The Impact of Urban Land Use Changes on Residential Property Rental Values in Kaduna Metropolis, Nigeria

Emmanuel S. Gwamna and Wan Zahari Wan Yusoff
Department of Real Estate Management, Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia, Batu Pahat, 86400 Johor, Malaysia

Abstract: Changes in urban land use in any society are inevitable irrespective of the genesis and nature of the changes and such changes are part of urban growth. Kaduna Metropolis in Nigeria has experienced changes in its physical form, population and social constituents which have led to land use changes and these changes have affected residential rental values in diverse ways. This study is unique in the sense that it focused on how some factors interdependently influence land use change and the effects of such changes on Residential property rental values in kaduna metropolis. Survey research design was adopted where questionnaires were administered to officials of government agencies and registered estate surveyors and valuers. Structural Equation Modeling (SEM) AMOS was used to analyse data. It was discovered that all the identified factors influencing land use change had significant relationship and cumulatively influenced land use change by 87% with land use planning having the highest influence. Land use change affected residential property rental values at 27%. Town planning authorities, built environment professionals, real estate investors, scholars and policy makers would all find this study useful.

Key words: Urban, land use change, residential property rental values, structural equation modeling

INTRODUCTION

The causes, consequences and control of land use change have become issues of immense importance to the present-day world. The reasons for societal interest in land use and land use change are many. Land use change reflects and defines where economic activity takes place and where and how communities develop (Goetz et al., 2005). Economic conditions, population, other land uses both public and private and the size of the urban area continually change, subjecting the urban land market to forces of perpetual adjustment (Balchin et al., 1995).

As world population surges, there has been a general increase in the demand for land in cities around the globe. Of particular note is the demand for residential land. It has been emphasized that residential land use, among the several contending urban land is the biggest consumer of land in urban centres (Alonso, 1960; Edwards, 2007; Kabba and Li, 2011; Uju and Iyand, 2012; Joshua, 2014). Under normal situations, increase in population elicits a proportionate increase in the demand for land for residential uses and the occurrence of commercial, industrial, institutional and transportational land uses is spatially linked to residential development. Consequently, any changes in the general use of land affect residential property rental values.

The metropolis of Kaduna in Nigeria has gone through structural changes in its physical form, population, economic and social constituents over the last century largely owing to urban growth. This has engendered changes in land uses in the metropolis (Saleh et al., 2014a, b).

The rapid urban growth and proliferation of human activities in Kaduna metropolis, Nigeria is accompanied by different types of land uses and their conversion from one type to another most often in contravention of land use planning. Incompatible combinations of various types of land use are commonly found adjacent to each other. Intra-urban migration of residents within Kaduna metropolis has resulted in irregular changes in land uses against urban planning regulations and this in turn affects residential property rental values in diverse ways (Ajibiuah, 2010; San, 2013).

Research carried out in the area of land use and property value in Nigeria has been quite considerable in recent times, although much of the research studies mainly focused on the determinants of land uses and determinants of property values separately. The crucial issue of properly defining the factors that bring about changes in land uses and meticulously analysing how
such land use changes influence residential property rental values in a major Nigerian city has not been addressed.

Additionally, most of the research studies on land use and property values in Nigeria were undertaken with the aid of analytical and technical tools that have been found to have some limitations that could affect the quality of results and deductions made from the analysis of data collected for such studies. Examples of such analytical techniques are the Analysis of Variance (ANOVA), Ordinary Least Squares (OLS) regression and Hedonic Price Model based on Multiple Regression Analysis (MRA).

Structural Equation Modeling (SEM), a versatile statistical modelling tool (Lei and Wu, 2007) was employed for data analysis in this study. SEM is a Second generation multivariate analysis technique developed due to some limitations in the traditional Ordinary Least Squares (OLS), especially when dealing with latent constructs (Awang, 2014). This research study will attempt to thoroughly examine the causal factors of land use changes and the consequential impact of land use changes on the rental values of residential property in Kaduna metropolis of Nigeria.

**Issues:** As people seek to maximise utility in deciding where to live, their relocation within Kaduna metropolis has resulted in irregular changes in land uses against urban planning regulations and this in turn has affected residential property rental values in diverse ways (Ajibuh, 2010). Their reasons for intra-urban migration are mostly non-monetary considerations such as safety, security, peace and quiet and family ties (Gandu, 2011). Often, households prefer to live alongside others of the same social and cultural background, religion or race.

In Kaduna metropolis, there are visible signs of the ineffectiveness of urban planning regulations and the non-adherence to such regulations by landholders especially on zoning ordinances which is an aftermath of the civil unrests and conflicts that have occurred in the metropolis over time (Gandu, 2011). There is the issue of inadequate land use planning or the land use plans remaining stagnant over time instead of being dynamic. Also, there is non-enforcement of zoning regulations leading to imbalance in land allocation for various uses (Ndabula et al., 2013; Saleh et al., 2014b).

These are also related to shoddy monitoring of the process of land use changes by town planning authorities in the aspect of property development control due to political interference, poor funding, insufficient technical staff, lack of equipment and tools and public resistance (Akinlabi, 2012).

**Related empirical studies:** Research works related to this study were reviewed in order to highlight the major areas of such works. The review dwelt on issues, research methods, findings as well as the researchers comments on them. These are presented in a tabular form in Table 1.

<table>
<thead>
<tr>
<th>Authors/ Source</th>
<th>Issues</th>
<th>Methods</th>
<th>Findings</th>
<th>Remarks/ Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larsen and Blair (2014) USA</td>
<td>Effects of surface street traffic externalities on residential property price</td>
<td>Hedonic regression was used</td>
<td>Single-family homes contiguous to an arterial street were sold at a discount while multi-unit properties contiguous to an arterial street were sold at a premium</td>
<td>SEM would have given a better analysis of the variables</td>
</tr>
<tr>
<td>McCord et al. (2014) UK</td>
<td>Amenity effect of public green spaces on house prices</td>
<td>Ordinary Least Squares (OLS) regression</td>
<td>Urban green space, all things being equal has significant positive effect on residential property values but the values vary according to property type</td>
<td>SEM is more suited to effectively analyse the variables and determine the nature of their relationship</td>
</tr>
<tr>
<td>Lee and Sohn (2013) Korea</td>
<td>Impact of elevated railways and underground subways on land prices</td>
<td>Hedonic price model</td>
<td>Land price of places near elevated railways are much lower than those along underground railways</td>
<td>The underlying factors to explain the findings would be better analysed by SEM</td>
</tr>
<tr>
<td>Liew and Haron (2013) Malaysia</td>
<td>Factors influencing the rise of house prices and their level of influence</td>
<td>Average indexing, t-test and Pearson correlation</td>
<td>Construction costs; population growth, long term profit of housing growth of GDP, security, public facilities and decline in supply of new housing</td>
<td>SEM only examined the factors in isolation of land use which is crucial to house price</td>
</tr>
<tr>
<td>Monzdomeno and Ronconi (2013) Argentina</td>
<td>Relationship between land use regulations, compliance and land prices</td>
<td>Ordinary Least Squares (OLS) regression</td>
<td>Places with stricter regulations have lower compliance rates with property laws. Lot selling legally in these places have lower land prices</td>
<td>SEM more suited to fashion out the interrelationship between the variables and give better results</td>
</tr>
<tr>
<td>He et al. (2014) China</td>
<td>Economic growth as driver of land use change</td>
<td>Correlation analysis and Structural equation analysis</td>
<td>A strong association between land use change and GDP expansion. Analysis indicate that economic growth drive land use change</td>
<td>The correlation analysis structural equations effectively analysed the variables</td>
</tr>
<tr>
<td>Koster and Rouwendal (2012) Netherlands</td>
<td>The impact of mixed land use on residential property values</td>
<td>Semi-parametric hedonic house price analysis</td>
<td>Generally, a compatible mix of land uses leads to a rise in residential property values compared to mono-land use area</td>
<td>SEM would have vividly justified the have factors why mixed land use areas higher property values</td>
</tr>
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<table>
<thead>
<tr>
<th>Author(s) and Country</th>
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<th>Methods</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Bao et al. (2014) China</td>
<td>The relative pricing behavior for land vis-à-vis land value determination</td>
<td>Hedonic price coefficients under semi-parametric framework</td>
<td>Land market prices determined by parcel size, floor space, location, neighborhood characteristics and planning use</td>
<td>SEM more suited to effectively determine the factors and analyse their strengths</td>
</tr>
<tr>
<td>Kamih et al. (2012) Egypt</td>
<td>Evaluating urban land changes highlighted</td>
<td>GIS, Remote Sensing and Principal component analysis</td>
<td>Population growth, city location and coastal tourist activities were the major factors driving land change and expansion</td>
<td>The inter-relationships between the factors was not</td>
</tr>
<tr>
<td>Appiah et al. (2014) Ghana</td>
<td>Effects of peri-urbanization on land use change patterns</td>
<td>Pearson’s Chi-square and step-wise logistic regression modeling</td>
<td>Increasing rate of peri-urbanization caused by rising demand for residential, recreational and commercial land use to the detriment of agricultural land use</td>
<td>SEM would have effectively detailed the effects of peri-urbanization on land use change patterns</td>
</tr>
<tr>
<td>Amenyah and Fletcher (2013) Ghana</td>
<td>Factors determining rental prices of residential properties</td>
<td>Two-way contingency table, ANOVA and Pearson correlation</td>
<td>Location, number of bedrooms, availability of amenities and facilities determine residential rental prices</td>
<td>SEM would have given a better analysis of the factors</td>
</tr>
<tr>
<td>Ong (2013) Malaysia</td>
<td>The relationship between macroeconomic variable and the price of housing</td>
<td>Multiple regression analysis</td>
<td>Gains tax are the key determinants of house prices</td>
<td>SEM would have given a better analysis of the variables</td>
</tr>
<tr>
<td>Adegoke (2014) Nigeria</td>
<td>Factors influencing rental value of residential property</td>
<td>Hedonic price model of stepwise regression basis</td>
<td>The most influential factors in all the areas were number of bathrooms, number of living rooms &amp; availability of burglar alarm</td>
<td>SEM would have given a better analysis of the factors</td>
</tr>
<tr>
<td>Fannuwa and Babawale (2014) Nigeria</td>
<td>Inherent values of particular physical infrastructure in rental values</td>
<td>Semi-log (log-linear) hedonic model was adopted</td>
<td>Power supply, good road conditions, street lighting, pedestrian pavements, good drainage systems, neighbourhood security and public waste removal services</td>
<td>SEM would have given an in depth detail of the interrelationships among the factors</td>
</tr>
<tr>
<td>Eni and Ukpung (2014) Nigeria</td>
<td>Impact of population growth on residential land use</td>
<td>Pearson moment correlation</td>
<td>More demand for residential land due to population growth and increase in proportion of land for residence A strong correlation between population growth and land cost</td>
<td>SEM would have detailed the effects of other factors on residential land use</td>
</tr>
<tr>
<td>Onyue (2014) Nigeria</td>
<td>Impact of road construction on land use pattern</td>
<td>ANOVA and simple descriptive statistics</td>
<td>Rise in values of property near newly constructed roads. Complementarity of the new roads attract people to the area and creates new demand for property</td>
<td>SEM would have detailed the contributions of other factors to the land use pattern and property values</td>
</tr>
<tr>
<td>Oduwole and Ezee (2013) Nigeria</td>
<td>Dynamics influencing rent apartment prices</td>
<td>Stepwise hedonic regression with double log model</td>
<td>Access road, number of rooms, number of bathroom, lot size, electricity, proximity to CBD, the presence of schools and crime rate</td>
<td>SEM would have given a better analysis of the variables</td>
</tr>
<tr>
<td>Olske et al. (2013) Nigeria</td>
<td>Factors affecting residential property values</td>
<td>Tables, percentages and relative importance index</td>
<td>Proximity to the highway, number and size of bedrooms, conveniences, good roads, drainage and security</td>
<td>SEM would have given an in-depth detail of the interrelationships among the factors</td>
</tr>
<tr>
<td>Adegoji (2013) Nigeria</td>
<td>Socio-economic attributes of intra-urban migration and its influence on residents</td>
<td>Correlation analysis and descriptive statistics</td>
<td>Statistically significant relationship between intra-urban migration pattern and socio-economic attributes</td>
<td>SEM would have detailed the effects of other factors on the intra-urban migration pattern</td>
</tr>
<tr>
<td>Oduwole (2013) Nigeria</td>
<td>Implications of changing land use structure on land use development</td>
<td>Factor analysis and Principal component Analysis (PCA)</td>
<td>Major determinants of residential development are accessibility infrastructure (road) and land value</td>
<td>Did not say much about property value which is important in the study city</td>
</tr>
</tbody>
</table>

**Conceptual framework:** The concept of this study is hinged on the factors that cause land use changes and the changes in land use subsequently affecting residential property rental values in Kaduna metropolis of Nigeria. The causal factors were gotten from the literature and past studies on land uses in Kaduna metropolis. The factors are population increase, intra-urban migration, security and safety considerations, land use planning regulations and considerations of public utilities and environment. They are responsible for the continuous changes in land uses which are residential, commercial, industrial and recreational uses.

The effect of the land use changes on residential property values may be positive or negative. Positive effects when there is a rise in residential property values and negative effects when there is a fall in residential property values. The diagram for the conceptual framework is shown in Fig. 1.
MATERIALS AND METHODS

Data and methods: The survey research design under quantitative research was considered the most appropriate to facilitate the realisation of the objectives of this research study. It is the best research design when the research problem involves the identification of factors that affect or influence an outcome, understanding the best predictors of outcome and testing hypotheses and theories (Creswell, 2003).

Sample: Structured questionnaires with close-ended questions were administered face-to-face and handed out to officials of six government agencies in Kaduna metropolis who are involved with land use matters. The agencies are the Kaduna State Urban Planning and Development Authority (KASUPDA), Kaduna State Environmental Protection Agency (KEPA) and the Kaduna State Ministry of Lands, Surveys and Country Planning. Others include the Kaduna State Development and Property Company (KSDPC), the Kaduna State Public Works Agency (KAPWA) and the Federal Surveys Unit, Kaduna.

Questionnaires with mostly close-ended questions were administered face-to-face and handed out to registered Estate Surveyors and Valuers practicing in Kaduna metropolis. The questionnaires were meant to elicit information on trends of residential property rental values and what influenced such values. Rental values were used in this research as against sales prices owing to the fact that property lettings are more generally regular than sales in Nigeria (Ajayi et al., 2013; Oduwole and Eze, 2013).

In developing the instrument for this research, the literature was extensively reviewed, the questions were drafted and tested with individuals similar to the sample frame (Creswell, 2012). This is pilot-testing or field testing to establish the content validity of the scores on the instrument and to improve the questions, format and scales (Creswell, 2003). Simple random sampling technique was adopted to select 180 officials from the 6 government agencies that is, 30 officials per agency. While 90 registered Estate Surveyors and Valuers were purposively selected due to their experience and years of practice in the study area.

A combined total of 270 questionnaires were administered to both government officials and registered estate surveyors and valuers. However, only 207 questionnaires were returned and found valid, depicting a response rate of 77.7%.

RESULTS AND DISCUSSION

Empirical analysis

Hypotheses: Drawing from the conceptual framework, 6 hypotheses were formulated for this study. They are as follows:

- $H_1$: Increase in population has significant influence on land use changes
- $H_2$: Intra-urban migration has significant influence on land use changes
- $H_3$: Security and safety has significant influence on land use changes
- $H_4$: Public utilities and environment has significant influence on land use changes
Table 2: Fitness indexes of the constructs

<table>
<thead>
<tr>
<th>Construct</th>
<th>Chisq/df</th>
<th>CFI</th>
<th>TLI</th>
<th>NFI</th>
<th>GFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population increase</td>
<td>3.256</td>
<td>0.973</td>
<td>0.918</td>
<td>0.962</td>
<td>0.986</td>
<td>0.105</td>
</tr>
<tr>
<td>Intra-urban migration</td>
<td>1.346</td>
<td>0.995</td>
<td>0.988</td>
<td>0.982</td>
<td>0.987</td>
<td>0.041</td>
</tr>
<tr>
<td>Security and safety</td>
<td>1.632</td>
<td>0.995</td>
<td>0.988</td>
<td>0.998</td>
<td>0.997</td>
<td>0.055</td>
</tr>
<tr>
<td>Land use planning</td>
<td>2.645</td>
<td>0.962</td>
<td>0.928</td>
<td>0.942</td>
<td>0.961</td>
<td>0.089</td>
</tr>
<tr>
<td>Utilities and environment</td>
<td>4.726</td>
<td>0.940</td>
<td>0.888</td>
<td>0.926</td>
<td>0.946</td>
<td>0.134</td>
</tr>
<tr>
<td>Land use changes</td>
<td>2.504</td>
<td>0.971</td>
<td>0.949</td>
<td>0.953</td>
<td>0.951</td>
<td>0.085</td>
</tr>
<tr>
<td>Residential rental values</td>
<td>1.279</td>
<td>0.999</td>
<td>0.996</td>
<td>0.994</td>
<td>0.993</td>
<td>0.037</td>
</tr>
</tbody>
</table>

Table 3: Test results for reliability and convergent validity

<table>
<thead>
<tr>
<th>Construct</th>
<th>Cronbach’s alpha</th>
<th>CR</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population increase</td>
<td>0.723</td>
<td>0.73</td>
<td>0.415</td>
</tr>
<tr>
<td>Intra-urban migration</td>
<td>0.805</td>
<td>0.80</td>
<td>0.418</td>
</tr>
<tr>
<td>Security and safety</td>
<td>0.852</td>
<td>0.88</td>
<td>0.608</td>
</tr>
<tr>
<td>Land use planning</td>
<td>0.819</td>
<td>0.83</td>
<td>0.427</td>
</tr>
<tr>
<td>Utilities and environment</td>
<td>0.829</td>
<td>0.82</td>
<td>0.447</td>
</tr>
<tr>
<td>Land use changes</td>
<td>0.857</td>
<td>0.84</td>
<td>0.447</td>
</tr>
<tr>
<td>Residential rental values</td>
<td>0.868</td>
<td>0.86</td>
<td>0.574</td>
</tr>
</tbody>
</table>

- \( H_1 \): Land use planning regulations has significant influence on land use changes
- \( H_2 \): Land use changes have significant effect on residential property rental values

Analysis and results: The collected data was coded and processed by SPSS Version 22. The data was screened for singularity, outliers and normality under this platform. To test the relationships between variables (constructs) of interest in this study, Structural Equation Modeling (SEM) Version 22 was employed.

The AMOS (Analysis of Moment Structures) software is one of the newest software developed for data analysis using SEM (Awang, 2014). The AMOS graphic was used to model and analyse the inter-relationship between and among the latent constructs in this study effectively, accurately and efficiently. The Confirmatory Factor Analysis (CFA) was performed for the measurement model of the latent constructs. The CFA was done for each of the 7 variables in this study.

The CFA addresses the issue of construct validity when the recommended fitness indexes reach the required level. The 3 model fit categories are absolute fit (RMSEA <0.08; GFI>0.90), incremental fit (CFI>0.90; TLI>0.90; NFI >0.90) and parsimonious fit (Chisq/df<5.0) (Awang, 2014). To test for reliability and convergent validity, the Cronbach’s alpha coefficient (= 0.70), value of composite reliability (CR = 0.60) and also Average Variance Extracted (AVE = 0.50) are all presented for the 7 constructs as shown in Table 2.

Hair et al. (2010) and Holmes et al. (2006) recommended the use of at least one Fitness Index from each category of model fit (Table 3). Having substantially achieved the required level for the recommended fitness indexes and the tests results for reliability and convergent validity mostly good for all the constructs, the structural model for the study was then assembled as shown in Fig. 2.

From Fig. 2 which is the initial structural model of the study, it can be seen that 21% of the performance in residential rental values could be estimated by using 1 construct which is land use change. Furthermore, 92% of the performance of land use change could be measured by fusing 5 exogenous constructs (independent variables) into the model namely intra-urban migration, population increase, security and safety, land use planning and public utilities and environment.

This study adopted a benchmark of 0.50 for factor loadings of items as, according to Awang (2014) for newly developed items like the ones for this particular study, the factor loadings of items should be 0.50 or higher. From Fig. 2, the factor loadings are mostly above 0.5 except for 1 item under intra-urban migration construct, 1 item under public utilities and environment construct and 1 item under land use change construct which are 0.49, 0.48 and 0.47, respectively.

It is also recommended that the correlation values between exogenous constructs should be <0.85 to achieve discriminant validity (Awang, 2014). The values for all the correlation between the exogenous constructs are below 0.85 save for the one between land use planning and public utilities and environment constructs which is 0.86. As for the fitness indexes of the structural model, at least 1 fitness index from the various categories of fitness indexes was met. The standings of the Fitness indexes are shown in Table 4.
In order to further improve upon the values of the fitness indexes of the structural model so as to have reliable results from the analysis, the items with factor loadings <0.5 were deleted from the model. Some of the pairs of redundant items were also set as free parameters to improve the model. Figure 3 shows the final structural Model.

From the final structural model above, 27% of the performance of residential rental values could be estimated by using the land use change construct. Also, 87% of the performance of land use change could be measured by fusing 5 exogenous constructs into the Model which are still intra-urban migration, population increase, security and safety, land use planning and public utilities and environment. The value of $r^2$ for the whole model (27%) is regarded as a large effect (Adams and Lawrence, 2015) since it could capture 27% of the estimate on endogenous construct (residential rental values) by including certain exogenous constructs into the model. The table below shows the interpretations of effect size (Table 5).

Regarding the factor loadings of the items, all of them are now above this study's benchmark of 0.50. All the correlation values between the exogenous constructs are below 0.85 with only the one between land use planning and public utilities and environment constructs which is on the 0.85 cut-off point thereby achieving discriminant validity with no multi-collinearities. There have also been some improvements in the fitness indexes of the final structural model as depicted in the Table 6.

The construct validity for the final structural model can be said to have been achieved since the requirements for all the categories of the fitness indexes have been met.
The regression weights indicating the beta coefficient estimates which measure the effects of every exogenous construct on the endogenous construct are presented in Table 7.

The path coefficient of population increase to land use change is 0.942. This value indicates that for every 1 unit increase in population, its effects would contribute 0.942 unit increase in land use change. Also, the effect of population increase to land use change is significant. When intra-urban migration increases by 1 unit, land use change decreases by 0.468 unit. That means intra-urban migration contributes to land use change by 0.532 unit. When security and safety go up by 1 unit, land use change goes up by 0.335 unit.

When utilities and environment go up by 1 unit, land use change goes down by 0.577 unit. That means public utilities and environment contributes to land use change by 0.423 unit. When land use planning increases by 1 unit, land use change increases by 1.567 unit. When land use change increases by 1 unit, residential property rental values increase by 0.562 unit. In reference to the regression weights and significance values presented above, Table 8 shows the result of all the hypotheses formulated in this study.

The results have revealed that the hypothesized relationships between and among the various variables are all significant with land use planning having the most influence on land use change in the study area. This is attributable to the expansion of Kaduna metropolis where new layouts for different land uses are being created and in the process redefining the land use structure of the metropolis.

From the degree of influence of the 5 factors influencing land use changes which was 87% and the degree of effect of land use changes on residential property rental values which stood at 27%, it can be seen that the effect sizes are strong (Adams and Lawrence, 2015). The values of 87 and 27% imply that the 5 factors influence land use changes and land use changes affect residential property rental values considerably, respectively.
The significance of all the hypothesized relationships between and among the variables depicts that the entire hypotheses for the study have been supported. Therefore, the objective of this study has been achieved and the disposition of the interplay of the various factors established.

CONCLUSION

This study has examined the factors influencing land use changes and the consequential impact of such changes in land use on residential property rental values in Kaduna metropolis of Nigeria. The study was limited to the investigation of the interrelationship between land use changes and residential property rental values without dwelling on the performance of actual rental values over a time period.

The major findings are that population increase, intra-urban migration, security and safety, public utilities and environment and land use planning have a combined influence of 87% on land use changes. While land use changes affect residential property rental values by 27%, meaning that the balance of 73% is accounted for by other factors outside the scope of this study.

The findings of this study have contributed to new knowledge in land use and residential property values. Firstly, the factors that influence changes in land uses were thoroughly examined and the effect of such land use changes on residential property rental values in a major Nigerian city was demonstrated.

Secondly, this study employed SEM for the analysis of data. This data analysis approach by the study is a fresh break from most of the earlier research studies on land uses and property values in Nigeria which were undertaken with the aid of analytical and technical tools that have been found to have some limitations which likely affect the quality of results and deductions made from the analysis of data collected for such studies.

Lastly, the findings of this research have contributed immensely to the body of knowledge of urban economics in general and land use and property values in particular especially as it relates to cities in developing countries which have been grossly under-theorised and frequently under-emphasised in mainstream urban studies.

In understanding the factors that explain land use changes and property values, planners and built environment professionals, financial institutions, property investors, policy makers and researchers can be in a better position to manage urban growth, prudently invest in property, craft policy and refine our understanding of how urban systems and economies function.

ACKNOWLEDGMENTS

This research was supported in part by Universiti Tun Hussein Onn Malaysia (UTHM) and the Nigerian Tertiary Education Trust Fund (TETFUND). The researchers express their profound gratitude to UTHM and TETFUND for the support.

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