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Peer-Review Model
External peer-review was done through double-blind method.

DISCOVERY
SCIENTIFIC SOCIETY

Impact of privatization of public utilities on residential property value at Ibeju-Lekki axis of Lagos state

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ABSTRACT

This study examined the impact of privatization of public utilities on residential property value at Ibeju-Lekki axis of Lagos state, with a view to providing information that could guide investment decision. Primary data utilized for the study were sourced through the use of questionnaire administered on household heads and estate surveyors and valuers at Ibeju-Lekki Axis. Multistage sampling technique was employed in selecting household heads. The study area was stratified into three residential densities (High, Middle and Low) as highlighted by Ibeju-Lekki Local Government administration. Systematic random sampling selection without replacement was employed to select one of every four identified residential areas in each density, gives 14, 15 and 9 residential areas from high, medium and low densities respectively. Data collected were analyzed using frequency distribution and multiple regressions. Result showed that that privatization of public utilities accounted for 48.8%, 69.5% and 41.5% of variation in rental value in the high, medium and low density areas respectively at R^2 of 0.488, 0.695 and 0.415. The study concluded that privatization of public utilities influences rental value with variation across the densities on the Ibeju–Lekki Axis.

1. INTRODUCTION

Privatization has emerged as a concept with many but related meaning. The concept of privatization implies the transfer of ownership of property or enterprise from a government to a privately owned entity. Adeniran and Gbadamosi (2017); Jerome (2008); Iheme (1997) defined privatization as the transfer of state-owned enterprise to the private sector. Privatization can thus be viewed as an arrangement between the public and the private sector of a given economy; a situation where there is a transition from publicly traded and owned enterprise to an enterprise privately owned. In most instances, functions previously performed exclusively by the public sector are transferred to the private sector. The concept of privatization encompasses all methods and or policies adopted by government to improve the delivery of services of public utility thereby increasing the role of market forces within the national economy.

In developed countries such as Australia, Canada, and USA, a world-wide era of privatization had picked up momentum in the last decades (Igbuzor, 2009). In these countries' economies, privatization has been identified as a method that increased profitability; returns of investment to owners, improved economic, welfare and growth (Birdalls and Neils, 2003). It is also identified as an important method essentially for provision of public utilities. In the developing countries however, the provision of public utilities are mostly financed by public fund. Studies by Aluko (2004) and Jerome (2008) showed that this arrangement was characterized by high degree of inefficiency, low or negative financial returns and high debts leading to high level of dissatisfaction. As a result of the dissatisfaction with the performance of government involvement in the provision of public utility, the need to revamp the economy thus became inevitable. One option left for the government as noted by Asaolu (2015) was to privatise public utility in a bid to ensure productivity; effectiveness and efficiency.

Public utilities are business organization wholly or partly established, owned and controlled by government to ease the task of the citizens (Asaolu 2015). These utilities include electricity distribution, water supply, waste management, road network construction and maintenance among others. Public utilities are fixed asset with long life span, monopolistic in nature, capital intensive and heterogeneous (Oyedele, Adair and McGreal, 2014). They are also known as state owned enterprises or infrastructure as well as public enterprises or services. Existing studies revealed that there is no standard categorization of public utilities. The work of Ariyo and Jerome (2008) grouped public utilities to soft and a hard public utility. Parker (2008), grouped public utilities into economic and social public utilities, Obateru (2004) categorized public utilities into physical and social utility.

According to Obateru (2004), physical utilities are man-built municipal services designed to enhance and improve the functioning of economic, domestic and its social activities within a region. The work of Famuyiwa and Babawale(2014) asserted that physical public utilities are localized; involve huge capital outlay with long lifespan and traditionally provided by the government. Examples of physical utilities include road networks, electricity services, water supply system, waste management, health services and drainage system among the important ones. Social public utilities are described as complex social networks, aimed at improving the quality of life, equity and social wellbeing of the community (Han, Yusof, Hai and Ismail, 2012). Examples include schools, primary health facilities. Further to the different classification of public utility by different authors, this study considered public utility from the opinion of Obateru (2006) where public utility was categorized based on physical and social utility. Therefore, the focus of this work is to find out the impact of privatization of physical public and social utilities on residential property value in the study area.

Olaleye (2011) opined that provision of public utility such as transportation, water, and energy resources are very important for residential property development and investment. Similarly, it has been observed that the efficiency and functionality of public utilities ease citizens' task and enhance value of residential property. In other words, in situation where there are adequate, efficient and functional public utility, residents are opened to many opportunities from ease in daily living to efficient, functional lifestyle and improved investment opportunities in residential property.

Residential property is an important sub-set of real estate industry. Residential property is a multi-dimension commodity which is more than shelter. The term is often used to describe dwelling accommodation otherwise known as house. Residential property is characterized by durability, high cost of construction, indivisibility, inelastic in supply in the short run, heterogeneous and fixed to a particular and specific location which prone its influence to factors within and outside it. These factors tend to have either positive or negative effect on residential rental value. The rental value of a property is the cash payment passing between the lease and lessor under a transparent informative market conditions at a specific time without duress on residential property.

Residential property value, in the field of estate management connotes the power of a property to command other properties in exchange for cash (Aluko, 1994). The value attached to residential property in the market is determined by forces of demand and supply. Primarily the concern of a valuer is on economic and market value of a commodity in the market. The real estate market as defined by Olusegun (2000) as the medium where bundle of rights are being exchanged for cash. In the market, activities exist between land owners, land users, estate surveyors and other professionals in the real estate sub sector of the economy. Satisfaction rate, scarcity of a particular design and desire of residents all among other factors influence residential property value in the market (Ogunba, 2008; Olusegun, 2010; Bello and Ajayi, 2010).

Studies on the effect of privatization of public utilities in Nigeria have mainly focused on the economic, growth and development of the nation. Researches on impact of privatization of public utilities on residential property value are still very scanty. This study therefore seeks to access the impact of privatization on residential property value at Ibeju- Lekki local government. The privatization exercise commenced in 2008 along with the Mega City Project of Lagos State privatization program. Among privatized public utilities were road construction and maintenance, water supply, solid waste collection and disposal, electricity distribution, security provision and telecommunication.

Public utilities are foundational to social growth and economic development of any nation (Oyedele *et al.* 2014*)*. These public utilities are predominately provided and fund by government (Ayodele, 1998; Aluko, 2004 and Adeyemo, 2005). However, according to World Bank (2004b), provisions of adequate public utility challenges include inadequate fund, lack of transparency and political interferences from politicians among others. All these problems influence residential rental value.Studies on factors influencing residential property value include; Famuyiwa and Babawale (2012), Feng and Humhrey (2012) and Adegoke (2014) these studies focused on internal and external factors influencing residential rental value. The work of Bello and Bello (2008) examined the willingness of residents to pay for better environmental public utilities at Akure. The study concluded that income, distance away from dump site and regularity of electric supply were factors influencing household willingness to pay for additional environmental improvement. However, the work focused on willingness to pay for public utility being funded by government without analyzing its implication on residential rental value. This study concentrated on public utilities which were funded and maintained by private sector and its effect on rental value at the study area. Also, there is need to update the currency of this information in literature on effect of privatized public utilities on residential property rental value.

Adegoke (2014) revealed that critical factors influencing residential property value at different residential densities of Ibadan where influenced by physical characteristics of the property. These physical identified factors include the number of bathrooms, living rooms, number of toilet and presence of burglar alarm among others all these identified factors have positive relationship on rental value at the study area. Famuyiwa and Babawale (2012) poised that the presence of public water infrastructure at Bourdillonn Road, Ikoyi, a metropolis of Lagos State, influenced property value positively. The above researchers have identified both internal and external factors influencing residential property value of public fund utilities. Hence, this study examined the impact of privatized public utilities on residential rental property value at Ibeju-Lekki axis.

Studies have been conducted on the importance of public utilities privatization in developed and developing countries. Examples are the works of Newberry and Pollitt (1997), Nnamdi and Nkwede (2014) among others. According to Newberry and Pollitt (1997), privatization of British Electricity Corporation led to economic reduction of government spending yearly. Nnamdi and Nkwede (2014) established managerial challenges of public enterprises using Nigeria Railway Corporation and Nigeria Postal Service as examples. The authors identified the challenges to include inadequate fund, political factor, inadequate staffs, and administrative bottleneck among others. Based on these managerial problems confronting the system, the study recommended privatization of Nigeria Railway Corporation and Nigeria Postal Service. These studies, Newberry and Pollitt (1997), Nnamdi and Nkwede (2014) focused on separate privatized public utility without considering the effect on residential property value; thus, this study established the effect of privatized public utilities on residential property.

Studies that established positive factors influencing residential property value include the work of Liu and Hite (2013), Famuyiwa and Otegbulu (2012), Famuyiwa and Babawale (2014) among others. Liu and Hite (2013) in their work measured the effect of green space on residential value. The study revealed that green space amenities around selected single houses in Delaware, Ohio, was positive only to high and middle priced houses, but not significant to bottom level home prices. The study was specific on single houses; this study worked on all types of residential property on the high, medium and low residential densities on the study area.

Similarly the work of Famuyiwa and Babawale (2014) examined the significance of specific infrastructure on detached house value in Lekki (Scheme 1) of Lagos State. The specific infrastructures were electricity, road and street lights. The study revealed that these basic physical infrastructures significantly influenced value of detached residential property positively in the study area. The study was not specific on provider of identified physical infrastructure; hence this work will focus on privately fund public utilities within different residential densities and on different types of residential dwellings at Ibeju- Lekki axis.

Studies that identified negative externalities include the work of Vor and de Groot (2009), Ajibola, Izunwane and Ogungbemi (2012) and Worokekoro and Urusheyi (2014). The study of Vor and de Groot (2009) carried out in Netherlands established that distance to industrial sites had a negative effect on the value of residential property. In Nigeria, Ajibola *et al,* (2012) assessed effect of flood on residential property at Lekki Phase 1 in Lagos. The study established that rental values of properties in flooded areas were lower than values of those in non - flooded area. These studies focused on natural effect and environmental composition of residential property on value. Hence, this study worked on effect of privatization public utilities on residential property value at Ibeju- Lekki Axis of Lagos State.

Jeong and Kim (2009); Singh and Komal (2009); Iroham, Oluwunmi, Simon and Akerele (2014), in their studies using trend, established that change over a period of time created a statistical noticeable pattern on real estate portfolio. Jenog *et al* (2009), in their study used time series analysis and shock – response analysis of the vector auto regression (VAR) mode to established impact of trend in retail rents in South Korea, the data for the research was sourced from two Korean Banks and Korea Statistic office from January 1995 to February 2008. The work established that retail rent had a positive relationship with office rents property

management, expenses, consumer price index and house deposit-basis leave value but negative relationship with interest. The study source of data was secondary, this study adopted primary and secondary source of data for the research.

Similarly in Nigeria, Iroham *et al* (2014) while examining trend in rental values in commercial properties between 2006 - 2011 along Oyemekun road, Akure, using primary data from estate surveyors and valuers the research concluded that converted offices is most predominant and shopping mall is most professionally managed. The research was primarily on commercial property. This study assessed effect of privatization on residential property value at Ibeju- Lekki before and during privatization.

2. METHODOLOGY

The study adopts both primary (questionnaire design) and secondary sources of data (records from Ibeju-Lekki government office which showed that there were 153 residential areas on the axis from which thirty–eight residential areas were selected for study. The records futures revealed the number of residential buildings on the selected densities). Primary data utilized for the study were sourced through the use of questionnaire administered on household heads and estate surveyors and valuers at Ibeju-Lekki Axis. Multistage sampling technique was employed in selecting household heads. The study area was stratified into three residential densities (High, Middle and Low) as highlighted by Ibeju-Lekki Local Government administration. Systematic random sampling selection without replacement was employed to select one of every four identified residential areas in each density, gives 14, 15 and 9 residential areas from high, medium and low densities respectively.

Multiple regression was employed for studying relationship on a straight line among two or more variables. Residential properties value (2003 to 2007), (2008 to 2015) and (2003 to 2015) were summed together as dependent variables (Y) while the privatized public utilities were independent variables (Water supply (X1), Telecommunications (X2), Street light (X3), Road (X4), Waste disposal (X5) and Postal services (X6). all (X1, X2,….X6) were summed as independent variables to predict residential properties value. Multiple Regressions measured the β's in the equation Regression equation: RPV(Y) = (Water supply*X1) + (Street light*X2)+ (Telecommunication*X3) + (Road network*X4) + (Waste disposal*X5) + (Postal services*X6) + Constant

$$Y = \beta o + \beta_1 X_{1} + \beta_2 X_2 + \beta_2 X_2 + \in \ ....\beta_P X_{pq+} \in$$

Y is dependent variable, property value

X is independent variables, privatized public utility

β Is the unknown regression coefficient

$\in$ is the error term.

3. RESULTS

Response Rate According to Residential Density

The distribution of the questionnaire administered and retrieved across the residential densities in the study area is presented in Table 1.

Table 1: Questionnaire Distribution and Response Rate

Residential Density	Actual Sample	Response Rate	% Achieved
High	171	111	64.9%
Medium	87	77	88.5%
Low	27	23	85.2%
Total	285	211	74.0%

Source Author's Field Survey (2017)

A total of 285 questionnaires were distributed among the residential densities in the study area. The questionnaires were distributed in the following proportion: 171, 87, and 27 for high, medium and low residential density. However, a total of 211 questionnaires (High 111, Medium 77 and Low 23) were retrieved. Therefore, 74.0% retrieval rate was recorded for the data collection process.

Trend of Residential Rental Value

Presented in Table 2 is the residential rental value between year 2003 and 2007. Findings established that block of 2bedroom flat have a rental value of 150,000 in the year 2003 and 2004, while the value increase to 180,000 in the year 2005 and it stay at 180,000 till

year 2007. The trend continued for every other property types, 3 bedrooms flat were at 200,000 and increased 250,000 in years 2005 till 2007. Similarly, 3 and 5 bedrooms duplexes were at 600,000 and 750,000 in the year 2003 and increased to 800,000 and 950,000 respectively in the year 2005 through 2007. This is an indication that rental values in the pre-privatization era maintain between two to three yearly increments, which is in conformation with the rent edict of the state. In a section of the edict it is clearly stated that rent review for all categories of housing should take effect biannually, meaning that no landlord can increase annually.

Table 2: Residential Rental Value during Pre-privatization (2003 to 2007)

HOUSING TYPES	PROPERTIES VALUE				
	YR 2003	YR 2004	YR 2005	YR 2006	YR 2007
Block of Flat (2 bedroom)	150,000	150,000	180,000	180,000	180,000
Block of Flat (3 bedroom)	200,000	200,000	250,000	250,000	250,000
Self-Contained	80,000	80,000	100,000	100,000	100,000
Duplex (3 bedroom)	600,000	600,000	800,000	800,000	800,000
Duplex (5 bedroom)	750,000	750,000	950,000	950,000	950,000
Bungalow (3 bedroom)	200,000	200,000	300,000	300,000	300,000
Bungalow (5 bedroom)	350,000	350,000	450,000	450,000	450,000
Detached (3 bedroom)	600,000	600,000	750,000	750,000	750,000
Detached (5 bedroom)	800,000	800,000	850,000	850,000	850,000
Semi Detached (3 bedroom)	450,000	450,000	500,000	500,000	500,000
Semi Detached (5 bedroom)	600,000	600,000	700,000	700,000	700,000

Author's Field Survey (2017)

Findings established in Table 3 revealed that between year 2008 and 2015 the rental value of a block of flat 2bedrooms increased from 200,000 to 500,000 in the following proportion: 200,000 to 250,000 in 2009, 250,000 to 350,000 in 2011, 350,000 to 450,000 in the year 2013 and finally 450,000to 500,000 in the year 2015. Findings further revealed that 3bedrooms duplex increased from 1,000,000 to 2,500,000 between years 2008 to 2015 in the following proportion: 1,000,000 in 2008, 1,500,000 in 2010, 2,000,000 in 2012, and 2,500,000 in 2015.

This is an indication that there is uniformity in the trend of increase in rental value for residential property over the years of the post-privatization era. It was observe in the analysis that there is a constant trend of every two years of increment in value. Thus, rent of residential properties attracts an increased value biannually in Ibeju-Lekki (See Fig. 1.).

Table 3: Residential Rental Value during Post-privatization Era (2008 to 2015)

HOUSING TYPES	PROPERTIES VALUE							
	Yr 2008	Yr 2009	Yr 2010	Yr 2011	Yr 2012	Yr 2013	Yr 2014	Yr 2015
Flat (2 bedroom)	200,000	250,000	250,000	350,000	350,000	450,000	450,000	500,000
Flat (3 bedroom)	300,000	300,000	450,000	450,000	600,000	750,000	750,000	750,000
Self-Contained	150,000	150,000	180,000	180,000	250,000	250,000	250,000	250,000
Duplex (3 bedroom)	1,000,000	1,000,000	1,500,000	1,500,000	2,000,000	2,000,000	2,000,000	2,500,000
Duplex (5 bedroom)	1,200,000	1,200,000	1,800,000	1,800,000	2,500,000	2,500,000	2,500,000	3,000,000
Bungalow(3 bedroom)	550,000	550,000	750,000	750,000	900,000	900,000	1,200,000	1,200,000
Bungalow (5 bedroom)	750,000	750,000	900,000	900,000	1,200,000	1,200,000	1,800,000	1,800,000
Detached (3 bedroom.)	1,500,000	1,500,000	1,800,000	2,000,000	2,000,000	2,500,000	2,000,000	3,500,000
Detached (5 bedroom.)	1,800,000	1,800,000	2,000,000	2,500,000	2,500,000	2,000,000	3,000,000	3,000,000
Semi-Detached(3 bedroom.)	800,000	800,000	1,000,000	1,000,000	1,800,000	1,800,000	1,800,000	2,000,000
Semi-Detached(5 bedroom.)	900,000	900,000	1,500,000	1,500,000	2,000,000	2,000,000	2,000,000	2,500,000

Source Author's Field Survey (2017)

The implication of the findings is that there is little distinct deference in the rate and pattern of increase of the rental value during pre-privatization and post-privatization era in the study area (See Figure 1). The study established an upward increased in the rental value on a biannual basis, falling in line with the rent control edict that stipulate a minimum of two years before any landlord can review their rents, which in turns affect the entire value of the properties. Therefore, we can say that the privatization of public utilities in the study area has little effects on the rental values of residential properties.
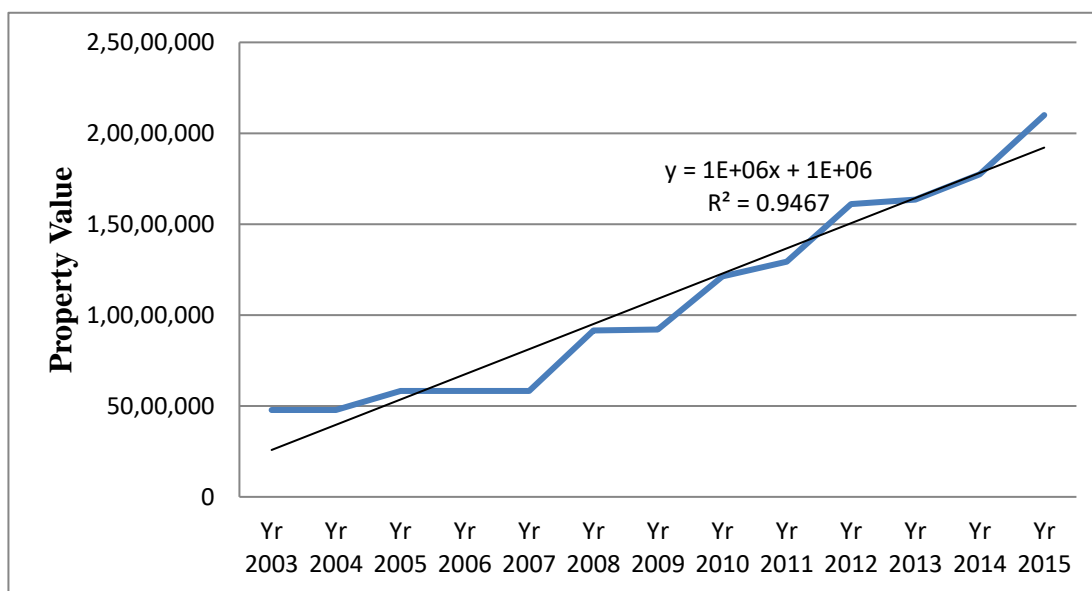

Figure 1: Upward Increased in Property value of Residential Properties 2003 to 2015
Source Authors' Field Survey (2017)

Impact of Privatized Public Utilities on Residential Value

This section examines the impact of the privatized public utilities on residential properties in Ibeju Lekki area of Lagos State. Multiple regression analysis was employed to analyze the data collected. This section presents the multiple regression analysis relating residential rental value during pre-privatization 2003- 2007, post privatization 2007 -2015 and both era 2003 -2015 across the three residential densities in the study area. The rental values were summed were summed together as dependent variables (Y), while the privatized public utilities were independent variables (Water supply (X_1), Telecommunications (X_2), Street light (X_3), Road (X_4), Waste disposal (X_5) and Postal services (X_6). all $(X_1, X_2,….X_6)$ summed as independent variables to predict residential properties value.

The findings on the high density as presented in Table 4.24 revealed that the multiple regression model in which the six predictors produced ($R^2 = 0.465$, F = 0.580, $p \leq 0.738$[b]), ($R^2 = 0.495$, F = 0.654, $p \leq 0.694$[b]), and ($R^2 = 0.488$, F = 0.637, $p \leq 0.705$[b]) for pre privatization, post privatization and both eras respectively. The regression (R = 0.682[a]), (R = 0.704[a]) and (R = 0.699[a]) for the three era indicated that there exists a fairly strong correlation between the residential properties value and privatized public utilities in the study area.

Table 4: Model Summary for High Density

Model	Pre Privatization	Post Privatization	Both Era
R	0.682[a]	0.704[a]	0.699[a]
R Square	0.465	0.495	0.488
R Square (Change)	0.000	0.030	-0.007
Adjusted R Square	-0.337	-0.262	-0.279
Std. Error of the Estimate	1605037.492	6632867.996	8217121.369
F- statistic	0.580	0.654	0.637
P	0.738[b]	0.694[b]	0.705[b]

Source Author's Field Survey (2017)

Pre Privatization: RPV(Y)= 20810491.368 - 2456560.425x_1 - 1538565.737x_2 - 1008220.452x_3 - 954050.465 x_4 + 2789495.352 x_5 -1029003.984x_6

Post Privatization: RPV(Y)= 93946693.227 **-** 9973147.410x_1 **-** 7347490.040x_2 -

4235219.124x_3 - 4616254.980X_4 **+** 11867450.199x_5 **-**5280756.972 x_6

Both Era: RPV(Y)= 114757184.595 **-** 12429707.835x_1 **-** 8886055.777x_2 **-** 5243439.575x_3 **–**

5570305.445x_4 + 14656945.551x_5 **-**6309760.956 x_6**(See Table 4)**

The coefficients of multiple determinations for pre privatization 0.465, 0.495 and 0.488 meaning that the public utilities before privatization explained 46.5% of the variation in residential properties value *(y)*. Whereas, the public utilities after privatization explained 49.5% variation in residential properties value, the percentage change in the variance explained is 3.0%. Therefore, privatization of public utilities in the high density of Ibeju Lekki has little impacts on the residential rental value.

Table 5: Coefficients[a] for High Density

Model	Pre Privatization		Post Privatization		Both Era	
	Coefficients	T	Coefficients	T	Coefficients	T
(Constant)	20810491.368	1.618	93946693.227	1.768	114757184.595	1.743
Water supply	-2456560.425	-1.468	-9973147.410	-1.443	-12429707.835	-1.451
Street light	-1538565.737	-.787	-7347490.040	-.910	-8886055.777	-.888
Telecommunications	-1008220.452	-.776	-4235219.124	-.788	-5243439.575	-.788
Road Network	-954050.465	-.709	-4616254.980	-.830	-5570305.445	-.808
Waste disposal	2789495.352	1.125	11867450.199	1.159	14656945.551	1.155
Postal services	-1029003.984	-.960	-5280756.972	-1.192	-6309760.956	-1.150

Dependent Variable: Residential Property value (Pre-privatization, Post-privatization and Both era)

The findings on the medium density area as presented in Table 4.26, shows the multiple regression model in which the six predictors produced (R^2 = 0.787, F = 2.462, $p \leq 0.201^b$), (R^2 = 0.678, F = 1.402, $p \leq 0.388^b$), and (R^2 = 0.698, F =1.542, $p \leq 0.351^b$) for pre privatization, post privatization and both eras respectively. The regression (R = 0.887[a]), (R = 0.823[a]) and (R = 0.836[a]) for the three era indicated that there exists a very strong correlation between the residential rental value and privatized public utilities in the study area.

Table 6: Model Summary for Medium Density

Model	Pre Privatization	Post Privatization	Both Era
R	0.887[a]	0.823[a]	0.836[a]
R Square	0.787	0.678	0.698
R Square (Change)	0.000	-0.109	-0.020
Adjusted R Square	0.467	0.194	0.245
Std. Error of the Estimate	1013283.990	5300393.382	6311622.700
F- statistic	2.462	1.402	1.542
P	0.201[b]	0.388[b]	0.351[b]

Source Author's Field Survey (2017)

Pre Privatization: RPV(Y)= 3987222.222- 2075000.000x_1 - 4421111.111x_2 -

1126111.111x_3 + 3278333.333x_4 + 1404444.444x_5 -1977222.222 x_6

Post Privatization: RPV(Y)= 14634666.667+6950000.000x_1 **-** 16545333.333x_2 -

3276333.333x_3 + 9679000.000x_4 + 4695333.333x_5 **-**3142666.667x_6

Both Era: RPV(Y)= 18621888.889 + 9025000.000x_1 **-** 20966444.444x_2 **-** 4402444.444x_3 +

12957333.333x_4 + 6099777.778x_5 **-** 5119888.889x_6**(See Table 6)**

The coefficients of multiple determinations are 0.787, 0.678 and 0.698 meaning that the public utilities before privatization explained 78.7% of the variation in residential properties value *(y)*. Whereas, the public utilities after privatization explained 67.8% variation in residential rental value, the percentage change in the variance explained is -10.9%. This is an indication that residential rental value in pre privatization is slightly higher than post privatization era; this could be associated to the state of services

rendered and the additional cost attached to the services. Privatization of public utilities in the medium density area of Ibeju Lekki has little downward impacts on the residential rental value.

Table 7: Coefficients[a] for Medium Density

Model	Pre Privatization		Post Privatization		Both Era	
	Coefficients	t	Coefficients	T	Coefficients	T
(Constant)	3987222.222	2.478	14634666.667	1.739	18621888.889	1.858
Water supply	2075000.000	1.672	6950000.000	1.071	9025000.000	1.168
Street light	-4421111.111	-2.456	-16545333.333	-1.757	-20966444.444	-1.870
Telecommunications	-1126111.111	-1.864	-3276333.333	-1.037	-4402444.444	-1.170
Road Network	3278333.333	2.181	9679000.000	1.231	12957333.333	1.384
Waste disposal	1404444.444	1.982	4695333.333	1.267	6099777.778	1.382
Postal services	-1977222.222	-1.229	-3142666.667	-.373	-5119888.889	-.511

Dependent Variable: Residential Property value (Pre-privatization, Post-privatization and Both era)

The findings on the low density area as presented in Table 4.28 revealed that the multiple regression model in which the six predictors produced ($R^2 = 0.422$, F = 0.729, $p \leq 0.631$[b]), ($R^2 = 0.415$, F =0.708, $p \leq 0.643$[b]), and ($R^2 = 0.415$, F =0.711, $p \leq 0.642$[b]) for pre privatization, post privatization and both eras respectively. The regression (R = 0.649[a]), (R = 0.644[a]) and (R = 0.645[a]) for the three era indicated that there exists a moderately strong correlation between the residential rental value and privatized public utilities in the study area.

Table 8: Model Summary for Low Density

Model	Pre Privatization	Post Privatization	Both Era
R	0.649[a]	0.644[a]	0.645[a]
R Square	0.422	0.415	0.415
R Square (Change)	0.000	-0.007	0.000
Adjusted R Square	-0.157	-0.171	-0.169
Std. Error of the Estimate	1493049.656	6389220.329	7856746.000
F- statistic	0.729	0.708	0.711
P	0.631[b]	0.643[b]	0.642[b]

Source Author's Field Survey (2017)

Pre Privatization: RPV(Y)= -1996129.032+-1181899.642x_1+211612.903x_3+

1687921.147x_4 + 567849.462x_5-203476.703x_6

Post Privatization: RPV(Y)= -9360483.871-5415179.211x_1+ 458548.387x_3 +

9124426.523x_4 + 1300268.817x_5-686648.746x_6

Both Era: RPV(Y)= -11356612.903-6597078.853x_1+ 670161.290x_3+10812347.670x_4 +

1868118.280x_5-890125.448x_6**(See Table 8)**

Table 9: Coefficients[a] for Low Density

Model	Pre Privatization		Post Privatization		Both Era	
	Coefficients	T	Coefficients	t	Coefficients	T
(Constant)	-1996129.032	-.397	-9360483.871	-.435	-11356612.903	-.429
Water supply	-1181899.642	-.708	-5415179.211	-.758	-6597078.853	-.750
Street lighting	211612.903	.222	458548.387	.113	670161.290	.134
Road Network	1687921.147	.927	9124426.523	1.171	10812347.670	1.128
Waste disposal	567849.462	.825	1300268.817	.442	1868118.280	.516
Postal services	-203476.703	-.346	-686648.746	-.273	-890125.448	-.288

Dependent Variable: Residential Rental value (Pre-privatization, Post-privatization and Both era)

The coefficients of multiple determinations are 0.422, 0.415 and 0.415 meaning that the public utilities before privatization explained 42.2% of the variation in residential rental value *(y)*. Whereas, the public utilities after privatization explained 41.5% variation in residential properties value, the percentage change in the variance explained is -0.7%. Therefore we can say that privatization of public utilities in the low density area of Ibeju Lekki has a moderate impact on the residential rental value.

The implication of the findings is that the coefficients of multiple determinations produced for high and low density are below 50% while that of medium density are above 50%, meaning that the impacts of privatization of public utilities on residential rental in the medium density is much more than the high and the low density area.

Impact of Privatized Public Utility on Residential Property value

The findings on the high density area as presented in Tables 4 and 5 revealed that the multiple regression model in which the six predictors produced (R^2 = 0.465, F = 0.580, $p \leq 0.738^b$), (R^2 = 0.495, F = 0.654, $p \leq 0.694^b$), and (R^2 = 0.488, F = 0.637, $p \leq 0.705^b$) for pre privatization, post privatization and both eras respectively. The regression (R = 0.682^a), (R = 0.704^a) and (R = 0.699^a) for the three era indicated that there exists a fairly strong correlation between the residential rental value and privatized public utilities in the study area. This established that privatization of public utilities in the high density area of Ibeju Lekki had little impacts on the residential rental value.

The findings on the medium density area as presented in Tables 4.26 and 4.27 revealed that the multiple regression model in which the six predictors produced (R^2 = 0.787, F = 2.462, $p \leq 0.201^b$), (R^2 = 0.678, F = 1.402, $p \leq 0.388^b$), and (R^2 = 0.698, F =1.542, $p \leq 0.351^b$) for pre privatization, post privatization and both eras respectively. The regression (R = 0.887^a), (R = 0.823^a) and (R = 0.836^a) for the three era indicated that there exists a very strong correlation between the residential rental value and privatized public utilities in the study area. This is an indication that residential rental value in pre privatization is slightly higher than post privatization era; this could be associated to the state of services rendered and the additional cost attached to the services. It was established that privatization of public utilities in the medium density area of Ibeju Lekki has little downward impacts on the residential rental value.

The findings on the low density area as presented in Tables 4.28 and 4.29 revealed that the multiple regression model in which the six predictors produced (R^2 = 0.422, F = 0.729, $p \leq 0.631^b$), (R^2 = 0.415, F =0.708, $p \leq 0.643^b$), and (R^2 = 0.415, F =0.711, $p \leq 0.642^b$) for pre privatization, post privatization and both eras respectively. The regression (R = 0.649^a), (R = 0.644^a) and (R = 0.645^a) for the three era indicated that there exists a moderately strong correlation between the residential rental value and privatized public utilities in the study area. Privatization of public utilities in the low density area of Ibeju Lekki has a moderate impact on the residential rental value.

4. CONCLUSION

This empirical study established that privatized public utilities that were identified on the study had a positive influence on rental value. Hence, an increase of residential properties and rental value was felt as a result of the impact of the privatization of the public utilities. This was established by the results of Multiple Regression Analysis that produce the coefficient of multiple determination R2 = 48.8%, 69.5% and 41.5% variation in rental values for High, Medium and low density respectively. This implies that the provision of public utility is important for promoting returns on real estate investment.

Data and materials availability

All data associated with this study are present in the paper.

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