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Examination of The Impacts of Road Rehabilitation On Real Estate Values in Owerri Metropolis, Imo State (2010-2020)

Ogbonna, Chinonso Ezenna [1] and [*] Onyejiaka, Joseph Chukwudi [2]
[*]Corresponding Author: cj.onyejiaka@unizik.edu.ng
[1,2]Department of Estate Management, Nnamdi Azikiwe University, Awka

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ABSTRACT: *Transportation's most significant impact on land development occurs when access is provided to land, as increased access to land raises its potential for development. Since 2010, Owerri Metropolis has witnessed unprecedented development within the socio-economic and political life of the state through road rehabilitation projects. Development and rehabilitation of road is essentially important to real estate activities, and the real estate market has experienced quite a number of developments as a result of the road infrastructure and rehabilitation going on over the years as many roads have been rehabilitated to solve the problem of traffic congestion in Owerri Metropolis. It is presumed by the researcher that the effect of road rehabilitation on the surrounding area is adding value to real estate. This study therefore examined road rehabilitation and its impacts on real estate values in Owerri Metropolis, Imo State. The study focused extensively on the road rehabilitation projects in Owerri Metropolis from 2010 to 2020 with a view to establishing how the residents as well as real estate values has been affected positively and negatively over the years. The population of the study consists of107 Estate Surveyors and Valuers, 39Real Estate Developers and 23,293 real property owners in Owerri Metropolis, consisting of Owerri Municipal, Owerri West and Owerri North LGAs, Imo State. The research adopted the survey method using structured questionnaires, personal interviews and observations as data collection instruments, with107 Estate Surveyors and Valuers, 39 Real Estate Developers and673 property owners constituting the sample size. The data collected were subjected to descriptive and inferential statistical tests. The hypotheses were tested using One-Sample T-Test. The study revealed that the process of road rehabilitation poses numerous challenges, and these challenges were significant enough that they exert negative influences on the residents at the time of execution. However, on completion, the benefits were more significant than the challenges that they go a long way to exert great positive influence on the values of real estate in the neighborhood. The study concluded by recommending that the rehabilitation of more roads will continue to present more benefits to the residents, and by so doing will continue to enhance real estate values in Owerri Metropolis, Imo State.*

KEYWORDS: examination, road rehabilitation, real estate values, Owerri metropolis, Imo State

INTRODUCTION

According to Duru and Anyanwu (2014), urbanization processes in most developing Nations including Nigeria, is a consequence of push and pull factors in the rural and the urban areas respectively. Urbanization in these Nations is characterized by the following: acute shortage of housing, deteriorating living conditions and physical expansion of the city into the fringes. Oftentimes the agricultural lands at the urban fringes are sacrificed to accommodate the ever-increasing population moving into the area for greener pasture. This has been the case in Owerri Metropolis as the city continues to expand and agricultural lands are being sacrificed on a daily basis so as to increase housing supply for the ever-increasing population. Transportation infrastructural development is undertaken to improve accessibility at a regional or urban level and to relieve traffic congestion in these areas (Afolabi, Oyetubo and Oluwaji, 2018). The importance of transport infrastructure to a nation cannot be overemphasized as efficient transport infrastructural facilities act as catalysts for development. As a matter of fact, the sustainability of an urban area has to do with the ease of commuting within the various areas and the primary purpose of any road, whether urban or rural, is faster conveyance in travel comfort and safety for all road users including residents, and this depends on the level of road network within the city (Supul, 2018).

Inadequate provision of transport infrastructure and services provide a basis for explaining the incidence of poverty across various Nigerian communities in both urban and rural areas. There is therefore cause for concern while considering the transport infrastructure base in Nigeria today which compares unfavorably with those of several African nations both in terms of quality and service coverage, in particular, the rural areas, where the bulk of the population resides, are largely deprived of basic pieces of transport infrastructure (Olomola, 2003). Thus, there is a need for urgent policy measures to address the prevailing travel and transport problems in Owerri Metropolis and other urban areas.

Road rehabilitation, an important stage and inevitable occurrence in urban socioeconomic development, is observed in terms of its components of accessibility, connectivity, traffic density compatibility and density of a particular road. Good road rehabilitation projects clearly result in poverty reduction by improving the living conditions of people by the opportunities available for trade and employment (Huang, 1994). This has been evident in Owerri Metropolis as infrastructural development and economic conditions keeps improving, thereby enhancing the living conditions of people within the neighbourhood. In every country, road rehabilitation projects or developments have impacts on other sectors such as works, housing and transport, and as the population increases, the government and private-sector players have attempted to meet the infrastructural needs of the residents. Road rehabilitation takes so much time especially when the government refuses to supply funds intermittently, such projects at times span for years making

users and residents anticipate its completion. According to Ogboru (2009) during this phase, accessibility is hindered both for residential and commercial property owners even road users have to lay off the road for a while. It becomes very stressful for residents to get to their place of work every day, also flooding can occur as a result of the excavated drainages which accompanies the construction. Real estate in Imo State which provides an important platform for residential, office, hospital, road expansion and good market network is not left out, as the incidence of road rehabilitation also exerts some implications on the real estate market. Therefore, it is obvious that the efficiency of economic activities as well as the performance of real estate markets in Owerri has possible links to the availability, standard and state of roads provided within it, and it is on this note that this study strives to examine the impacts of road rehabilitation on real estate values in Owerri Metropolis, Imo State.

The Problem

Real estate in Imo State provides an important platform for residential, commercial and office accommodations, hospitals, road expansion and good market network. However, inadequacy of roads and poor road finishing is a significant inhibitor to urbanization and commercial activities. It is a level of serious bottleneck taking place due to lack of road construction and expansion leading to poor communication, constrained network, and poor condition of commercial activities as it hinders movement of goods and services over a geographical location. Road rehabilitation projects undertaken by the government to rescue the populace from the blight of incessant traffic congestion is assuredly going to prove productive in the future, as they are important criteria for the physical and economic development of towns and cities all over the world. Business activities in Owerri have been confirmed to depend on transport and transport infrastructure, with movement of goods and services from place to place becoming a vital and inseparable aspect of global and urban economic survival. In Owerri, Imo State, the trend in road rehabilitation projects was earlier concentrated within the Old Owerri, and over the years, the State Capital has witnessed tremendous improvements in terms of road infrastructural provision with the attendant rapid influx of population. Since 2011, the city has been witnessing tremendous road infrastructure delivery and rehabilitation as the government of Imo State embarked upon the development of more roads in Owerri Metropolis to increase connectivity and accessibility within and around the city. The provision of these roads has reduced the rate of traffic congestion within and around Control Post, Owerri. Some renown expanded roads include Wetheral Road, Okigwe Road, Orlu Road, Port Harcourt Road, Jacob Zuma Road, Nekede Road, Spibat Road, Aba Road, Ochiedike Road, Akachi Road that links Wetheral Road to Aba Road, Dee Sam Mbakwe Road that links Wetheral Road to Freedom Square, Warehouse Junction, as well as the construction of the 1st, 2nd, 3rd and 4th Inland Roads, to mention but a few. These numerous road rehabilitation projects have had various positive implications on the residents ranging from reduced transportation costs, increased access to markets, access to new employment centers, employment of local workers on the project itself, better access to health care and other social services, and strengthening of local economies, as well as negative implications ranging from inconveniences caused by detours, displacement of

residents and businesses, local road closures, dust, heavy equipment traffic on existing roads, safety hazards, interference with emergency services, increased noise pollution and aesthetic impacts. Furthermore, given that rapid and continued rise in housing and land prices are expected in cities with road improvements and rapid economic and population growth, there is an impression that the real estate market, especially residential and commercial properties within Owerri Metropolis may have been influenced by the road rehabilitation projects either positively or negatively. Hence, this work examined the impacts of road rehabilitation on real estate values in Owerri Metropolis, Imo State.

Aim and Objectives of the Research

Aim

The aim of this study is to examine the impacts of road rehabilitation on real estate values in Owerri Metropolis, Imo State between 2010 to 2020.

Objectives

The aim was achieved by addressing the following objectives:

1. To identify the road rehabilitation projects in Owerri Metropolis from 2010 to 2020.
2. To determine the advantages and disadvantages of road rehabilitation in Owerri Metropolis.
3. To identify the impacts of road rehabilitation on land values in Owerri Metropolis.
4. To ascertain the challenges faced by residents during road rehabilitation exercises in Owerri Metropolis.

Research Questions

The researcher has posed the following research questions.

1. What are the road rehabilitation projects in Owerri Metropolis from 2010 to 2020?
2. What are the advantages and disadvantages of road rehabilitation in Owerri Metropolis?
3. What are the impacts of road rehabilitation on land values in Owerri Metropolis?
4. Are there challenges faced by residents during road rehabilitation exercises in Owerri Metropolis?

Research Hypotheses

The hypotheses for this study are:

H_{01}: From 2010 to 2020, there has been no significant benefit of road rehabilitation in Owerri Metropolis to the residents of Owerri Metropolis.

H_{02}: There is no relationship between road rehabilitation and the values of real estate in the study area from 2010 to 2020.

RELEVANT LITERATURE

Transportation and Property Value

Transportation and property are important in physical and economic development of towns and cities all over the world. Property and land values tend to increase in areas with expanding transportation networks, and increase less rapidly in areas without such improvements (Oni, 2009). Stevenson (1995) study identified the social impact of major roads and its significant potential positive and negative changes in peoples' cultural traditions and lifestyles, their physical and psychological health, their families, their institutions and their community. He concluded that the impacts of road projects on people and their communities are important and are increasingly having greater influence on the route alignment decisions and roadway design. Akee (2006) examined the impact of road construction on rural labor force outcomes in a developing country and discovered that households respond quickly to the new employment opportunity once the new road is functional. The benefits of road rehabilitation, depending on the type of improvement (construction of a new link, capacity addition to an existing link, or upgrading an existing link), could represent a reduction in the time cost of travel or other variable costs, such as fuel consumption or mileage-related vehicle depreciation (Lacono and Levinson 2009). It could also represent an improvement to the level of access that a given transportation network provides. Aigbe, Ogundele and Aliu (2012) having examined road facility availability such as traffic light, street light and culvert; and the conditions of the roads in terms of smoothness, presence of potholes, and cleanliness, stressed the need for timely and efficient maintenance of roads for improved road service delivery to upgrade the present negative effects of commuting and ensure smooth, easy, and comfortable ride on metropolitan roads.

Concept of Road Rehabilitation and its Impacts on the Neighbourhood

It is a well-known fact that transportation is an integral part of any city, town, neighborhood or place whether rural or urban (Jimi-Oni and Oluwatobi2017). It is therefore very necessary that every area should possess quality transportation systems as well as good road networks that can serve the population and ease movement. However, whenever the population exceeds the available roads or they are found to be inadequate (traffic), road rehabilitation has to be considered which can come in form of expansion of old roads or construction of entirely new ones (Oni, 2009). Road rehabilitation is the creation, construction, widening and repair of existing road surfaces (Oduwaye, 2006). The evident excess in a population’s demand for roads occurs via the increase in economic activities around the area. The growth of an urban area due to influx of people in search of employment usually takes its toll on the land and the built environment as related in Ajayi, Ojo, Olukolajo and Oyetunji (2013). It is the duty of the government to provide infrastructures where they are not available or are inadequate. However, the lack of town planning regulation makes rehabilitation difficult, demolitions of residential and commercial properties including shops situated close to the routes pose the same threat, provisions have to be made, which

in turn means compensation has to be given to the affected parties or the government can exercise the power of compulsory acquisition.

Ajayi, Ojo, Olukolajo and Oyetunji (2013) asserted that opening up of new roads usually lead to increased economic activities and higher land values among others. Road construction takes so much time especially when the government refuses to supply funds intermittently, such projects sometimes span for years making users and residents anticipate its completion. According to Ogboru (2009) during this phase, accessibility is hindered both for residential and commercial property owners even road users have to lay off the road for a while. It becomes very stressful for shop owners to get to their place of work every day, also flooding can occur as a result of the excavated drainages which accompanies the construction. According to Kutz (2008), transport infrastructure improvement projects produce significant environmental and social costs. The sources of impacts that have been identified and which are known to cause significant negative impacts are noise and air pollution, compulsory acquisition of lands and impacts on local biodiversity (Hanley, Shogren and White, 2001). These impacts prevail during construction and during the operational period.

RESEARCH METHODOLOGY

Population of the Study

The population of the study was made up of Estate Surveyors and Valuers, Real Estate Developers and property owners in Owerri Metropolis, Imo State. However, the population distribution can be seen in Tables 1 and 2:

Table 1: Population Distribution

S/N	Category	Total Population
1	Estate Surveyors and Valuers	107
2	Real Estate Developers	39
3	Property Owners	23,293
	Total Population	**23,439**

Sources: Nigerian Institution of Estate Surveyors &Valuers, Imo State Branch, Owerri, 2022.
Real Estate Developers Association of Nigeria, Imo State Branch, Owerri, 2022.
Ministry of Lands, Housing, Survey and Physical Planning, Imo State, 2023.

Table 2: Population Distribution (Property Owners in Owerri Metropolis, Imo State)

S/N	Department	Population
1	OwerriNshiIse	858
2	Ikenegbu/Aladinma Layouts	1015
3	Amakohia/Akwakuma Layouts	1348
4	Spibat/Works Layouts	647
5	Akachi Layout	435
6	Worldbank Housing Estate	1150
7	Imo Housing Estate	1124
8	Federal Housing Estate	1065
9	Site and Services Layout	425
10	Orji	2045
11	Uratta	1430
12	Naze	945
13	Nekede	1889
14	Area F	165
15	Area G	150
16	Area H	200
17	Area H Extension	180
18	Nekede Exclusive Garden Estate	485
19	Area K	215
20	Area L	350
21	Area M	310
22	Area N	550
23	Area P	40
24	Area R	466
25	Area S	155
26	Area T	180
27	Area TA	178
28	Area U	370
29	Area UA	220
30	Area V	200
31	Area W	203
32	Area Y	545
33	Okohia Layout	202
34	Rescue Layout	190
35	OhiaNkwuUmuejechi Layout	188
36	Avu Junction Layout	90
37	Civic Centre	180
38	Alaoma Layout	800
39	Native Lands	2,105
Total		**23,293**

Source: Ministry of Lands, Housing, and Physical Planning, Imo State, 2023.

Sampling Size and Techniques

The sample of the population is often used as representative. However, a survey of the entire population where it is feasible is expected to produce a more valid and reliable conclusion, all things being equal. This requires the drawing up of adequate sample size which reflects the true representation of the population. However, given that the population of the Real Estate Developers and Estate Surveyors and Valuers are not large enough, their entire population were sampled, while in order to reduce the magnitude of sampling error from property owners, due to the non-experimental nature of the studies, as well as to minimize the cost of the sampling exercise, attempts were made to determine the adequate sample size (n) for this research work from the accessible population, thus the statistical formula of Yamane (1967) and a sampling error of 3.8% for Estate Surveyors and Valuers and property owners respectively were adopted as shown below:

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

Where n= represents sample size; N= total population size and e = represents sampling error.

a. N= 23,293 (Population of property owners in Owerri Metropolis, Imo State)

$$n = \frac{23,293}{1+ 23,293\ (0.038)^2}$$

$$n = \frac{23,293}{34.635} \qquad n = 673$$

Therefore, the sample sizes used for this study were 107 Estate Surveyors and Valuers, 39 Real Estate Developers and 673 property owners in the study area.

The simple random sampling technique was used to sample the property owners in the study area, while the entire population of the Estate Surveyors and Valuers and Real Estate Developers were sampled.

Methods of Data Collection

Data were gathered from the population utilizing the accompanying information gathering methods or instruments like questionnaires and observation of the target population.

The total population of the study for the Estate Surveyors and Valuers was 107, that of the Real Estate Developers was 39 and property owners was 23,293. The simple random sampling technique was used to sample the property owners while the entire population of Estate Surveyors and Valuers and Real Estate Developers were sampled, all in conjunction with structured questionnaires to extract necessary information from the target population. 72 questionnaires were adequately filled and returned by the Estate Surveyors and Valuers, 31 questionnaires were adequately filled and returned by Real Estate Developers, while 657 questionnaires were adequately filled and returned by the property owners, which were presumed to be adequate for this study.

Table 3: Allocation of Sample Size and Questionnaire Distribution

Category	Total Population	Sample Size	Questionnaires Returned
Property Owners	23,293	673	657
Estate Surveyors and Valuers	107	107	72
Real Estate Developers	39	39	31
Total	**23,439**	**819**	**760**

Table 3 showed that 673 questionnaires were administered to the property owners in the study area out of which 657 were duly filled and returned, 107 questionnaires were administered to Estate Surveyors and Valuers out of which 72 were duly filled and returned, while 39 questionnaires were administered to Real Estate Developers out of which 31 were duly filled and returned. On the overall, a total of 819 questionnaires were distributed to the sampled population and a total of 760 of the administered questionnaires were retrieved and were used for analysis.

Method of Data Analysis

The descriptive and inferential statistical analyses were employed in the presentation and analysis of the objectives and hypotheses. Frequency tables and percentage techniques were used in the presentation and analysis of the data collected. The responses for each relevant question in the questionnaires were represented in tables and the statistical results used to compare the relative importance to various answers. The hypotheses were tested using the One-Sample T-Test.

For the objectives, the five likert weighting scales were used in answering questions. The 5–point likert scales are: strongly disagree (SD=1), disagree (D=2), not sure (NS=3), agree (A=4) and strongly agree (SA=5).

RESULTS AND DISCUSSION

Presentation of the Preliminary Information of the Respondents

The preliminary information of the respondents that were obtained include sex, educational levels, occupations, nativity and how long each of them have lived in Owerri. The responses are presented in this section using the acronym ‘RPO’ to represent ‘Real Property Owners’, ‘ESV’ to represent ‘Estate Surveyors and Valuers’ and ‘RED’ to represent ‘Real Estate Developers’.

Table 4: Sex Distribution of the Respondents

Sex	RPO		ESV		RED	
	F	%	F	%	F	%
Male	434	66.1	61	84.7	25	80.6
Female	223	33.9	11	15.3	6	19.4
Total	**657**	**100.0**	**72**	**100.0**	**31**	**100.0**

Source: Researcher’s Field Survey, 2023

Table 4 shows that 66.1 percent of the property owners are male while 33.9 percent are female. Estate Surveyors and Valuers have 84.7 percent of the respondents as male while 15.3 percent are female. The Real Estate Developers have 80.6 percent male while 19.4 percent are female. This indicates that there were more male respondents in each category than female respondents.

Table 5: Educational Levels of the Respondents

Level	**PO**		**ESV**		**RED**	
	F	**%**	**F**	**%**	**F**	**%**
None	27	4.2	0	0.0	0	0.0
Primary	95	14.4	0	0.0	0	0.0
Secondary School	150	22.8	0	0.0	0	0.0
Tertiary	385	58.6	72	100.0	31	100.0
Total	**657**	**100.0**	**72**	**100.0**	**31**	**100.0**

Source: Researcher's Field Survey, 2023

Table 5 has the educational qualifications of the respondents. It shows that 4.2 percent of the property owners have no formal education, 14.4 percent attended primary school as their highest level of education, for 22.8 percent, their highest level of education is secondary school (SSCE) while the remaining 58.6 percent attended up to tertiary level. While the Estate Surveyors and Valuers together with Real Estate Developers all attended up to tertiary education level.

Table 6: Occupations of the Respondents

Occupation	**PO**		**ESV**		**RED**	
	F	**%**	**F**	**%**	**F**	**%**
Civil Servant	126	19.2	23	31.9	8	26.1
Private practitioner	83	12.6	28	38.9	14	44.8
Trader	191	29.1	0	0.0	2	6.5
Self employed	160	24.3	12	16.7	4	12.9
Others	97	14.7	9	12.5	3	9.7
Total	**657**	**100.0**	**72**	**100.0**	**31**	**100.0**

Source: Researcher's Field Survey, 2023

Occupation of the respondents is contained in table 6 as can be seen. It shows that property owners, Estate Surveyors and Valuers and Real Estate Developers, have 19.2 percent, 31.9 percent and 26.1 percent as civil servants. The private practitioners constitute 12.6 percent, 38.9 percent and 44.8 percent respectively while traders are made up of 29.1 percent, 0 percent and 6.5 percent respectively. Those who are self-employed are respectively 24.3 percent, 16.7 percent and 12.9 while those who have other jobs are 14.7 percent, 12.5 percent and 9.7 percent respectively.

Table 7: Nativity of the Respondents

Owerri Nativity	PO		ESV		RED	
	F	%	F	%	F	%
Yes	266	40.5	29	40.3	13	41.9
No	391	59.5	43	59.7	18	58.1
Total	**657**	**100.0**	**72**	**100.0**	**31**	**100.0**

Source: Researcher's Field Survey, 2023

For the nativity of the respondents as contained in table 7, it can be seen that 40.5 percent of the property owners are from Owerri while 59.5 percent are not from Owerri. Estate Surveyors and Valuers together with Real Estate Developers have 40.3 percent and 41.9 percent of their respondents being from Owerri while 59.7 percent and 58.1 percent are not from Owerri.

Table 8: How long respondents have lived in Owerri

Duration	PO		ESV		RED	
	F	%	F	%	F	%
1-10 years	103	15.6	18	25.0	8	25.8
11-20 years	229	34.8	21	29.2	8	25.8
Above 20 years	325	49.5	33	45.8	15	48.4
Total	**657**	**100.0**	**72**	**100.0**	**31**	**100.0**

Source: Researcher's Field Survey, 2023

Table 8 has the information of how long the respondents have lived in Owerri. It can be seen that for the three categories of respondents, 15.6 percent, 25.0 percent and 25.8 percent respectively have lived in Owerri for less than 10 years, 34.8 percent, 29.2 percent and 25.8 percent have respectively lived in Owerri between 11–20 years while 49.5 percent, 45.8 percent and 48.4 percent have lived in Owerri for above 20 years respectively.

Analysis of Research Objectives

The objectives of the research are presented and explained in this section.

In all the 5–point likert scales; strongly disagree (SD=1), disagree (D=2), not sure (NS=3), agree (A=4) and strongly agree (SA=5), a mean cutoff point was calculated as follows:

$$\bar{x} = \frac{1+2+3+4+5}{5} = \frac{15}{5} = 3.0$$

From the cutoff point, any issue whose mean response is 3.0 or above is regarded as agree while those with mean responses less than 3.0 are regarded as disagree. Each objective was met using well-structured issues as contained in the question, it was responded by the three categories of

respondents and the overall mean of each was used. The explanations are contained below the respective tables.

Objective One: To identify the road rehabilitation projects in Owerri Metropolis from 2010 to 2020

Table 9: Road Rehabilitation Projects in Owerri Metropolis between 2010 and 2020

S/N	Issue raised	PO	ESV	RED	Overall	Remark
1	Port Harcourt Road	4.89	4.81	4.81	4.84	Agree
2	Hospital Road	4.79	4.75	4.68	4.74	Agree
3	Musa Yaradua Drive	4.82	4.89	4.87	4.86	Agree
4	Ochiedike Road	4.85	4.90	4.84	4.86	Agree
5	Jacob Zuma Road	4.86	4.86	4.87	4.86	Agree
6	First Inland Road	4.90	4.92	4.90	4.91	Agree
7	Second Inland Road	4.90	4.92	4.90	4.91	Agree
8	Third Inland Road	4.90	4.92	4.90	4.91	Agree
9	Fourth Inland Road	4.90	4.92	4.90	4.91	Agree
10	AchikeUdenwa Avenue	4.81	4.79	4.77	4.79	Agree
11	C.B. Anyanwu Road	4.82	4.90	4.90	4.87	Agree
12	Orlu Road	4.82	4.82	4.81	4.82	Agree
13	Okigwe Road	4.81	4.81	4.90	4.84	Agree
14	Wetheral Road	4.89	4.85	4.87	4.87	Agree
15	Aba Road	4.86	4.78	4.71	4.78	Agree
16	Akachi Road	4.89	4.85	4.87	4.87	Agree
17	Samek Road	4.82	4.82	4.81	4.82	Agree
18	Spibat Road	4.81	4.81	4.90	4.84	Agree
19	Ellen Johnson Sirleaf Road	4.89	4.85	4.87	4.87	Agree
20	Nekede Road	4.86	4.78	4.71	4.78	Agree

Source: Researcher's Field Survey, 2023

Table 9 shows that the following road rehabilitation projects were carried out in OwerriMetropolis between 2010 and 2020:

1. Port Harcourt Road
2. Hospital Road
3. Musa Yaradua Drive
4. Ochiedike Road
5. Jacob Zuma Road
6. First Inland Road
7. Second Inland Road
8. Third Inland Road

9. Fourth Inland Road
10. AchikeUdenwa Avenue
11. C.B. Anyanwu Road
12. Orlu Road
13. Okigwe Road
14. Wetheral Road
15. Aba Road
16. Akachi Road
17. Samek Road
18. Spibat Road
19. Ellen Johnson Sirleaf Road
20. Nekede Road

Objective Two: To determine the advantages and disadvantages of road rehabilitation in Owerri**.**

Table 10: Advantages of Road Rehabilitation

S/N	Issue raised	PO	ESV	RED	Overall	Remark
1	Direct employment creation	5.00	5.00	5.00	5.00	Agree
2	Enhanced economic development	5.00	5.00	5.00	5.00	Agree
3	Reduced travel/transportation cost	3.93	3.76	3.68	3.72	Agree
4	Reduced vehicle operating cost	4.39	4.44	4.42	4.42	Agree

Source: Researcher's Field Survey, 2023

From table 10, it can be seen that the advantages of road rehabilitation are:

1. Direct employment creation
2. Enhanced economic development
3. Reduced travel/transportation cost
4. Reduced vehicle operating cost

Table 11:Disadvantages of Road Rehabilitation

S/N	Issue raised	PO	ESV	RED	Overall	Remark
1	Loss of property through demolition	5.00	5.00	5.00	5.00	Agree
2	Increased safety cost (traffic handling requirements)	5.00	5.00	5.00	5.00	Agree
3	Increased number of accidents	3.78	3.92	3.94	3.88	Agree
4	Increased environmental costs (air/noise pollution)	4.86	4.93	4.94	4.91	Agree
5	Increased crime rate (robbery and burglary attacks)	3.95	3.96	4.06	3.99	Agree

Source: Researcher's Field Survey, 2023

The disadvantages of road rehabilitation according to table 11 are:

1. Loss of property through demolition

2. Increased safety cost (traffic handling requirements)
3. Increased number of accidents
4. Increased environmental costs (air/noise pollution)
5. Increased crime rate (robbery and burglary attacks)

Objective Three: To identify the impacts of road rehabilitation on land values in Owerri.

Table 12: Land Values (Per Plot) in Owerri Metropolis from 2010 to 2020

S/N	Year	PO	ESV	RED	Overall	Remark
1	2010	2.00	2.00	2.00	2.00	1–5M
2	2011	2.04	2.04	2.06	2.05	6-10M
3	2012	3.00	3.00	3.00	3.00	6-10M
4	2013	3.00	3.00	3.00	3.00	6-10M
5	2014	4.00	4.00	4.00	4.00	11-20M
6	2015	4.00	4.00	4.00	4.00	11-20M
7	2016	4.06	4.06	4.06	4.06	21-30M
8	2017	4.95	4.92	4.84	4.90	21-30M
9	2018	5.00	5.00	5.00	5.00	21-30M
10	2019	5.07	5.07	5.10	5.08	31-40M
11	2020	6.00	6.00	6.00	6.00	31-40M

Source: Researcher's Field Survey, 2023

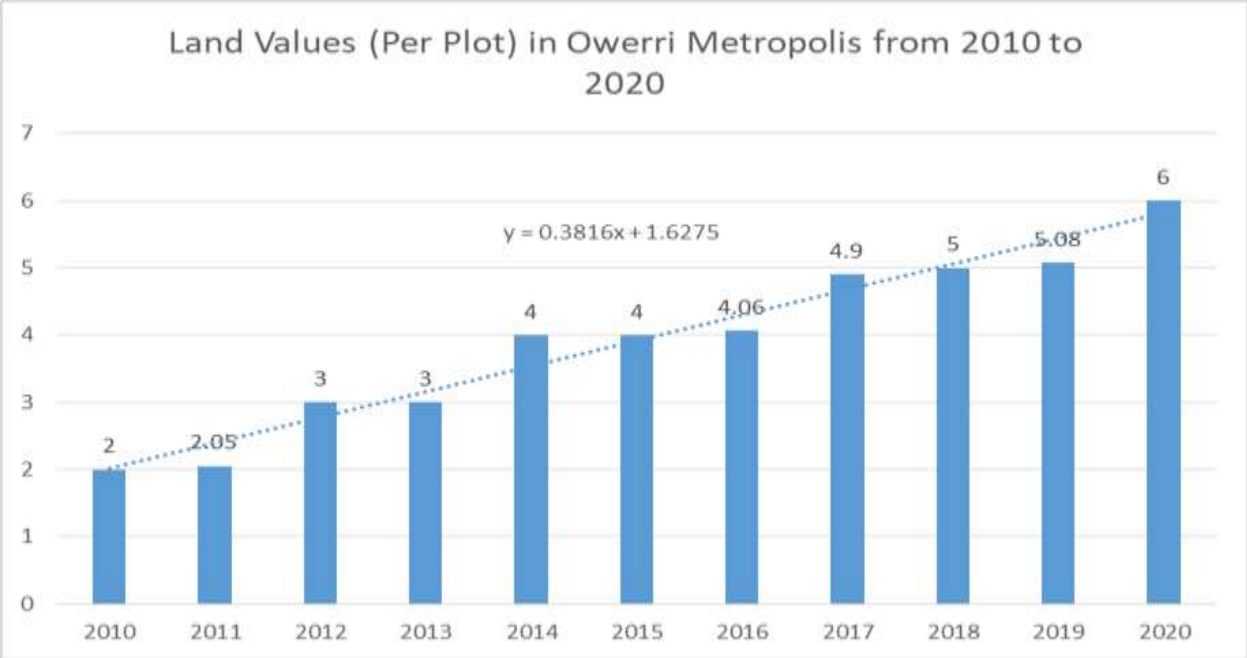

Figure 3: Chart showingland values (per plot) in Owerri Metropolis from 2010 to 2020

Table 12 and figure 3 show that the land values (per plot) in Owerri Metropolis increased from the range of ₦1M –₦5M in 2010 to the range of ₦11M – ₦20M in 2015 and that as at 2020 the land value was within the range of₦31M to ₦40M.
Figure 3 also indicates that the trend of land value is an increasing trend, implying an upward movement of the values, just a sort of confirmation of the responses of the respondents in table 12. The trend has its model as:

$$y = 1.6275 + 0.3816x$$

Y represents the land values while *x* is the year.
The above trend can be used to predict the land values in subsequent years.
Objective Four: To ascertain the challenges faced by residents during road rehabilitation exercises in Owerri Metropolis.

Table 13:Challenges faced by Residents during Road Rehabilitation Exercise

S/N	Issue raised	PO	ESV	RED	Overall	Remark
1	Loss of time due to traffic diversions	5.00	5.00	5.00	5.00	Agree
2	Reduction in vehicular speeds due to port holes	4.36	4.14	3.94	4.15	Agree
3	Stress to persons from the need to squeeze through narrow roads	5.00	5.00	5.00	5.00	Agree
4	Noise and air pollution from construction activities	5.00	5.00	5.00	5.00	Agree
5	Reduction in business revenues and decrease in productivity	4.39	4.22	4.23	4.28	Agree

Source: Researcher's Field Survey, 2023

The challenges faced by residents during Road Rehabilitation Exercise as seen in table 13 are:
1. Loss of time due to traffic diversions
2. Reduction in vehicular speeds due to port holes
3. Stress to persons from the need to squeeze through narrow roads
4. Noise and air pollution from construction activities
5. Reduction in business revenues and decrease in productivity

Presentation of the Research Hypotheses
The postulated hypotheses were tested; the results and interpretations are presented in this section. Relevant statistical tools were used for the statistical analysis.
Hypothesis One: From 2010 to 2020, there has been no significant benefit of road rehabilitation in Owerri Metropolisto the residents of Owerri.

This hypothesis was tested by conducting a one–sample t–test on the benefits derived by residents after road rehabilitation as responded by the respondents using the mean cutoff mark of 3.0 as the standard.

Statistical Tool Used: One Sample T–Test.

Reason for choice of Tool: One set of observation was compared to a known value.

Degrees of Freedom: 7.

Decision Rule: Accept the null hypothesis if the p–value is greater than or equal to 0.05, otherwise reject it.

Test Proper: The result (output) of test is presented in tables 11a and 11b.

Table 14a: One-Sample Statistics for Hypothesis One

	N	Mean	Std. Deviation	Std. Error Mean
Benefits Derived by Residents after Road Rehabilitation	8	4.5700	.43596	.15413

Source: Researcher's Statistical Computation, 2023

Table 14a shows the mean and standard deviation among other things for the t–test conducted. It can be seen that the mean is 4.5700 while the standard deviation is 0.43596.

Table 14b: One-Sample Test for Hypothesis One

	Test Value = 3.0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Benefits Derived by Residents after Road Rehabilitation	10.186	7	.000	1.57000	1.2055	1.9345

Source: Researcher's Statistical Computation, 2023

Table 14b shows that the p – value is 0.000 which is less than 0.05; this implies that the test is significant, therefore we reject the null hypothesis and conclude that from 2010 to 2020, the residents of Owerri Metropolishas significantly benefited from road rehabilitation projects in numerous ways. The benefits are:

1. Enhanced economic development
2. Reduced travel/transportation cost
3. Reduced vehicle operating cost
4. Increase in business activities and employment opportunities
5. Increased business revenues and productivity
6. Reduction in noise and air pollution
7. Increase in vehicular speeds due to non-existence of portholes
8. Gain in time due to little or no traffic diversions

Hypothesis Two: There is no relationship between road rehabilitation and the values of real estate in the study area from 2010 to 2020.

To test this hypothesis, data on the responses of the respondents on rental values of 4–bedroom detached duplex in Owerri Metropolisfrom 2010 to 2020, rental values of 3–bedroom flats in Owerri Metropolis from 2010 to 2020 and rental values of studio apartments (self–contain) in Owerri Metropolis from 2010 to 2020 were obtained from the questionnaire. The data were first presented using tables and charts as contained in tables 15a to 15c and figures 4a to 4c respectively. The results in the tables and figures show that the rental values increased as the years progressed. More explanations are contained below the charts.
The values were subjected to one sample t–tests to find out if the increments are statistically significant, using the initial rental values of each category as the standard of measurements. These results are as well presented.

Table 15a:Rental Values of 4-Bedroom Detached Duplex in Owerri Metropolis from 2010 to 2020

S/N	Issue raised	PO	ESV	RED	Overall	Remark
1	2010	2.00	2.00	2.00	2.00	100-500K
2	2011	2.00	2.00	2.00	2.00	100-500K
3	2012	2.12	2.11	2.10	2.11	501K-1M
4	2013	3.00	3.00	3.00	3.00	501K-1M
5	2014	3.12	3.13	3.10	3.12	1.1M-2M
6	2015	3.95	3.94	3.90	3.93	1.1M-2M
7	2016	4.00	4.00	4.00	4.00	1.1M-2M
8	2017	4.00	4.00	4.00	4.00	1.1M-2M
9	2018	5.00	5.00	5.00	5.00	2.1M-3M
10	2019	5.17	5.21	5.19	5.19	3.1M-4M
11	2020	6.00	6.00	6.00	6.00	3.1M-4M

Source: Researcher's Field Survey, 2023

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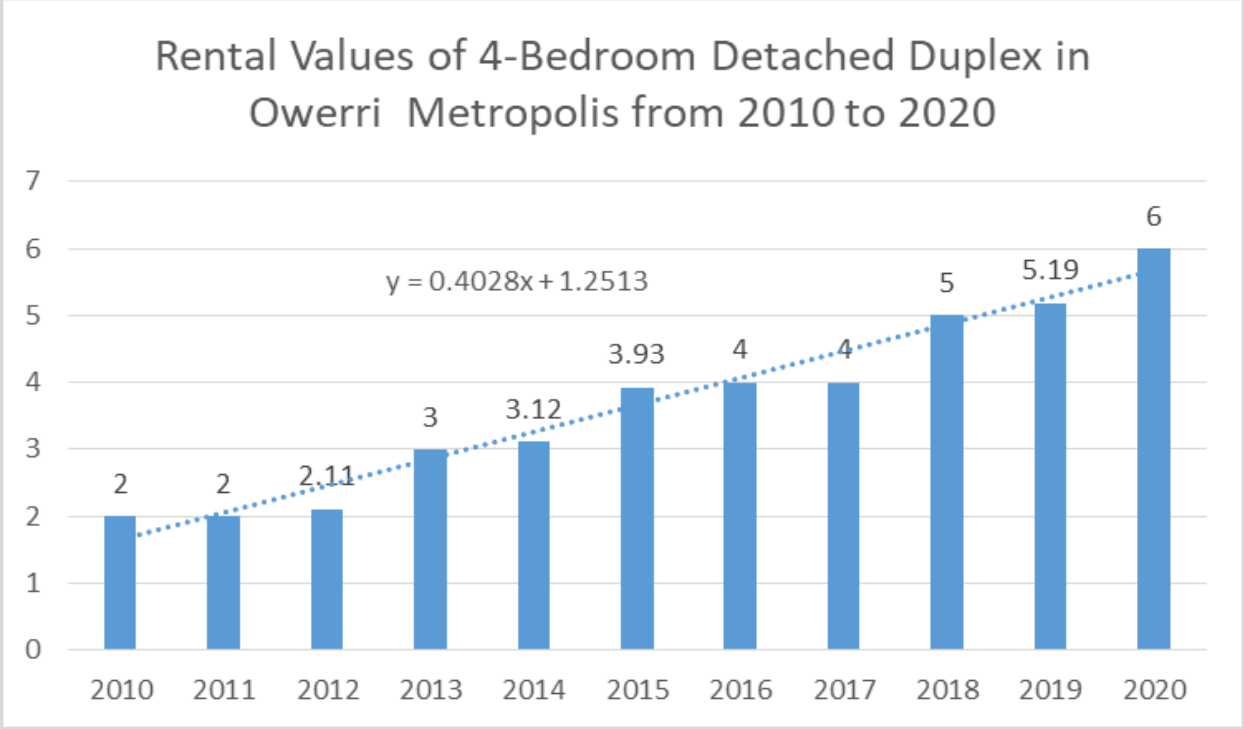

Figure 4a:Chart showingrental values of 4-bedroom detached duplex in OwerriMetropolis from 2010 to 2020

Table 15a and figure 4a show that the rental values of 4 – bedroom detached duplex in Owerri Metropolisincreased from the range of ₦100,000 – ₦500,000 in 2010 to the range of ₦1.1M – ₦2M in 2015 and that as at 2020 the rental values were within the range of ₦3.1M to ₦4M. Figure 4a also indicates that the trend of the rent of 4 bedroom detached duplex is an increasing trend, implying an upward movement of the rents, just a sort of confirmation of the responses of the respondents in table 15a. The trend has its model as:

$y = 1.2513 + 0.4028x$

Y represents the rent while *x* is the year.

The above trend can be used to predict the rent in subsequent years.

Table 15b:Rental Values of 3-Bedroom Flats in Owerri Metropolis from 2010 to 2020

S/N	Issue raised	RPO	ESV	RED	Overall	Remark
1	2010	2.00	2.00	2.00	2.00	100-200K
2	2011	2.96	2.93	2.90	2.93	201K-400K
3	2012	3.00	3.00	3.00	3.00	201K-400K

4	2013	3.00	3.00	3.00	3.00	201K-400K
5	2014	3.95	3.93	3.94	3.94	401K-600K
6	2015	4.00	4.00	4.00	4.00	401K-600K
7	2016	4.00	4.00	4.00	4.00	401K-600K
8	2017	5.00	5.00	5.00	5.00	601K-800K
9	2018	5.00	5.00	5.00	5.00	601K-800K
10	2019	5.08	5.07	5.10	5.08	801K-1M
11	2020	5.80	5.82	5.84	5.82	801K-1M

Source: Researcher's Field Survey, 2023

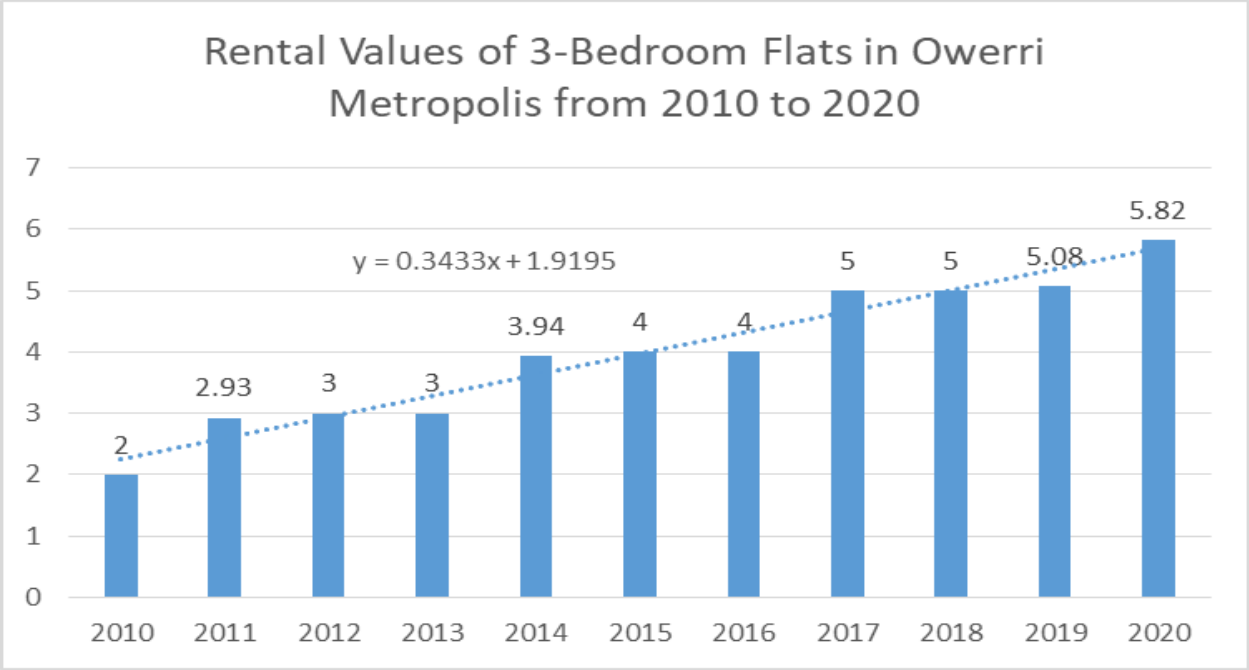

Figure 4b: Rental Values of 3-Bedroom Flats in Owerri Metropolis from 2010 to 2020

Looking at Table 15b and figure 4b, it can be seen that the rental values of 3 – bedroom flats in Owerri Metropolis increased from the range of ₦100,000 – ₦200.000 in 2010 to the range of ₦401,000 – ₦600,000 in 2015 and that as at 2020 the rental values were within the range of ₦801,000 to ₦1M.

Figure 4b also indicates that the trend of the rent of 3 - bedroom flats is an increasing trend, implying an upward movement of the rents, just a sort of confirmation of the responses of the respondents in table 15b. The trend has its model as:

$y = 1.9195 + 0.3433x$

Y represents the rent while *x* is the year.

The above trend can be used to predict the rent in subsequent years.

Table 15c:Rental Values of Studio Apartments inOwerriMetropolis from 2010 to 2020

S/N	Issue raised	RPO	ESV	RED	Overall	Remark
1	2010	2.00	2.00	2.00	2.00	50-100K
2	2011	2.23	2.24	2.26	2.24	101K–200K
3	2012	3.00	3.00	3.00	3.00	101K–200K
4	2013	3.00	3.00	3.00	3.00	101K–200K
5	2014	3.00	3.00	3.00	3.00	101K–200K
6	2015	3.00	3.00	3.00	3.00	101K–200K
7	2016	3.00	3.00	3.00	3.00	101K–200K
8	2017	4.00	4.00	4.00	4.00	201K–400K
9	2018	4.00	4.00	4.00	4.00	201K–400K
10	2019	4.00	4.00	4.00	4.00	201K–400K
11	2020	4.00	4.00	4.00	4.00	201K–400K

Source: Researcher's Field Survey, 2023

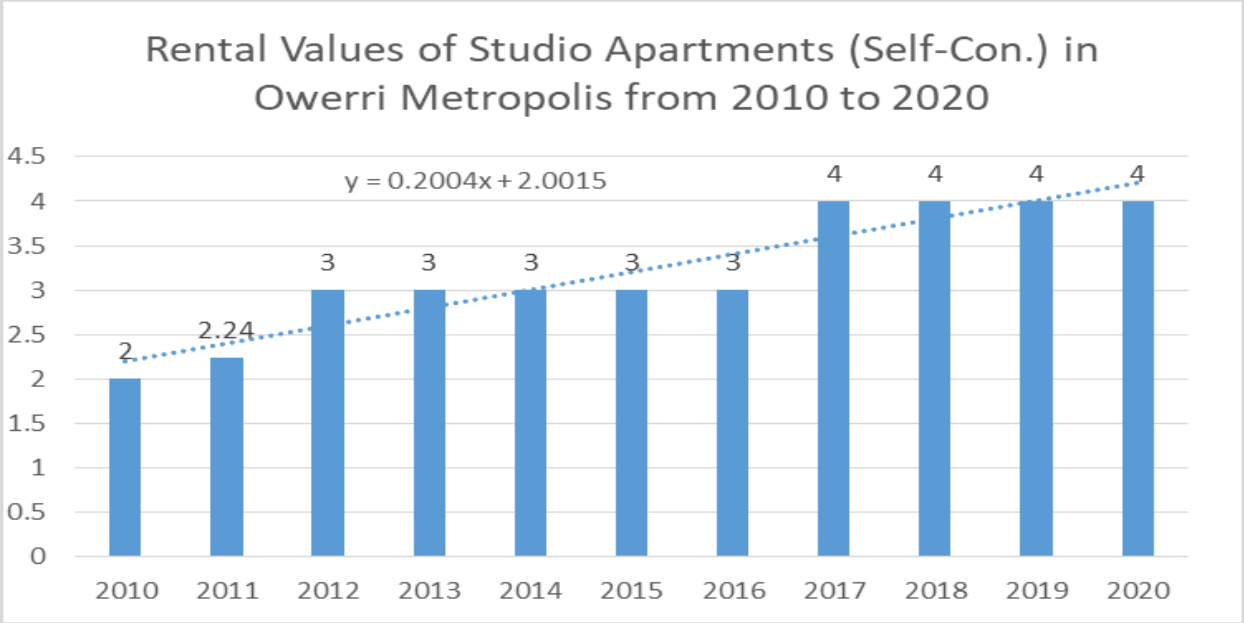

Figure 4c: Rental Values of Studio Apartments in OwerriMetropolis from 2010 to 2020

Table 15c and Figure 4c shows that the rental value of studio apartments was between the range of ₦50,000 to ₦100,000 in 2010, in 2011 it rose to between ₦101,000 to ₦200,000, which was maintained till 2016. From 2017 till 2020, the rent remained within the range of ₦201,000 to ₦400,000.

Trend analysis was carried out to determine the rate at which the rents change per year. It revealed that the rents change at about 0.2004 units per year; that is, each year, about 0.2004 unit is added to the existing rent in the location. The equation is as shown:

$y = 2.0015 + 0.2004x$

Y represents the rent while *x* is the year.

The above trend can be used to predict the rent in subsequent years.

Statistical Tool Used: One Sample T–Test.

Reason for choice of Tool: One set of observation was compared to a known value.

Degrees of Freedom: 7.

Decision Rule: Accept the null hypothesis if the p–value is greater than or equal to 0.05, otherwise reject it.

Test Proper: The result (output) of test is presented in tables 16a and 16b.

Table 16a: One-Sample Statistics for Hypothesis Two

	N	Mean	Std. Deviation	Std. Error Mean
Rental Values of 4-Bedroom Detached Duplex in Owerri Metropolis from 2010 to 2020	11	3.6682	1.36222	.41072
Rental Values of 3-Bedroom Flats in Owerri Metropolisfrom 2010 to 2020	11	3.9791	1.16715	.35191
Rental Values of Studio Apartments (Self-Con.) in Owerri Metropolis from 2010 to 2020	11	3.2036	.71564	.21577

Source: Researcher's Statistical Computation, 2023

Table 16a shows the mean and standard deviation for the rental values of three categories of houses as responded by the 3 categories of respondents.

Table 16b: One-Sample Test for Hypothesis Two

	Test Value = 2.0 (100-500K, 100-200K and 50-100K)					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Rental Values of 4-Bedroom Detached Duplex in Owerri Metropolis from 2010 to 2020	4.062	10	.002	1.66818	.7530	2.5833
Rental Values of 3-Bedroom Flats in Owerri Metropolis from 2010 to 2020	5.624	10	.000	1.97909	1.1950	2.7632
Rental Values of Studio Apartments (Self-Con.) in Owerri Metropolis from 2010 to 2020	5.578	10	.000	1.20364	.7229	1.6844

Source: Researcher's Statistical Computation, 2023

Table 16b has the t–test results for the rental values of the 3 different categories of rents/apartments studied. Each of the p – values can be seen to be less than 0.05, which means that the tests are significant. Therefore, it can be concluded that road rehabilitation in the study area has a direct relationship and significant implication on the values of real estate from 2010 to 2020; the impact being in the form of increase in real estate values as the years progressed and as more roads are being rehabilitated in the study area. This leads to the rejection of the null hypothesis and acceptance of the alternative hypothesis.

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