ugep, the study area.

II. THEORETICAL /CONCEPTUAL FRAMEWORK
Land Use and Transportation Model

Hendon, (1971) maintained that land use models deal with describing activities of land consuming factors and their competition for land in an urban setting. These factors are household, films, and retail establishment, each with a particular requirement for space and access to Jobs, school, and market. This model also considered the interaction of different activities through the transportation network.

Land use transportation interaction overcomes the deficiency in the existing traditional model. When considering the addition of a new property in property development because of the addition of this facility, they will be some route change even possibly some mode switching and possibly some destination changes where travelers can satisfy say their shopping trip needs; what the existing transportation model are not capable of capturing is the projections of relative changes in household location and employment location of the land consuming factors.

Fegarang (1994) stated that the reason for deficiency of existing traditional transportation model is that land use activities considered in the trip generation phase have a fixed spatial pattern. It is known that improving transportation facilities or even anticipation of new facilities, create a secondary effect. These changes in population and employment location are since some zone becomes more accessible and therefore household and film state to relocate to take the advantage of the new facilities even anticipating those changes. Famous examples of those imbalances are the over loaded streets in Ugep Urban. The Ikom-Calabar highway is overcrowded with a lot of activities because of the advantage derives from the level of accessibility. Other roads such as New Market Road, Park Road has become prematurely overloaded with property development, few years after their construction.

Concept of Property and Property Development

The concept of property has no single or universally accepted definition.Various academic disciplines like law, economics, anthropology, and sociology treat the concept more systematically and within or between the different disciplines and fields. In common use, property may be regarded as simply one's own thing and it is the relationship between individuals and the objects, which is seen as being the holders' "own" to dispense with as they deem seek fit. The social scientists conceive property as a bundle of rights and obligations. They stressed further that property is not a relationship between people and things but a relationship between people about things, and it is often conceptualized as the rights of ownership defined in law and may be private or public property - the later belongs to an individual while the former belongs to a community collectively or a State. Property rights encourage holders to develop the property, generate wealth, and efficiently allocate resources based on the operation of the market to produce more wealth and better standards of living.

Property may be classified into real estate, immovable property, estate in land, real property, tangible and intangible, personal property, interests in land and improvements. Personal property may be tangible such as cars, clothing, animals, and intangible or abstract (e.g., financial instruments such as stocks and bonds), which includes intellectual property (patents, copyrights, trademarks). Real property in common law systems refers to land or any permanent feature or structure above or below its surface. Immovable property is any immovable object or item of property that cannot be moved and includes premises and property, houses, land and associated goods and chattels.

In common law systems, personal property may be called chattels, and distinguished from real property or real estate, while in civil law systems personal property is called movable property or movables indicating any property that can be moved from one location or another. In distinction with immovable property or immovable, such as land and buildings, property may be classified in variety of ways, such as goods, money, negotiable instruments, securities, and intangible assets. There is further distinction between personal and private property.

Personal property refers to things that an individual has an exclusive right to use but only while they are in use or used regularly. It differs from private property, which refers to things owned by an individual regardless of whether he is using them and has a right to prevent others from using what he does not use or has no intention of using. Real estate or immovable property is a legal term that encompasses land together with anything permanently affixed to it. Real estate (immovable property) is synonymous with real property otherwise called realty, in contrast with personal property (also sometimes called chattel) (Wikipedia, 2008). In respect of value, market value is the price at which an asset would trade in a competitive setting, and it is usually interchangeable with fair market value or fair value.

In this study, attention would be on property values that are found within the transportation route of the newly rehabilitated roads, as a result property value tern to increase while some residential properties give way to commercial purpose that bid higher, which is the amount of money obtainable for an interest at a particular time from persons that are able and willing to purchase it on the basis that value is not intrinsic. The results from estimates made subjectively by able and willing purchasers of the benefit or satisfaction that is derivable from ownership of the interest, which may be for profit making, speculative, pre-cautionary, or prestige motives (N.I.E.S.V., 1985; Johnson, Davis, and Shapiro, 2005).

III. LITERATURE REVIEW

Transportation and Property Value

Transportation is the conveyance of goods and people by land (by road, rail, human porterage, motorized and non-motorized vehicles), across water (ship, canoe, boat, etc.) and through the air (helicopter, light and heavy aircraft, etc.). One thing is clear, transportation or transport involves the movement of people, goods, and services from a point of origin to a destination through any of the means mentioned above including pipeline and even telecommunication or combination of these means (Wikipedia, 2008).

The importance of transportation,therefore, cannot be over-emphasized. Transportation centrally affects the relationship between physical space and society, and changes in transportation affect the organization of human activity in urban and regional space. It structures the built environment, spurs urban growth, as well as orders relationships among cities in a national urban system (Yago, 1983).In a study on urban transportation issues in both India and North America, Singh (2005) stated that due to increases in population brought about by both natural increase and migration from rural areas and smaller towns, availability of motorized transport, increase in household income, and increase in commercial and industrial activities have added to transport demand. The expected effect on residential and commercial property markets becomes positive, but the range of impacts vary from marginal to over 100% in the commercial sector from the North American evidence.

In another study in UK, Singh (2005) found that the impact of road transport was positive particularly regarding capital increase in residential property values. However, the study put less emphasis on exact values, and some of the observed increase may be due to optimism of the markets rather than actual effects. Similarly, there is also some evidence that residential property prices might decrease immediately around the transport investment or station. Value increase was determined in the study in a narrow way and mainly through changes in property and land values whereas wider range of measures ought to have been used. The measures should have included changes in accessibility, ownership patterns for land and property, site consolidations, number of transactions and yields as well as composite measures such as density of development.

In terms of connection between transportation and supply of land, transportation changes extend the supply of urban land for settlement and urban expansions were promoted through transportation advances in addition to evolution of national urban system. (Berry and Horton, 1970; Pred, 1974),

According to Dickey (1975); Balchin, Kieve, and Bull (1991); urban road transportation system is one of the important factors responsible for shaping the urban centres, based on the assumption that consumers rationally choose a form of transportation, according to their social and spatial position within the urban market. They opined that the urban road transportation system acts as basic component of urban areas' social, economic, and physical structure and it plays an essential role in the determination of the scale, nature, and form of urban areas.

The overall implication of these studies is that accessibility as a means of transport directly affects the value of residential properties. Apart from this, the earlier studies have focused on impact that single rapid transit system has on residential property values. Many of them focused on studies carried out overseas while few studies were carried out on the impact of road network on commercial property values in Nigeria. Even the

few studies carried out in Nigeria (for example, Omoogun 2006; Olayiwola, Adeleye, and Oduwaye, 2005) do not provide in-depth analysis on road transport network, location attributes, demand and supply and impact on property development, rather they made sparse references to availability of transport and accessibility as determinants.

Transportation and Accessibility

According to Makri and Folkesson (2007), accessibility is a slippery notion and one of those common terms that everyone uses until faced with problem of defining and measuring it. The importance of this statement is that accessibility is a daily use amongst people of various backgrounds and inclinations giving way tomany definitions. In transportation, accessibility refers to ease of reaching destinations. People in places that are highly accessible would reach many other activities or destinations quickerwhile people in inaccessible places can reach fewer places in the same amount of time, so that the nearer or less expensive places are weighted more than farther or more expensive places.

Accessibility, in general terms, describes the degree to which a system is usable by as many people as possible. It is the degree of ease with which to reach certain locations from other locations and viewed as the ability to access functionality and possible benefit. Accessibility as a property of location may be grouped into general and special accessibility. According to Harvey (1999), general accessibility refers to nearness to rail termini, bus stations and motorways transport facilities, labour, customers, and service facilities such as banks and post office while special accessibility exists when complimentary uses are near each other. In this case, the net economic cost of movement will be lower in terms of distance, time, and convenience in addition to greater comparative advantages given greater accessibility of a location (Balchin et al, 2000).

It has generally been agreed in earlier studies (Haig, 1926; Alonso, 1960; McQuaid and Grieg, 2003) that accessibility has important roles to play in the determination of property values, but the studies failed to recognize the part played by road network that primarily delivers the accessibility. Few of the studies established the relationship that exists between property value and pattern of road network. These studies on land and property values in relation to accessibility centered mainly on transportation and transportation schemes. They neglected the fact that it is not only movements of people by rail, sea, inland waterways, air, and roads alone that matter but also how patterns and means of movements affect demand for activity centres and consequently value of properties.

Classical urban location and rent theory by Alonso (1964) states that rents decline outwards from the Central Business District (CBD) to set off the declining revenue generation-capacity and higher costs such as cost of movements. The layout of a metropolis is determined by a principle termed minimization of costs of friction and land uses can derive advantage in terms of revenue generation from sites that are most accessible to customers (Haig, 1926). This theory relates distance to rental value. In other words, those land uses that are close to the Central Business Districts tend to generate higher revenue than locations farther away and implies that lower cost of movements will result in higher land and property development. The theory explains causes of different land values within an urban area and suggests that value depends on economic rent, while rent depends on location, location on convenience, and convenience on nearness. It concluded that value depends on nearness. In a mono-centric urban area, the centre is where transport facilities maximize labour availability, customer flow and proximate linkages that attracts highest values and rents (Kivell, 1993).

Many of the studies relate to urban residential areas carried out in many parts of the world. It suffices to state that they reflected social, cultural, economic, and political situations different from the Nigerian situation. Their adoption for use in the Nigerian situation may not provide perfect explanations but will be useful as guides.

IV. MATERIALS AND METHODS

The Study Area

Ugep is in the West-Central Corner of Cross River State, about 140 kilometres northwest of Calabar, the capital of Cross River State, Nigeria as indicated in figures 1 to3. It is the headquarters of Yakurr Local Government Area, Cross River State. Ugep lies between Latitudes 5^0 40^i and 6^0 10^1North of the Equator and Longitudes 8^0 2^1 and 6^0 10^1East of the Greenwich Meridian. Ugep shareNorthern and Eastern boundaries with Assiga, Nyima, and Agoi Clans of Yakurr Local Government Area, Southern boundaries with Biase Local Government Area and Eastern boundaries with Abi Local Government Area (see figures 1 and 2). The study area is made up of five major political communities. There areIjiman, Ketabebe, Ijom, Ikpakapit, and Bikobiko. According to the 2006 census report, Ugep had a total of 134,773 persons. Current projections show that 210,246 reside in the study area by 2022. The residents of Ugep are predominantly engaged in agricultural activities.

Figure 1: Map of Cross River State, showing the location of Ugep Urban
Source: Google Earth 2016
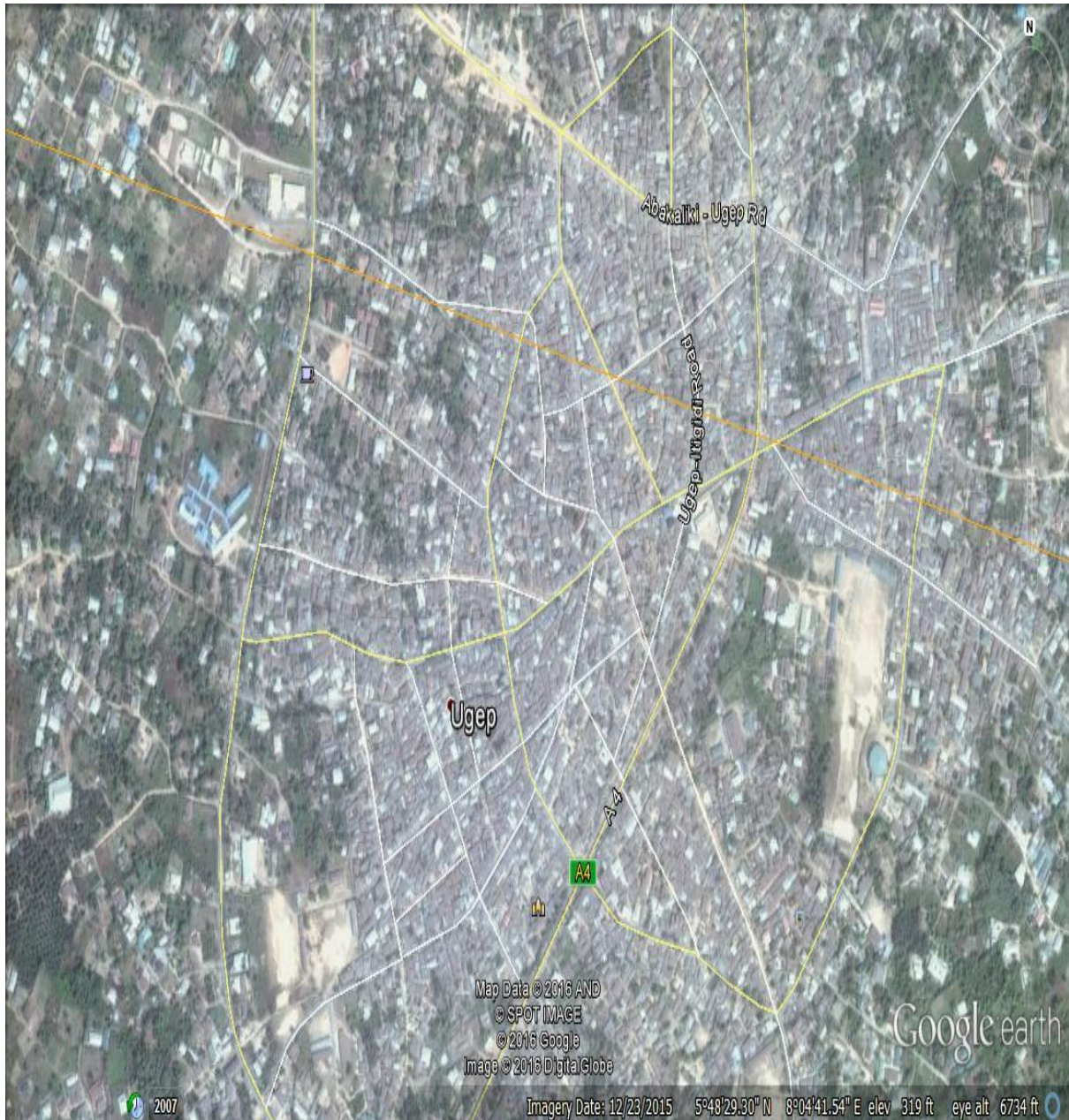
Figure 2: Satellite view of Ugep Urban, showing the level of development and road network of the study area.
Source: Google Earth 2022

Methods

The survey research method was employed in the study. Data were obtained from both the primary and secondary sources. Specifically, copies of questionnaires, field observations and personal interviews as well as information from textbooks, journals, internet, published and unpublished articles were consulted. Questionnaires were administered to the sample residents and property developers, so as to acquire intricate basic details of the study area, and the impact of road construction/rehabilitation on property development. The study population comprised of the total number of residents in the study area. According to the 2006 population, a total of 134,773 persons were residing in the area. The population was projected to 2022 using a growth rate of 2.8 percent. It resulted in 210,246 persons. To deduce the minimum sample, the Yaro Yamane formular was applied. The formular is mathematically expressed as follows.

$$n = \frac{N}{1 + N(e)^2}$$

Where   n = Sample size, N = Population of the study, $(e)^2$ = Degree of tolerable error (0.05%). In all, a total of 400 persons were sampled for the study. Therefore, a total of 400 copies of questionnaires were administered on households in the study area. Data were systematically administered. Thequestionnaires were distributed

proportionally in linewith the population of each ward. Data were further analyzed using simple percentages and Pearson product moment correlation coefficient (PPMC) based on statistical package for social sciences. PPMC is mathematically represented as follows.

$$r = \sum xy - \frac{\frac{(\Sigma x)(\Sigma y)}{N}}{\sqrt{[\Sigma\chi^2 - \frac{(\Sigma\chi)2}{N}][\Sigma\chi^2 - \frac{(\Sigma y)2}{N}]}}$$

Where   n = Sample Size, $\sum$ = Summation of the Frequency, x = Independent Variable, y = Dependent Variable

V.   DATA ANALYSIS AND DISCUSSIONS

Table 1 explained the level of perception of respondents in relation to the level to which road construction trigger property development. The information showed that 1.8 percent strongly disagreed that road construction in Ugep leads to property development, 26 respondents representing 6.6 percent disagreed, 124 respondents representing 31.3 percent agreed, 239 respondents representing 60.3 percent strongly agreed. Majority of the respondents strongly accepting that road construction significantly impacts on property development imply that road construction has significant contribution.

Table 1: Perception of Residents on Road Construction andProperty Development.

Respondents	Frequency	Percentage
Strongly agree	239	60.3
Agree	124	31.3
Disagree	26	6.6
Strongly disagree	7	1.8
Total	396	100.0

Source: Field Survey, 2022

Table 2 show that 50 respondents representing 12.6 percent strongly disagreed that road construction has resulted to increase in property rental values along the access roads. However, 65 respondents representing 16.4 percent disagreed, 15 respondents representing 3.8 percent were undecided, 110 respondents representing 27.8 percent agreed, while 156 respondents representing 39.4 percent strongly agreed.

Table 2: Distribution of Respondents according to whether Road Construction has resulted to increase in Property Rent

Respondents	Frequency	Percentage
Strongly Agree	156	39.4
Agree	110	27.8
Disagree	65	16.4
Strongly Disagree	50	12.6
Undecided	15	3.8
Total	396	100.0

Source: Field Survey, 2022

Table 3 shows that 4 respondents representing 1 percent strongly disagreed that properties along the main roads have relative advantage in terms of patronage over minor roads, 43 respondents representing 10.8 percent disagreed, 144 respondents representing 36.4 percent agreed, while 205 respondents representing 51.8 percent strongly agreed.

Table 3: Respondents according to whether Properties along main Roads have relative advantage in terms of patronage over minor roads.

Respondents	Frequency	Percentage
Strongly agree	205	51.8
Agree	144	36.4
Disagree	42	10.8
Strongly disagree	4	1
Total	396	100.0

Source: Field Survey, 2022

In table 4, it was notedthat 6 respondents representing 1.5 strongly disagreed that the quality of roads (motorable, tarred surface, width of road etc,) in Ugep encourages property development, 26 respondents

representing 6.6 percent disagreed, 124 respondents representing 31.3 percent agreed, 240 respondents representing 6o.6 percent strongly agreed.

Table 4: Respondents according to whether quality of roads encourages Property Development.

Respondents	Frequency	Percentage
Strongly agree	240	60
Agree	124	31.3
Disagree	26	6.6
Strongly Disagree	6	1.5
Total	396	100.0

Source: Field Survey, 2022

Test of Hypotheses

        The model used for testing the following hypotheses is Pearson Product Moment Correlation based on SPSS version. The result in table 5 depicts the impact of road construction/rehabilitation on property development in Ugep. The correlation was 0.015 which is significantly less than the critical value calculated at 0.05 level of significance. Therefore, the null hypothesis was rejected, while the alternative hypotheses was accepted. Therefore, statistically, road construction/rehabilitation has significant impact on the rate of property development in Ugep. The result indicates that the impact is significant at 0.05.

Table 5: Pearson Product Moment Correlation Coefficient Analysis showing the Impact of Road Construction/Rehabilitation Property Development in Ugep.

Descriptive Statistics

		Road construction in Ugep	Property development.
Road construction in Ugep.	Pearson Correlation	1	.015
	Sig. (2-tailed)		.762
	N	397	392
Property development.	Pearson Correlation	.015	1
	Sig. (2-tailed)	.762	
	N	392	395

Source: SPSS Output, 2022

Discussion of Findings

        From the findings including the result of the hypothesis, it was revealed that road construction/rehabilitation has a significant impact on the rate of property development in Ugep. This result tends to answer the question of Canmbell, as contain in Alshul (1980) who questioned whether property development occurs because of improved and effective transport facilities or whether the facilities merely permit development where potentials already exist.

        According to Oni (2009), property and land values tend to increase in areas with expanding transportation network anddecreases in areas without such improvement. In Ugep the study reveals that there was high rate of property development resulting from road construction/rehabilitation.

        Furthermore, in another study, Mc Quaid and Grieg, (2003) opined that accessibility has important role to play in the determination of property values although the study failed to recognize the part played by road network development which is the factor of development that primarily delivers accessibility to land uses andland use development. In transportation, accessibility refers to the ease of reaching destinationsby people in places that are highly accessible, reaching many other activities or places within the shortest possible time. This has influence on the pattern of development in Ugep.

The aboveexplains reasons for high concentration of property development, vehicular/pedestrian movements, and business activities along the major roads such as Ikom/ Calabar Highway, Abakiliki/Ugep Road, and the bye-pass diverting traffic away from the town centre to meet Abakaliki/Ugep Road. These roads also have high concentration of converted and multi-purpose-built properties to take advantage of the level of accessibility.

        According to Oni (2009), property and land values tend to increase in areas with expanding transportation network and increases less rapidly in areas without such improvements. Land values tend to increase along the newly improved or reconstructed roads in the study area. Example the hospital road, Donald Duke Way, and Liyel Imoke Street.

VI. RECOMMENDATIONS AND CONCLUSION

The following recommendations are made based on the findings.

i.   Government should invest effectively on road transportation because it is the highway to property development in any giving area. Further road construction/reconstruction/rehabilitation should be embarked upon on other minor roads to reduce the level of concentration on the major roads.

ii.   From the above development, there will be a redistribution or equitable distribution of property rents on houses in the study area.

iii.   This study has shown that accessibility is an important variable in road development. Road network delivers location attributes, accessibility, and enhances demand, supply, and connectivity elements. Once there are improvements in these variables, property development would be enhanced.

Conclusion

From the analysis and interpretation of data collected, it can be concluded thateffective and efficient road transportation system could result in increase inproperty development vis-à-vis land or property values in Ugep urban. Several parcels have been converted from agricultural land use to residential uses. The increasing population of the area has translated to increase in demand for housing, thus resulting to increase in house rent, high demand for landed property, change in land use and change in property usage. Developers in the area are currently working on increasing the supply. On the other hand, land prices for residential, commercial, institutional purposes and among others are increasing due to the increased demand.

The state and local governments should formulate and implement policies and measures that will effectively promote accessibility through increased development of roads. Roads have great impact on property development which invariably are some of measures of growth and development of the urban economy.

REFERENCES

[1].   Aderamo, A. J. (2003). A graph theoretic analysis of intra-urban road network in Ilorin, Nigeria. Research for Development. 17, 1 & 2; (221 – 240).
[2].   Ajom, S. K., Eteng, S. U and Etim, N. M (2022). Effect of urban infrastructure on residential housing development in Calabar, Cross River State, Nigeria. Journal of the Nigerian Institute of Town Planners, 28(1):123-132
[3].   Eteng, S. U (2016). Impact of road rehabilitation on housing conservation in Calabar South Local Government Area, Cross River State, Nigeria. B.tech Project. Cross River University of Technology, Calabar, 123p
[4].   Alonso, W. (1960): A model of the urban land market. Proceedings of the Regional Science Association, 6, 142-149.
[5].   Alonso, W. (1964). Location and land use: Toward a general theory of land rent. Cambridge, Massachusetts: Havard University Press.
[6].   Balchin, P. N., Kieve, J. L., and Bull, G. H. (1991). Urban land economics and public policy (Fourth Ed.) Hampshire: Macmillan Educational Limited.
[7].   Berry, B. J. L., and F. E. Horton (1970). Geographic perspectives on urban systems. Englewood Cliffs, NJ: Prenctice-Hall.
[8].   Dickey, J. W. (1975). Metropolitan transportation planning. Washington, D.C., Scripta Books.
[9].   Echenique, M.H. (1985) The use of integrated land use and transport models: The cases of Sao Paulo, Brazil and Bilbao, Spain, In: M. Florian (Ed.) The practice of transportation planning, The Hague: Elsevier. 263-286
[10].   Fejarang, R. A. (1994). Impact on propertyvalues: A study of the Los Angeles Metro Rail. Transportation Research Board, 73rd Annual Meeting, Washington, D.C., January 9 – 13.
[11].   Goldberg, M. A. (1970). Transportation, urban land values, and rents: A synthesis land economics, 46, 2; 153-162.
[12].   Haggett, P., and J. C. Chorley (1969). Network analysis in geography. London:Butler & Tanner Ltd.
[13].   Haig, R. M. (1926). Towards an understanding of the metropolis. Quarterly Economic Journal, 40, 421 – 423.
[14].   Harris, C. D. and Ullman, E. L. (1951). The nature of cities, in Paul K. Hatt and Kivell, P. (1993). Land and the City. London: Routledge.
[15].   Harvey, J. (1999). Urban land economics. 5th Ed. Jack Harvey Publishers.
[16].   Hendon, W. S. (1971). The park as a determinant of property values. American Journal of Economics and Sociology, 30(3) 289-300.
[17].   Hoyt, H. (1939). The structure and growth of residential neighbourhoods in American Cities. Washington: Government Printing Office.
[18].   Hunt, J. D. and Simmonds, D. C. (1993). Theory and application of an integrated land-use and transport modelling framework, Environment and Planning, 20, pp. 21–244.
[19].   Johnson, T.; Davis, K.; and Shapiro, E. (2005). Modern methods of valuation of land, houses and buildings. London:Estate Gazette and EPP Books Services (Ghana).
[20].   Makri, M.-C., and Folkesson, C. (2007). Accessibility measures for analyses of land use and travelling with Geographical Information Systems in http://www.tft.lth.se/ kfbkonf/ 4 Makrifolkesson.pdf
[21].   Mackaness, W., and Edwards, E. (2002). The importance of modelling pattern and structure in automated map generalization. Joint ISPRS/ICA workshop on Multi-Scale Representations of Spatial Data, Ottawa, Canada, 7-8 July
[22].   McQuaid, R. and Grieg, M. (2003). Transport and the Scottisheconomy: Key issues, employment research institute and transport research institute. Napier University, October.
[23].   Oduwaye, Adekunke (2004). Land value determinants in medium density residential neighbourhoods of Metropolitan Lagos. Journal of the NITP, XVII, 1,
[24].   (October, 2004), 97–111
[25].   Omoogun, C. B. (2006). The centripetal effects of location on rental values of residential property in Metropolitan Lagos. Conference Proceedings on the Built Environment: Innovation Policy and Sustainable Development. Department of Architecture, Covenant University, Ota, Nigeria, 328 – 334.

[26]. Oni, A. O. (2008). An empirical study of the Lagos State Rent Edict of 1997. Journal of the Nigerian Institution of Estate Surveyors and Valuers. 31, 1, January – June, 20 – 32

[27]. Oyesiku, O. O. (2002). From womb to tomb. 24th Inaugural Lecture at Olabisi Onabanjo University on 27 August. Ago-Iwoye: Olabisi Onabanjo University Press.

[28]. Wikipedia (2008). Arterial roads in Wikipedia, The Free Encyclopedia, http://en.wikipedia.org/w/index.php?title=Arterial_road&oldid= 212832640.

[29]. Yago, G. (1983). The sociology of transportation. Annual Review of Sociology, 9, 171-190.

[30]. Zacks, J. M., and Tversky, B. (2001). Event Structure. Psychological Bulletin, 127, 3-21

[31]. Zhang, Q. and GIS Centre Lund University, Sweden (2004). Modeling structure and patterns in road network generalization. Paper Presented at ICA Workshop on Generalization and Multiple Representation, held in Leicester, 20-21 August.