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FEDERAL UNIVERSITY OF TECHNOLOGY  
MINNA, NIGER STATE, NIGERIA**

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2020  
INTERNATIONAL  
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**BOOK OF PROCEEDINGS**

**MAIN THEME:**

**Sustainable Housing And Land Management**



**3RD -5TH MAY, 2021**



**SCHOOL OF ENVIRONMENTAL TECHNOLOGY COMPLEX,  
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**School of Environmental  
Technology International  
Conference  
(SETIC 2020)**

**3RD - 5TH MAY, 2021**

**Federal University of Technology Minna, Niger  
State, Nigeria**

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**E. B. Ogunbode**

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## PREFACE

The School of Environmental Technology International Conference (SETIC 2020) is organised by School of Environmental Technology, Federal University of Technology Minna, Nigeria. In collaboration with Massey University New Zealand, Department of Civil Engineering Faculty of Civil Engineering and Built Environment Universiti Tun Hussein Onn Malaysia, Malaysia Centre For Professional Development and Industrial Project Development School of Professional and Continuing Education (SPACE) UTM-KL Malaysia, Global Academia, Department of Architecture, Faculty of Engineering and Architecture, Istanbul Gelisim University Istanbul Turkey, Sustainable Environmental and Technology (SET) Research Group, Department of Architecture, Universiti Sains Islam. The main theme for this year conference is “SUSTAINABLE HOUSING AND LAND MANAGEMENT”. This promotes and encourage innovative and novelty for policy issues for inclusive and sustainable housing, access to finance for housing and land development, sustainable building materials, building cost management, sustainable and resilient cities, geoinformatics for land management, rapid urbanization, sustainable land use and spatial planning, gender issues in access to land.

The responses from participants for this conference are overwhelming, well attended, and successful. The operation mode was Virtual for all participants who choose the oral presentation mode. While, Physical for all poster medium presenters. Our participants are from various Universities and other sector across the globe, from countries like United State for America (USA), Turkey, Malaysia, China, Saudi Arabia, Kenya, New Zealand just to mention a few. Hence, this conference provides a good platform for professionals, academicians and researchers to widen their knowledge and approach on latest advances in research and innovation. Papers presented in this conference cover a wide spectrum of science, engineering and social sciences.

Finally, a note of thanks must go to SETIC 2020 Local Organizing Committee (LOC) for their remarkable dedication in making this conference a success. We hope the event will prove to be an inspiring experience to all committee members and participants.

## ACKNOWLEDGEMENTS

The effort put together in achieving the success of SETIC 2020 is predicated on the feat of the first and second edition of School of Environmental Technology International Conference held in 2016 and 2018, respectively. The support and goodwill from Vice-Chancellor of Federal University of Technology, Dean School of Environmental Technology, Dr Dodo Y. A., Dr Moveh S. and many other highly motivated people are highly appreciated.

It is also my privilege and honour to welcome you all, on behalf of the Local Organizing Committee (LOC) to the 3rd edition of the Biennial School of Environmental International Conference (SETIC 2020). This Conference which was earlier schedule for 7th to 11 April, 2020 is holding now (3rd to 5th May, 2021) due to the challenges of COVID-19 Pandemic and the ASUU-FGN crisis which made our public Universities in Nigeria to be closed for about one year. We thank God for keeping us alive to witness the great SETIC2020 event, in an improved form exploiting the new-normal situation posed by the Pandemic for a hybrid (i.e. both physical and virtual) form of Conference participation.

The conference provides an international forum for researchers and professionals in the built environment and allied professions to address fundamental problems, challenges and prospects Sustainable Housing and Land Management. The conference is a platform where recognized best practices, theories and concepts are shared and discussed amongst academics, practitioners and researchers. This 2020 edition of SETIC has listed in the program a Round Table Talk on Housing Affordability beyond COVID-19 with selected Speakers from across the globe available to do justice on the topic of discussion.

Distinguished Conference participants, permit me to warmly welcome our Keynote and Guest Speakers:

- Prof. Ts. Dr. Mohd Hamdan Bin Ahmad, *Deputy Vice Chancellor (Development) Universiti Technology Malaysia (UTM)*;
- Assoc. Prof. Dr. James O.B. Rotimi, *Academic Dean Construction, School of Built Environment, College of Sciences, Massey University of New Zealand*;
- Assoc. Prof. Sr. Dr. Sarajul Fikri Mohammed, *General Manager, Centre for Professional Development and Industrial Project Development School of Professional and Continuing Education (SPACE), UTM-KL*.
- Prof. Ts. Dr. Zanaail Abidin Akasah, *Visiting Professor on Sustainable Solar Integrated Design Building Design, International Micro Emission University (IMEU)/HIMIN Ltd. China & Senior Research Fellow, The Architects Resourcery, Jos, Nigeria*;
- Ar. Dr. Elina Mohd Husini, *Department of Architecture, Faculty of Engineering & Built Environment, Universiti Sains Islam*;
- Asst. Prof. Dr. Yakubu Aminu Dodo, *Department of Architecture, Faculty of Engineering and Architecture Istanbul Gelisim University, Istanbul Turkey*

and the five Speakers for our Round Table Talk on Housing Affordability Beyond COVID-19

- Dr. Muhammad Mustapha Gambo, *Manager, Policy, Research and Partnerships, Shelter Afrique, Nairobi, Kenya*;
- Prof. Dr. Soumia Mounir, *Department of Architecture Ecole Nationale d'Architecture d'Agadir [The National School of Architecture of Agadir], Morocco*

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# DECLARATION

## PEER REVIEW AND SCIENTIFIC PUBLISHING POLICY STATEMENT

3rd MAY 2021

TO WHOM IT APRIL CONCERN

I wish to state that all the papers published in SETIC 2018 Conference Proceedings have passed through the peer review process which involved an initial review of abstracts, blind review of full papers by minimum of two referees, forwarding of reviewers' comments to authors, submission of revised papers by authors and subsequent evaluation of submitted papers by the Scientific Committee to determine content quality.

It is the policy of the School of Environmental Technology International Conference (SETIC) that for papers to be accepted for inclusion in the conference proceedings it must have undergone the blind review process and passed the academic integrity test. All papers are only published based on the recommendation of the reviewers and the Scientific Committee of SETIC

Babatunde James OLAWUYI  
Chairman SETIC 2020  
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## PROFILE OF KEYNOTE SPEAKERS AND GUEST SPEAKERS

SETIC 2020 organisers wishes to thank our keynote speakers, and Guest speakers for accepting to create time to share from their rich wealth of knowledge and interact with delegates and participants on varied issues being examined at this year's conference. A brief profile of each keynote speaker is provided here, this would allow for future interaction and networking with them.

 <p><b>Key-Note Speaker I</b></p>	 <p><b>KEY-NOTE SPEAKER II</b></p>	 <p><b>Key-Note Speaker III</b></p>
<p><b>Prof. Ts. Dr. Mohd Hamdan Bin Ahmad</b> Deputy Vice Chancellor (Development) University Teknologi Malaysia</p>	<p><b>Prof. Ts. Dr. Zainal Abidin Akasah</b> (Visiting Professor) Sustainable Solar Integrated Building Design International Micro-Emission University (IMEU)/NIMW Ltd China &amp; Senior Research Fellow The Architects Renouancey, Jos Nigeria</p>	<p><b>Associate Prof. Dr. James O.B. Rotimi,</b> Academic Dean Construction, School of Built Environment, College of Sciences, Massey University of New Zealand.</p>
 <p><b>Key-Note Speaker IV</b></p>	 <p><b>Guest Speaker I</b></p>	 <p><b>Guest Speaker II</b></p>
<p><b>Assoc. Prof. Sr. Dr. Sarajul Fikri Mohamed</b> General Manager, Centre for Professional Development and Industrial Project Development School of Professional and Continuing Education (SPACE) UTM-RL Malaysia</p>	<p><b>Asst. Prof. Dr. Yakubu Aminu Dodo</b> GREM, MyCREST MAARCHES Istanbul Gelisim University, Istanbul Turkey</p>	<p><b>Ar. Dr. Elina Mohd Husini</b> Department of Architecture Faculty of Engineering &amp; Built Environment, Universiti Sains Islam Malaysia</p>

## ROUND TABLE PANEL SPEAKERS

# Round Table Talk

## On Housing Affordability Beyond Covid-19

Main Theme

# SUSTAINABLE HOUSING AND LAND MANAGEMENT

 <p><b>Dr. Muhammad Mustapha Gambo</b> <i>Manager: Policy, Research and Partnerships, Shelter Afrique, Nairobi, Kenya.</i></p>	 <p><b>Prof. Dr. Soumia Mounir</b> <i>Department of Architecture Ecole Nationale d'Architecture d'Agadir (The National School of Architecture of Agadir) Morocco</i></p>	 <p><b>Dr. Said Alkali Kori</b> <i>General Manager, Projects and Portfolio Management Family Homes Fund Federal Ministry of Finance, Abuja.</i></p>
 <p><b>Ts. Dr. Sasitharan Nagapan,</b> <i>Department of Civil Engineering Faculty of Civil Engineering and Built Environment Universiti Tun Hussein Onn Malaysia, Malaysia</i></p>	 <p><b>Dr. Mercy Nguavese Shenge</b> <i>AIA Assoc. Historic District Commissioner, City of Rockville, MD. USA.</i></p>	 <p><b>Asst. Prof. Dr. Yakubu Aminu Dodo</b> <i>GREM, MyCREST MAARICHES Istanbul Gelisim University, Istanbul Turkey</i> <b>Moderator</b></p>

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## Residential Property Use Conversion and Rental Value Trends in Osogbo, Nigeria

Ankeli, A. I.<sup>1</sup>, Nuhu, M. B.<sup>2a</sup>, Sule, A. I.<sup>2b</sup>, Popoola, N. I.<sup>2c</sup>, Ankeli, U. C.<sup>3</sup>

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### **Abstract:**

*The volatility in property rental market and the increasing trend of property use conversions in Nigerian cities have become a typical issue of national discuss, as every available plots or building fronting Major Streets in our cities are either in the process of conversion or have been converted. This paper assesses property use conversions with the view to determining it causes and influence on rental trends or performances in Osogbo, the capital of Osun state. Ten years data on rental values spanning from 2010 to 2019 were collected and used for the study. Data on rental values and property usage were sourced from Estate Surveyors and Valuers (ESV) while information on use conversions were obtained from tenants and the State Ministry of Lands and Physical Planning (MLPP). In order to achieve the aim of the study, 236 questionnaires were administered on the respondents, only 200 questionnaires representing 84.75% was correctly filled and returned for analysis. Data collected were analyzed using both descriptive and inferential statistical techniques. The results of findings revealed a statistically significant influence of land/property use conversion factors on rental performances in the state. It further shows that economic and demographic factors are the two prime reasons for property use conversion from residential to commercial uses, after use conversions command higher annual average rental values. The implications are among others, the creation of an unenviable property rental regime in the city and depletion of the available residential housing stock. It is on these findings that the study recommend the effective and efficient land use conversion control and management mechanism as well as incentive for residential property developers in the city of Osogbo.*

**Keywords:** Residential Property, Property Use Conversions, Rental Values Trend.

## INTRODUCTION

Human settlements world over has and is steadily witnessing series of transformations due to global demographic explosion, technological advancement, socio-political influences and economic factors. Olarewaju (2016) observed that the current trend of global demographic pattern of expansion that ranges from progressive mega scale population increase to the micro level variation in the continental population distribution have implications on the existence and survival of cities. Advancement in modern day technology has drastically helped in the reduction of mortality rate globally, with increased birth rate, good living and longer life expectancy rate. Ankeli et al. (2019) reported that United Nations Population Funds put global population in 2011 at 7 billion which is currently above 7.3 billion. Cohen (2006) attributed the rapid urban growth resulting in stiff competition among nations for economic development of cities. Despite the advantages of the growth in economy, the management of the unprecedented population explosion, urban rental vitality, land use infiltrations and related issues have become one of the important challenges of our time.

Today, most cities are flashpoint zones for property use conversions in Nigeria. As a nation, Nigeria is said to be the harbinger and a nation at the forefront of the escalator of rapidly urbanizing nations' of the world, hence cities in the country are seen to be the centres of economic, political and social powers (Adegbola & Oluwale, 2018). However, Falade (2011) opined that cities and towns in Nigeria are completely different from what they used to be in the last fifty years due to the raising population and urbanization rate which have been fast tracked. The nations' population figure was said to be about 30 million in 1952 but by 2006, it increased to 140 million and was projected to reach 167 million by 2011 (National Population Commission 2006). Currently, the nations' population is said to be over 200 million people with escalating urban growth rate from 7% in 1930 to 50% in 2016 with the implication of having about 50% of Nigeria populace residing in the cities. Submissions of previous studies as Agbola (2005) and Adeniji (2007) on housing programmes appraisals in the country in the last thirty years revealed no significant positive achievement. Findings from recent studies on property use conversion in Nigerian cities have revealed that a significant proportion of land and buildings in urban areas have been converted from their original use to some other uses especially from residential use to commercial uses (Adegunle et al. 2016, Agukoronye & Nwankwo 2002). These studies further established strong direct relationship between the rising property use conversions and the rapid urban rental growth in our cities. The necessities for the understanding of change process in our cities, its agent and beneficiaries that can be used as planning and management indicators for a functioning city have been stressed by Fabiyi, (2006). Hence the word property or land use conversion is used interchangeably in this paper to mean the same thing.

This study therefore focuses on the analysis of the rental trends and influence of the conversions of residential properties to commercial use on rental value performances in Osogbo with the view that improved and effective land use conversions would help in the stability of property rental value performances in the study area. To achieve the aim, the objectives set for the study are to: identify the causes of property use conversions from residential to commercial uses in the study area; access the trend in the rental performances of before and after use conversions and to evaluate the influence of property use conversions on rental values in the study area. Thus, the study seek to provide answers to the following pertinent questions: What are the causes of property use conversions in the study area? What is the trend in property rental values in the study area? Does property use conversion exert statistically significant influence on rental value trends in the study area?

## **JUSTIFICATION FOR THE STUDY**

The raising wave of Property use conversions is a major challenge confronting most cities in Nigeria. Nwachukwu and Ukpabi (2008) argued that property owners embarked on property use conversions especially from residential to commercial uses in the bid to maximize rental return. The alterations in land use pattern of cities, housing stock depletion and the consequential hike in urban rentals have been attributed to property use conversions activities (Ankeli et al. 2019, Adegunle et al. 2016, and Agukoronye & Nwankwo 2002). The trending use conversion phenomenon especially from residential to commercial uses according to

Ankeli et al. (2019) is gradually becoming a common sight in the city of Osogbo as every available residential properties fronting major streets or roads in Osogbo have either been converted to shops, offices or business premises or are in the process of such conversion. More so, the influx of people and business ventures from the proximate bigger cities as Lagos and Ibadan is not helping matter as commercial land uses are gradually taking over residential land spaces thereby enhancing the steady succession and invasion phenomenon resulting in the redefinition of the city land use structure and the denial of the urban poor access to decent and affordable residential accommodation within the city. The gradual formations of urban slum settlement, conflicting urban land uses, evolving rental market in the metropolis and land ownership conflicts are occurrences that if not critically examined and controlled could bring about aesthetic problems aside other social vices. It is on this bases that study of this nature is considered justified, appropriate and timely.

### **THEORETICAL FRAMEWORK**

Several theories have been propounded by earlier scholars on land use, development, management and control. Verburg, *et al.*, (2004) in their attempt to appraise the patterns of land use conversions and its determinants in the Netherlands advocated for the understanding of the multifarious interactions that exist between man and his physical environment. Egbenta, (2009) validated the postulation of economic theory premised on the idea that economic activities expansion absorb other abutting land uses through space competition and ability to pay higher rent (bid rent theory). Qina *et al.* (2016) concluded that bearing in mind the specific land uses, Wingo's (1961) rent The theory of the totality of the relationship by Wingo assesses and incorporated the specific land uses attributes that exists between the components and its surrounding environment in land offer prices. This study is hinged on economic theories validated by Egbenta (2009). The identified conversion factors that was tested were gotten from previous literature on land use.

### **LITERATURE REVIEW**

Conversion in the use for which a property or land is intended, zoned or approved for has become a common phenomenon in most Nigerian cities. Fabiyi (2006) viewed land or property use change as the reflections or the indirect consequences of economic growth through which the structure and functioning of the ecosystem have been in one way or the other altered. Abiodun et al. (2011) observed that the degree of land use conversions varies with the time under consideration as well as with the geographical locations. Ogungbemi (2012) examined factors influencing change in use and its attendant problems. The study posited that land use conversion is induced by varieties of factors among which are economic, demographic, institutional, infrastructural, environmental attributes, and sociological factors. Ankeli (2007) argued that investors expected returns on the available use options (which could be financial, social or otherwise) often serves as the determiner for land use conversions. These studies were not specific on any of the influencing factors. Olujimi (2010) however, asserted that the negative effect of the factors of land use conversions damage the interest of investors, thus subsequently discouraging investment potentials and initiatives in the subsector. Olarewaju

(2016) examined the spatio - environmental dimension of residential land use change along Taiwo road, Ilorin and discovered a statistically significant variation in residential property values. Olarewaju (2016) failed to specify the value type, hence there exist gap that need to fill. Iroham et al. (2013) assessed the trend in rental values of commercial properties in commercial hub of Akure. The study revealed that converted office spaces with the highest rental values have better investment fund recoupment potentials. The study failed to report the cause(s) of conversion. It is in an attempt to fill the observed gaps, determine the influence of property use conversion factors on rental values in the study area that this study test the conversion factors reported by Ogungbemi (2012).

## METHODOLOGY

The study adopted survey research approach. Both quantitative and qualitative data were obtained and utilized for the study. Structured questionnaires were administered on respondents which comprise of estate surveyors and valuers (ESV), staff of the State Ministry of Lands and Physical Planning and tenants. To determine the properties to be selected for the study, all the properties along the selected arterial roads were enumerated and screened in order to select those that best exhibit conversions characteristics which invariably form the sample frame for the study. Out of the 760 properties enumerated, 445 exhibit conversion characteristics. Kothari's (2004) formula was adopted in the determination of the sample size for the tenants, hence 196 properties were selected as the sample size for the study on which questionnaires were administered. The sample frame for the ministry staff and ESV was taken as the sample size for the study since they are few. Data collected for the study through questionnaires sought information on land/property use conversions, rental values and causative factors of use conversions. The information were later processed through the use of both descriptive and inferential statistical tools so as to give the overall evaluation of the trend in rental values caused by property use conversions. Descriptive statistical tools used for the study includes frequencies, percentages and averages. Variables from existing literatures were further used to test the perception of the respondents through the generation of weighted indices based on 5 point likert scale.

To measure the level of influences of property use conversion on rental values, structural equation model which is a more advance form of regression analysis was used to graphically present the level of influences of the independent variables (land use conversions) on the dependent variables (rental values) and build the model fit, while microsoft excel was used to depict the visual representations (Trend Model) of the before and after use conversion rental performances. The results are presented in the next section of the paper. To identify and rank the variables based on the perceptions of the respondents, a Relative Importance Index (R.I.I) was used. In calculating the R.I.I., the formula suggested by Lim & Alum and used by Dabara et al., (2017) was adopted. The formula is:

$$R.I.I. = \frac{\sum W}{A*N} = \frac{5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n_1}{5N}$$

Where;

W = weight given to each statement by the respondents ranges from 1 to 5;

n5 = strongly agreed; n4 = agreed; n3 = uncertain; n2 = disagreed; n1 = strongly disagreed

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A = Highest response integer (5); and

N = Total number of respondents.

**Table 1: Demographic Profile of Estate Surveyors**

LOCATIONS	OSOGB0	
	F	%
<b>GENDER</b>		
Male	25.0	100
<b>ACADEMIC QUALIFICATION</b>		
PhD	01.0	04.0
M.Sc / M.TECH	07.0	28.0
B.Sc / B.TECH / HND	17.0	68.0
Total	25.0	100.0
<b>PROFESSIONAL QUALIFICATION</b>		
FNIVS	02.0	08.0
ANIVS + RSV	18.0	72.0
ANIVS	05.0	20.0
Total	25.0	100.0
<b>CURRENT POSITION</b>		
Principal Partner	20.0	80.0
Partner	04.0	16.0
Senior Estate Surveyor	01.0	04.0
<b>Total</b>	<b>25.0</b>	<b>100.0</b>

Source: Field Survey (2019)

**Table 2: Questionnaires administered on Estate Surveyors and Valuers (ESV), Tenants, Ministry of Lands and Physical Planning (MLPP)**

Locations	ESV	No of ESV	MLPP	Tenants	Total (%)
OSOGB0	Full Time Practitioners	15	15	196	226
	Part Time Practitioners	05	00	00	5
	Freelance	05	00	00	05
	Questionnaire Distributed	25	15	196	236
	Questionnaire Retrieved	<b>23</b>	<b>15</b>	<b>162</b>	<b>200 (84.75)</b>

Source: Field Survey (2019)

## RESULTS AND DISCUSSION

Tables 1 and 2 present the demographic profile and the number of questionnaires administered on the respondents. All the ESV are registered with their professional body and holds not less than HND/BSc certificate for which 80% are principal partners. Table 2 shows the number of questionnaires administered on the respondents. 25 questionnaires were administered on ESV,

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15 questionnaires were administered on relevant staff of the MLPP who are on grade level 10 and above and 196 questionnaires administered on tenants. In all, a total of 236 questionnaires were administered with only 200 questionnaires representing 84.75% of the total administered questionnaires properly completed and returned for analysis. This was considered adequate for convincing analysis, as the analysis was based on the total number of questionnaires retrieved.

**Table 3: Factors influencing Property Use Conversion in Osogbo**

Conversion Factors	1	2	3	4	5	R.I.I	Ranking
Economic Factors	12	20	0	25	45	0.75	1
Demographic Factors	10	30	0	20	42	0.72	2
Environmental Attributes	15	34	0	18	40	0.71	3
Infrastructural Factors	15	35	0	17	35	0.65	4
Sociological Factors	10	46	0	16	30	0.63	5
Institutional Factors	20	50	0	12	20	0.53	6

**Source:** Field Survey (2019)

Table 3 presented the critical factors influencing property use conversion in the study area. Economic and demographic factors (R.I.I. 0.75 and 0.72) are the most critical factors influencing the conversions of residential properties to commercial uses. This might not be unconnected to the influx of businessmen into the city, cheap cost of living and among others. The study further revealed that the least critical factor influencing land use conversion is institutional factor (R.I.I 0.53). Hence, there is the need for a more effective and pragmatic institutional framework for addressing the drivers of land use conversions in the state. The findings of the study are congruent with the submission of Ankeli et al. (2019).

**Table 4: Average Annual Rental Values of Converted Residential Properties to Commercial uses in Osogbo**

Location	OSOGBO (Average)										
	Property Types			Rent for Converted Two Bedroom [N]			Rent for Converted Three Bedroom [N]			Rent for Converted Tenement Building [N]	
Year	After	Before	*Diff	After	Before	*Diff	After	Before	*Diff		
2010	63,000	52000	11,000	58,000	45,000	13,000	16,720	12,080	4,640		
2011	63,000	52000	11,000	84,000	66,000	18,000	17,440	12,600	4,840		
2012	90,000	59000	31,000	94,000	74,000	20,000	22,480	16,200	6,280		
2013	104,000	84000	20,000	102,000	78,000	24,000	22,480	16,200	6,280		
2014	104,000	84000	20,000	115,000	91,000	24,000	22,480	16,200	6,280		
2015	115,000	94000	21,000	123,000	103,000	20,000	25,100	21,680	3,420		
2016	129,000	107000	22,000	143,000	117,000	28,000	28,700	24,800	3,900		
2017	144,000	113000	31,000	168,000	129,000	39,000	36,520	30,800	5,720		
2018	150,000	119000	31,000	218,000	165,000	53,000	36,520	31,200	5,320		
2019	162,000	126000	36,000	228,000	175,000	53,000	38.520	31,600	6,920		
<b>Mean</b>	<b>84,375</b>	<b>66,625</b>	<b>23,400</b>	<b>101,563</b>	<b>78,125</b>	<b>29,200</b>	<b>19,865</b>	<b>15,674</b>	<b>5,360</b>		

**Source:** Field Survey (2019) \*Differences in average rentals of converted properties

Tables 3 shows the annual rental performances of converted purpose built residential two bedrooms, three bedrooms and tenement buildings to commercial uses in Osogbo from 2010 to 2019. The table shows the calculated arithmetic mean score and average annual rental change

or differences for before and after use conversions. From the table, significant positive performance was noticed between 2017 and 2019 for two and three bedroom properties, while there was a dip in the rental performance of converted tenement building between 2015 and 2016. The reason for the dip in rent could be attributed to the desire for larger space by space users.

The trend model as represented in figures 1, 2 and 3 below run the variables against time and further revealed that, annual rental values of after use conversions for two, three and tenement properties increases by ₦ 11,248, ₦ 17,994 and ₦ 2,553. Within the same period, rent for before use conversions only increased by ₦ 8,939, ₦ 13,739 and ₦ 2486 which shows that investment in after use conversions are more attractive, hence a factor for conversion.

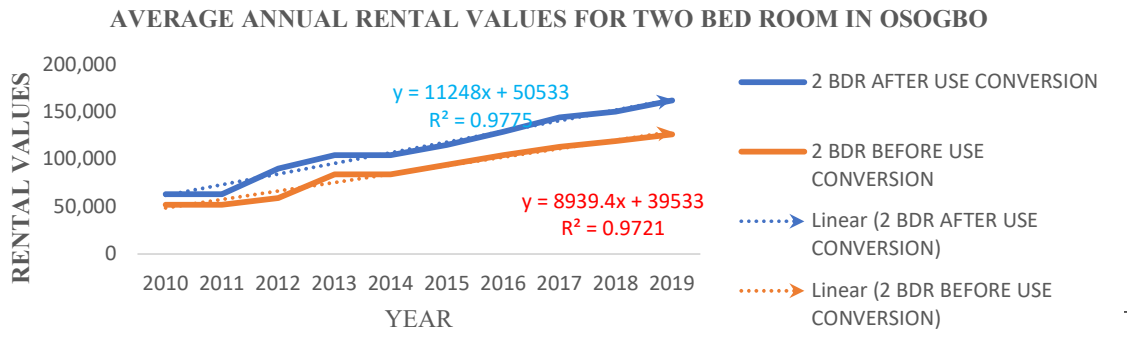


Fig 1: Average Annual Rental Trend of Two Bedroom Properties in Osogbo

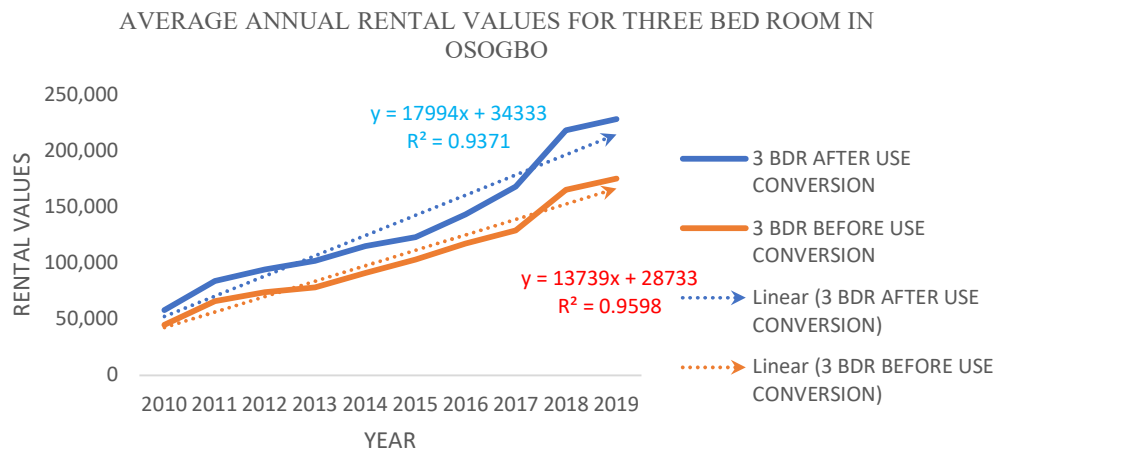


Fig 2: Average Annual Rental Trend of Three Bedroom Properties in Osogbo

AVERAGE ANNUAL RENTAL VALUES OF TENEMENT BUILDING IN OSOGBO

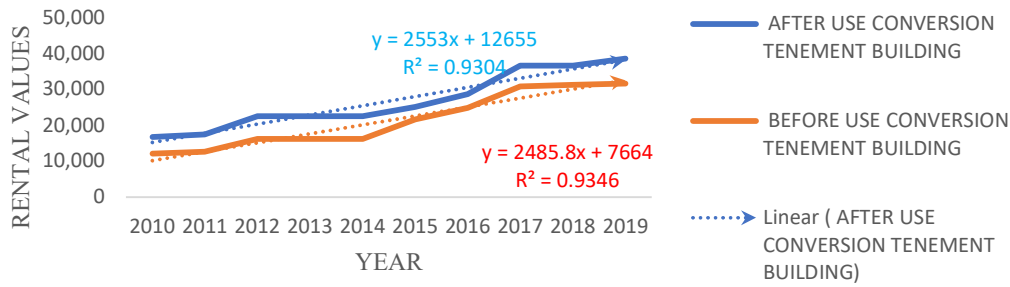


Fig 3: Average Annual Rental Trend of Tenement Building Properties in Osogbo

The regression weights in Table 5 shows the coefficient of demographic factor to Land Use Conversion which is 0.089. This indicated that the influence of a single unit increase in demographic variable contributes 0.089 unit increase in Land Use Conversion in the study area, hence it has a positive significant effect on Land Use Conversion. Increase in Economic factors by a single unit, brings about 0.361 unit increase in Land Use Conversion. Increase in Sociological factors by a single unit contributes 0.004 unit drop in Land Use Conversion.

**Table 5: Regression Weights and Significance Value**

Construct		Construct	Estimate	S.E	C.R	Label
LANCONV	<---	DEMOFAC	.089	.022	4.045	***
LANCONV	<---	ECOFAC	.361	.111	3.252	***
LANCONV	<---	SOCIOFAC	-.004	.020	-2.000	***
LANCONV	<---	ENVIATTRI	.032	.007	4.571	***
LANCONV	<---	INSTFAC	-.026	.005	-5.200	***
LANCONV	<---	INFRAFAC	.100	.045	2.222	***
Rental	<---	LANCONV	.028	.013	2.153	***
HOUSHORT	<---	Rental	1.000			
HIGOCCURATE	<---	Rental	.721	.267	2.696	***
ENVIPROB	<---	Rental	.012	.286	0.042	
URBANCRIME	<---	Rental	.044	.014	3.142	***
DEFPAY	<---	Rental	9.728	1.236	7.870	
LANDENCRO	<---	Rental	-.525	.133	-3.962	***

\*\*\*Indicates significant level

The construct used for the study are interpreted as follows:

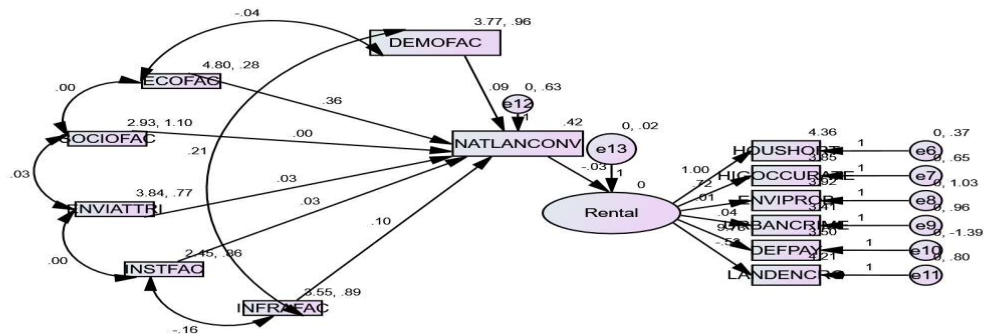
LANCONV = Land/ property Use Conversion, ENVIATTRI = Environmental Attribute  
 INSTFAC = Institution Factors, INFRAFAC = Infrastructural Factors, SE = Standard Error  
 CR = Critical Region, DEMOFAC = Demographic Factors, ECOFAC = Economic Factors,  
 SOCIOFAC = Sociological Factors

Table 6 revealed the result of the determiners which are ratio of CMIN-DF, Goodness-of-Fit Index (GFI), Normed Fit Index (NFI), Comparative Fit Index (CFI), Tucker Lewis Index (TLI) and Root Mean Square Error of Approximation (RMSEA). The required level set by Hair, *et al.*, (2006) and adopted for this paper are: GFI = (spec. > 0.90), NFI = (spec. > 0.90), CFI = (spec. > 0.90), and RMSEA = (spec. < 0.080).

**Table 6: Model Fit Summary**

Fit Statistics	Obtained	
Index Name	Index Values	Comments
Root mean Square Error of Approximation (RMSEA)	0.038	Required level achieved
Goodness of Fit Index (GFI)	0.987	Required level achieved
Tucker Lewis Index (TLI)	0.954	Required level achieved
Normed Fit Index (NFI)	0.925	Required level achieved
Relative Fit Index (RFI)	0.995	Required level achieved
Degree of freedom	59	
Chi-square	303.290	
Chi-square Significance level	0.000	Required level achieved
CMIN/DF	2.438	
PCLOSE	0.040	Required level achieved

The structural equation model in figure 4 below depicts the graphical presentation of the regression weights and their significance values in table 5 above. It shows the covariance between the variables through the double headed arrows, the estimate of error variance ‘e’ and the summaries of the proportion of variance in the dependent variable explainable by the collective sets of the predictors display as  $R^2$  (on top of box). It correlates and integrates all the factors for land use conversion constructs that provides the link from the land use conversion factors to its effect on rental values. The model indicated significant influence of land use conversions on rental with p value of 0.040 which suggested a good fitness (structural model) for the data collected and used with a corroborative value for the good model fit.



**Fig. 4: Structural model of Land Use Conversion Factors and Rental Values in Osogbo Conclusion**

The study evaluates the causes of property/land use conversions and its influence on rental vales in Osogbo, Nigeria and confirmed the restructuring of the city land use due to the steady conversions of residential buildings fronting arterial roads to commercial uses. The study further discovered that, property use conversion influences rental value performances or trend and contributed to the depletion of residential housing stock with the consequential effect of high rental regime, land use infiltration, among others. Again after use conversions rental tend to perform better and have recoupmnt potentiality than before use conversions’ rental values. In order to stabilize the rental market, the paper therefore recommend the creation of property

use conversion unit in the state ministry of lands that will monitor property use activities in the state, effective and efficient institutional framework for land use control mechanisms and incentives to residential property developers/investors.

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