

Infrastructure Development and Residential Property Rental Values in Karu, Local Government Area Nasarawa State: Assessing Tenants Satisfaction

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ABSTRACT

This study examined the tenant's satisfaction on infrastructural availability and how it affects residential property rental values in Abacha Road, Karu Local Government Area, Nasarawa State. Using a descriptive survey design, data were collected from 132 landlords and tenants via structured questionnaire, with 122 valid responses (92.4%) analyzed using descriptive statistics, and Pearson correlation. Results showed moderate infrastructure availability (mean 3.31) and tenant satisfaction (mean 3.24), with annual rental values averaging ₦2,199,273. The study found out also that infrastructure availability did not significantly predicted rental value, though 95.1% of respondents believed better infrastructure would raise rents. The study concluded that rental values are currently driven more by property-specific features than neighborhood infrastructure, and recommended that government upgrade roads and drainage, landlords weigh property attributes when setting rents, and valuers use caution when relying on infrastructure scores to estimate achievable rental value.

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INTRODUCTION

Residential housing prices are affected by many factors, not only as a measure of the performance of environmental quality, and in particular urban environments, but also as a tool for the socio-economic development of a city (Ngoc, Tien & Hieu, 2023). Sani, Mohammed and Usman (2023) note that the main factors that affect the rental value of residential properties are location, time, property rights, condition, accommodation characteristics and amenities. These can add value (appreciate) a property or subtract value (depreciate) from property. Mbazor, Aigbavboa and Thwala (2024), believe that residential property is not just a building that is limited only to the physical structure in which a person lives, but it is about having the amenities that make it easier to live such as good water, good electricity, good roads and play that makes it easier to live such as recreational parks.

Alexander and Okpakam (2024) argue that infrastructure plays a big role in the value of property: the presence of good infrastructure will enhance the value and the presence of non-existent infrastructure will bring depreciation. Infrastructure array Foundational Economy Collective (2022) defines infrastructure as a system of services that are essential to the operation of the city such as housing, electricity, water supply, drainage, refuse collection, streets and sewerage. Also, according to Mahmood et al., (2025) the availability of a good infrastructure is crucial to the success of human activity system. Despite the optimism during the independence, the provision and management of urban infrastructure has been in a state of low standard, low enforcement of regulations and low co-ordination in planning. The redevelopment of existing buildings was common and sometimes even ignored as the management system is not coordinated. Unfortunately, it has taken years and the challenges are still there. Most households are still relying on well water or water from vendors as described by Reader (2022) which could be unhealthy.

However, research has found that majority of the developing countries suffer from the lack of basic infrastructure (Ali et al., 2025). Ebekozi et al., (2022) found out that in some

urban centres, 34 percent of the households still do not have access to basic infrastructure such as electricity, water, roads and waste disposal. Similarly, Akanmu and Salisu (2024) highlighted the decay of the key infrastructure that is electricity, water, road and drainage in the metropolis of Lagos. The presence of adequate and functional urban infrastructure supports business and residential areas to be in demand as rental properties. The spatial search for these places is aided by the human and firms' rivalry about "who is where", which increases the value of land and the price of housing and renting a house (Shen & Tu, 2022). Our poor or absent infrastructure can negatively impact our health (physical and mental), social order, productivity, development and wellbeing (Nkem et al., 2024).

The disparity of residential rental value among towns and cities has emerged as a matter of increasing concern among the estate surveyors, valuers, landlords, tenants, agents, and policy makers in Nigeria (Chinagorom, 2020). The inequities of infrastructure have started to impact the cost of living in some areas, and sometimes cause conflict between investors, landlords and renters (Rosenthal & Vilchis 2024). The population of Nasarawa State has grown rapidly due to the influx of residents from the neighboring Federal Capital Territory of Abuja, which has not always been accompanied by adequate infrastructure development particularly in terms of roads, power supply and provision of water services, and many homes in the state have continued to have poor roads, inconsistent power supply, and inadequate water provision despite relatively high rents (Nuhu, et al., 2024).

Furthermore, the proximity of Karu LGA. to Abuja makes it one of the fastest growing areas in Nasarawa state (Chukwuma, Mutaka & Adamu-Ja 2023). Despite having similar levels of provision of infrastructure, rent prices in Karu have been fluctuating over the last decade; high in some places, low in others (Ali et al, 2025). In Abacha Road in particular, residents suffer from long power outages, poor roads and frequent water shortages, but still pay as much rent as in better serviced roads (Chukwuma, Mutaka & Adamu-Ja 2023). This makes it challenging for landlords to increase

rents and for tenants to afford comparably expensive rents for poorly served housing (N-yanbini, Okrah & Amponsah, 2025). At this time, there is no empirical evidence to verify which infrastructure factors, individual or combined (roads, electricity or sanitation), most strongly impact rent in Karu (Ali et al., 2025). This uncertainty makes investment decisions difficult and restricts policy responses, especially in a world of limited resources and increasing demands for housing (Adeogun et al., 2023).

Moreover, there is no formal research on tenant satisfaction with the quality of infrastructure services in Karu, which are crucial for housing demand and choice, and there is not much quantitative evidence and only anecdotal evidence on existing tenants' complaints, especially along Abacha Road. The research focuses on the level of infrastructure provision, tenant satisfaction and residential rental value in selected areas, as well as to ascertain the impact of infrastructure on the residential rental value. Findings are expected to guide effective policy development, promote investment in properties, and enhance living conditions in the study area.

Literature Review

Infrastructure and Rental Value of Residential Property

Infrastructure is the key driver of economic growth and development and the driver of urban activities. The infrastructure is the economic and social capital of the community and the critical component of the urban system (Krueger et al., 2022). Infrastructure Gardner and Henry (2023) define infrastructure as the transport, water and sanitation, electricity, telecommunication and other sectors which is a large portfolio of investment in all economies, a third to one-half of the public expenditure (equivalent is 3-6% of GDP).

Brown and Ikiriko (2025) found out that the state of urban infrastructure in Nigeria is deplorable and ineffective largely due to the failure to maintain the infrastructure due to the current remedial approach of maintenance and lack of effective infrastructure management system. The link between Infrastructure and Rental value of residential property in Karu Local Government Area is complex. Infrastructure enhances the habitability of the home and it also enhances economic and social development and that makes it more valuable in the future. Therefore, the analysis of the trend of rental value without taking into account the availability, quality and reliability of the infrastructure would be ignoring the fundamental factors that affect value of real estate. But it is a medium of trade and investment that integrates and reshapes the economic and social activities of the cities by amalgamating all amenities that support a city to develop.

Factors Influencing Adequate Infrastructure Provision

The provision of inadequate infrastructure in Nigeria has many reasons and can be attributed but not limited to: lack of finance; poor governance; corruption; economic sabotage; poor maintenance culture; population growth and disregard of urban and regional planning regulations (Okegbemi, 2024). Finance is one of the factors and is a major factor in the provision of inadequate infrastructure and it has been the bane of infrastructure and other development projects in Nigeria for a long time (Okolie & Edo 2023).

Infrastructures of all types are required to be provided for this population and their resources. But according to Shurtz (2025), the population growth, which is now over 50% urban, is straining the infrastructure and the government's recently. Other than the insufficient funding, a major problem is the poor governance of the country and is mainly responsible for

the low infrastructure provision in all sectors. For example, the tax revenue to GDP of Nigeria 2013, which was expected to be 25%, is now 14%. This 11% GDP growth is predicted to be due to the poor management and allocation of human and natural resource (Business Day May, 4, 2014). El Yaqub, Musa and Magaji (2024) also in their emphasis went further to say that corruption of the fund allocated for infrastructural development in public offices is prevalent.

Also, projects for which funds have been allocated and released often are not completed and cost inflation of projects is frequent (Dick-Sagoe et al., 2023). Other causes of poor infrastructure provision include sabotage, lack of appropriate policies, poor maintenance in Nigeria and this was found in (Iliya, Maigari & Ishaku, 2024).

Infrastructure Development and Residential Property

Abraham (2024) in his classical rent theory concept theorizes that the improvement of access roads has a positive effect on the price of land and property. Infrastructure in a social economic entity (country, region or community) can have a positive or negative effect on the property. For example, if the government builds incinerators in the residential areas, it will have a negative impact on the price of the properties but if the government introduces good infrastructure such as good road network, water supply, electricity, good drainage, etc. it will have a positive effect on the price of the properties.

Gdakowicz and Putek-Szelawna (2025) research the value of property in terms of amenity and accessibility. They used six accessibility, criteria amenities including property characteristics and regression analysis to 24,082 property transactions in the selected areas. They found a value increase of property due to infrastructure. The location of a household is to some extent, limited by the opportunity sites, according to Yu and Higgins, (2024). This utility maximizing is done based on environmental attributes and not the observable ones (Bai et al., 2024).

Infrastructural Facilities Affecting Rental Value of Residential Properties

Bright & Jenewari (2025), described infrastructure as the sum total of facilities that constitute a city. It's also seen as a wide range of economic and social infrastructure essential for creating a supportive environment that boosts economic activity and improves living standards. These include housing, electricity, pipe-borne water, drainage, waste disposal, roads, se-wage, health, education, telecommunications and institutional infrastructure (police station, fire-fighting stations, banks and post office). Real estate is a heterogeneous good which is made up of a combination of unique features not only due to its location, but also due to access to medical services is a significant factor in home price. Access to and proximity to hospitals, clinics and laboratories is also instrumental in enhancing resident's safety and quality of life, which translates to higher rental. The tenants will be willing to pay more in areas where they can access quality medical services, particularly in highly populated neighborhoods, such as Karu, where risks of contagious disease outbreaks are not uncommon (Oluwadare, 2024). Therefore, residential areas that have easy access to quality health care facilities and services are likely to have lower vacancy rates; therefore, demonstrating that health care is a public good and an economic value of residential development. Other public goods are recreation and business. The transport network is a critical infrastructure in a city and it is a key factor for housing rental (Tuan & Lan, 2025). It is a network of links and amenities which allow people, goods and services to move from one place to another (Zhang et al.,

2023). The amenities are roads, streets, highways, bus routes and other transport amenities which make the area accessible. The transport has been improved and so, the residents in the area can reach the important amenities like offices, stores, schools, hospital and shopping Centre's (Wahyuddin, et al., 2025). The areas with good transport infrastructure are more attractive for tenants because it is time saving, cost saving and accessible to the area (Okosun et al., 2023). So, the residential buildings in the area will be more occupied and have higher rents than residential buildings in areas with poor or no transport infrastructure (Egharevba & Edohen, 2023).

The transport infrastructure and rents relationship also has socio-economic implications (Orvin, Fatmim & Hoque, 2025). Better road and transport infrastructure can attract more commercial, education and health facilities in the area and this will be a "virtuous circle" of increasing attractiveness of the area (Göransson & Andersson, 2023). For example, more commercial and education facilities have been constructed in Karu neighborhoods with good road access which draws more people and increase residential values. This shows that transport infrastructure can impact residential values directly and indirectly by impacting urban development which can influence the residential rental values in the long run (Rosen, Álvarez & León, 2022). Adeogun et al., (2023) Proposed that an occupant of a residential property can be prepared to pay premium value for a property depending on his perceptions of basic amenities such as access, water and electricity supply. Zhang, Ye and Wang, (2022) speculated gate the effects of redevelopments on residential values of houses in a given area. Likewise, Ciardullo, Wins and Restle (2025) using the hedonic pricing model, they valued irrigation water, as one of the attributes of land parcels. They observed that distance to water has an impact on the value of land.

Commerce and recreation are also amenities. Markets, parks, gyms and entertainment centres are all amenities that make life more convenient, and improve neighborhood social interaction and aesthetic appeal. What has been noted is that residents are attracted to areas that provide them the services and amenities needed to enhance their quality of life, which makes these areas more desirable to residents (Ciardullo, Wins & Restle 2025). The construction of the parks and malls in Karu, adjacent to the residential investments has been followed by rental increases, a situation that highlights the influence of amenity services on real estate.

Another important determinant of rental rates is social amenity such as security and community groups. The two most important things for tenants are social amenity (security and community) in the peri urban areas where there is population explosion and urban challenge. Areas with good security, neighbourhood watch and good social interactions are in high demand and command higher rent than their peers (Aliu, 2023). The experience of other cities in Nigeria suggests that good social amenities increase the tenants' satisfaction and the rent.

The availability of physical and social amenities enhances housing value. Houses in a developed neighborhood with adequate access to schools, hospitals, markets, security and parks will be rented for higher prices. These amenities are often considered as a package as renters want to stay in an area where they have access to their day-to-day amenities and feel safe and comfortable (Lach et al., 2022). Therefore, integrated urban planning should be adopted in Karu in which infrastructure provision should be managed to improve property values.

The availability of a good water supply is also a critical factor in the determination of residential rent, particularly in the

peri-urban areas where the problems of water shortages are felt (Dada, 2023). Access to water for drinking, cooking, cleaning and bathing is convenient and healthy. As a result, houses with a regular supply of municipal water or borehole water are preferred and attract a higher rent than houses with an irregular or no supply of water (Dada, 2023).

In summary, the development of water infrastructure, alongside electricity, road infrastructure and sanitation is a good approach to boost rental values and sustainable urban development (Bhanye et al., 2024).

Empirical Studies

Oyedemi and Olorunisola (2024) investigated the effect of road expansion on residential rental values in peri-urban Nigerian settlements and found a strong positive relationship, with properties along expanded roads recording an average rental increase of 28 per cent over five years. The current study departs from this finding in its cross-sectional results: road network showed a weak negative correlation with rental value ($r = -0.122$) rather than the strong positive effect Oyedemi and Olorunisola reported. The difference is best explained by the underlying variation each study measured against; their study captured before-and-after change following genuine road improvement, while the present study measured rental value against infrastructure scores that were already narrowly clustered around 'moderately available' along Abacha Road, leaving little cross-sectional variation for road access to explain.

Onyejiaka and Okpala (2020) examined urban infrastructure and residential real estate value in Awka, Anambra State, and found that electricity availability and road connectivity accounted for 35 per cent and 27 per cent of the variation in rental value, respectively. The current study again departs from this pattern: electricity showed only a negligible positive association with rental value ($r = 0.027$), far below the substantial effect Onyejiaka and Okpala recorded. This suggests that in Abacha Road, unlike in the more infrastructural uneven districts of Awka, electricity availability has become common enough across the sample that it no longer distinguishes higher-rent from lower-rent units.

Bello, Adepoju and Durosinmi, (2020). Studied residential investment property in Abuja and found that road infrastructure explained 38 per cent of rental value variation, followed by security provision (22 per cent) and electricity supply (18 per cent). The current study's findings run in the opposite direction on two of these three variables: security recorded the strongest correlation of all items tested, but it was negative and borderline significant ($r = -0.180$, $p = 0.060$), and road again showed a weak negative correlation. This is one of the more notable points of departure from the reviewed literature, where it is attributed to the comparatively uniform level of infrastructure and security provision across the Abacha Road sample, relative to the more varied conditions Bello *et al.* observed across Abuja's four districts. Sani, Mohammed and Usman (2023) analysed locational, neighbourhood and physical characteristics of rental properties across three Nigerian metropolitan cities and found that road access alone accounted for 32 per cent of rental variance, with neighbourhood safety contributing a further 22 per cent. As with Bello *et al.*, (2020), the current study's findings on both road and security run counter to this result. The explanation offered in this study is consistent across all four of the studies discussed so far: where infrastructure and security provision are genuinely uneven across a sample, as in the cities (Sani, *et al.*, 2023) studied, these variables carry strong explanatory power; where provision has become

comparatively uniform, as along Abacha Road, that explanatory power is lost even though the underlying attributes are still valued by tenants in principle.

Ekemode (2020) examined the impact of urban regeneration, including infrastructural upgrades and transport accessibility, on commercial property values in Osogbo, and found rental increases averaging 25 per cent in regenerated districts. Rather than a direct cross-sectional test of infrastructure against rent, Ekemode's study is framed around infrastructure-led change over time, and read this way the current study is broadly consistent with it.

Oyalowo (2022) studied the implications of urban expansion for land, planning and housing in Lagos and found that properties in newly expanded districts with reliable roads, electricity and water experienced rental increases of 25 to 30 per cent, while poorly serviced areas saw stagnating or declining rents. As with Ekemode (2020), this is a study of change over time rather than of variation at a single point in time, and the current study's qualitative and perceptual findings, particularly respondents' strong belief in the long-run link between infrastructure and rent, are broadly consistent with Oyalowo's conclusions, even though this study did not find a corresponding statistical effect within its single cross-sectional sample.

Fateye (2020) examined the driving factors of property investment in peri-urban markets of Ogun State and found that road connectivity, electricity reliability and water access were the primary factors influencing rental value, with road connectivity alone explaining 30 per cent of the variance. Fateye's peri-urban setting is the closest parallel to Abacha Road among the studies reviewed, which makes the direct ion of the current study's departure particularly instructive: where Fateye found infrastructure still explaining substantial rental variation in a comparable peri-urban context, the present study suggests that Abacha Road may have already progressed past the stage of infrastructural unevenness that gave Fateye's variables their explanatory power, supporting this study's argument that property-specific characteristics become more important as an area's infrastructure matures.

Ade and Adegbe (2020) investigated the relationship between personal income tax, infrastructural development and residential property market growth in Lagos State and found that properties in infrastructure enhanced districts recorded an average rental increase of 20 per cent, driven by policy-supported improvements to roads, water supply and electricity. Like Ekemode (2020) and Oyalowo (2022), this is a study of policy-driven infrastructural change over time

rather than a cross-sectional comparison of individual properties, and the current study's evidence on respondents' long-run expectations for infrastructure-led rental growth is broadly consistent with Ade and Adegbe's conclusions, notwithstanding the absence of a corresponding short-run statistical effect in the present sample.

MATERIALS AND METHODS

The Research Design

The study adopted the descriptive survey design because this design allows researchers to collect data in an orderly and systematic way from a given population without changing the status quo. This design is appropriate for investigating the relationship between infrastructure developments and housing rental values in Karu Local Government Area in their present form. The survey design, using a quantitative approach, is believed to be the best method for this study.

Population of the Study

The target population is residential tenants and landowners who reside or own properties in Karu Local Government Area, at Abacha Road. This choice is because tenants are affected by the provision of infrastructure in their area and the landlords are the ones who set the price of residential rent and make adjustment based on the supply and demand of the tenants and the market.

Sample Frame

The population of interest are the stakeholders in the residential rental market of Karu (landlords/tenants). The study specifically targeted those on Abacha Road, where infrastructure is being developed. The study adopted a simple random sampling technique to select respondents in order to find out the effects of infrastructure on residential rental prices in this area

Sample Size

The study was carried out at Abacha Road, Karu, Nasarawa State, among property owners and tenants involved in the residential rental market. By sampling such respondents along Abacha Road, the study ensured that they are well represented and that the findings is not biased toward any particular location, and that the data is fair, valid, and reliable. The population of residential households was estimated to be 200, and the sample size of 132 based on the Krejcie and Morgan table (Krejcie & Morgan, 1970), as follows:

Table 1: Sample Size Distribution by Area

Area	Sample frame	Sample size
Abacha	200	132
Total	200	132

Source: Krejcie, R. V., & Morgan, D. W. (1970). *Determining sample size for research activities. Educational and Psychological Measurement*, 30(3), 607-610.

A total of 132 households will be selected as the sample of the research

Sampling Technique

Random sampling is deemed to be the best sample technique. This is due to the sample size to be surveyed from the population, of the rental housing in Karu, Nasarawa state, being 132. This provided equal opportunity and balanced credible and scientifically reliable data collection.

The Study Areas

The study area, Abacha Road is a rapidly developing residential neighborhood situated in New Karu, the

headquarters town of Karu Local Government Area, Nasarawa State, Nigeria. The development of Abacha Road settlement is growing in population due to the proximity to Abuja, the government and commercial centers. The most developed area near the federal capital is Karu, where there is also the highest demand for residential properties resulting to an increase in land and property prices. This has created a challenge for property developers in Karu, and hence they are moving to Keffi. However, amenities in both communities are still lacking. Electricity is unreliable, roads are in poor state,

and public water supply, especially in Nasarawa state, is scarce. Residents have to use water vendors. The lack of basic services means private property developers have to do their part in providing and upgrading services such as electricity, water and roads. The study is focused on Abacha road because it has many residential buildings and the major infrastructural developments are taking place, which reflects how Karu is growing as a township. It is also easily

accessible, and has schools, markets and other commercial activities around, making data collection and information gathering more effective but also ensuring that it is a typical place in the rental market in the town. Also, it is a better benchmark for other areas like Masaka and Mararaba. Overall, these towns' population growth has brought about pressure on the infrastructure and development challenges.

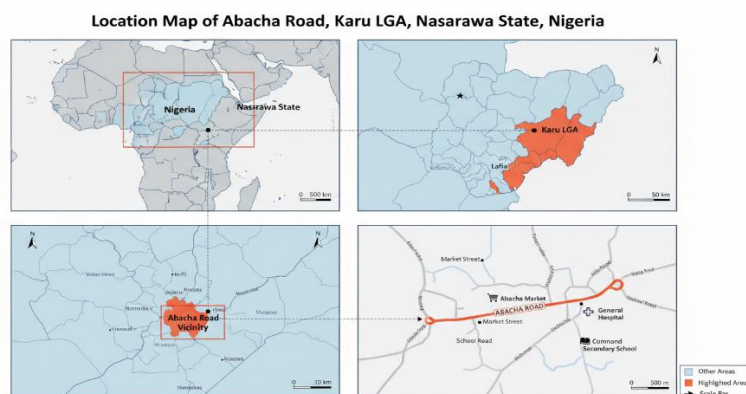


Figure 2: The Karu Local Government Area, Nasarawa State

RESULTS AND DISCUSSION

Level of Availability of Infrastructure in the Study Area (Objective One)

The study sought to ascertain the level of availability of infrastructure in Karu Local Government Area. Respondents rated six infrastructure items on a five-point Likert scale (Very Available = 5, Available = 4, Moderately Available = 3, Poorly Available = 2, Unavailable = 1). The mean score

and standard deviation of each item were computed, and a criterion mean of 3.00 was adopted as the benchmark for determining availability; any item with a mean score of 3.00 and above is considered available, while a mean below 3.00 is considered not available, consistent with the midpoint convention for five-point Likert scales used in similar studies (Sani, Mohammed & Usman, 2023; Ibrahim 2024).

Table 2: Range of Mean Scores and Decision Rule for Level of Infrastructure Availability

Range of Mean Score	Level of Availability
4.20 – 5.00	Very Available
3.40 – 4.19	Available
2.60 – 3.39	Moderately Available
1.80 – 2.59	Poorly Available
1.00 – 1.79	Unavailable

Source: Researcher's Computation, 2026

Note: Range = (Highest scale value – Lowest scale value) ÷ Number of levels = (5 – 1) ÷ 5 = 0.80. Mean scores are interpreted using the range bands above; where a mean falls in the boundary zone between two bands, the higher band is applied only when it meets the lower limit of that band.

Table 3: Mean Score and Standard Deviation of Infrastructure Availability

S/N	Infrastructure Item	Mean	Std. Dev.	Rank	Remark
1	Good road network	3.52	0.85	1 st	Available
2	Availability of water supply	3.39	0.91	2 nd	Available
3	Reliable electricity supply	3.29	0.86	3 rd	Available
4	Security services	3.27	0.85	4 th	Available
5	Other basic infrastructure	3.20	0.81	5 th	Available
6	Good drainage system	3.19	0.85	6 th	Available
	Grand Mean	3.31	—		Available

Source: Field Survey, 2026

Table 3 shows that all six infrastructure items recorded mean scores above the criterion mean of 3.00, with a grand mean of 3.31, indicating that infrastructure in Abacha Road is, on the average, moderately to fairly available rather than absent. Road network availability ranked highest (mean = 3.52), suggesting that respondents perceive road access as the most available form of infrastructure in the area. This is followed

by water supply (mean = 3.39) and electricity supply (mean = 3.29). Drainage system recorded the lowest mean score (3.19), although it still falls within the 'available' category, indicating that while drainage facilities exist, they are the least developed of the infrastructure items assessed. This finding is consistent with the position of Mahmood, Misra, Sun, Luqman and Papa (2025) that infrastructure in rapidly

urbanising peri-urban settlements tends to develop unevenly, with road networks typically receiving earlier attention than drainage and sanitation systems. It also lends support to the position of Ekpo et al., (2025) that infrastructure facilities are present but their quality and reliability vary considerably across different categories, a pattern that is reflected in the relatively close mean scores recorded across all six items in Table 3 (range of 0.33 between the highest and lowest mean), suggesting that no single infrastructure type is dramatically better provided than the others; rather, all six are moderately, and almost uniformly, available.

Tenant Satisfaction with Available Infrastructure

The study further sought to determine the level of tenant satisfaction with available infrastructure in the study area. Respondents rated their level of satisfaction with six infrastructure-related items on a five-point Likert scale (Very Satisfied = 5, Satisfied = 4, Neutral = 3, Dissatisfied = 2, Very Dissatisfied = 1), using the same criterion mean of 3.00 to distinguish satisfaction from dissatisfaction.

Table 4: Mean Score and Standard Deviation of Tenant Satisfaction with Infrastructure

S/N	Satisfaction Item	Mean	Std. Dev.	Rank	Remark
1	Poor infrastructure attracts lower rents (perception)	3.52	1.05	1 st	Satisfied
2	Water supply system	3.34	0.90	2 nd	Satisfied
3	Electricity supply	3.30	0.92	3 rd	Satisfied
4	Security services	3.28	0.87	4 th	Satisfied
5	Road condition	2.99	0.81	5 th	Neutral/Borderline
6	Drainage system	2.98	0.75	6 th	Neutral/Borderline
	Grand Mean	3.24	—		Satisfied

Source: Field Survey, 2026

Table 4 indicates an overall grand mean of 3.24, which is above the criterion mean of 3.00, suggesting that respondents are, on the average, satisfied with the infrastructure available to them, although the margin is narrow for several items. Respondents most strongly affirmed the view that areas with poor infrastructure attract lower rents (mean = 3.52), reflecting a widely shared perception that rental value and infrastructure quality move together in the study area. Satisfaction with water supply (mean = 3.34) and electricity supply (mean = 3.30) followed closely. Road condition (mean = 2.99) and drainage system (mean = 2.98) recorded mean scores that hover almost exactly at the criterion mean, signifying that respondents are, at best, neutral and, in a substantial number of cases, dissatisfied with these two items. This finding is consistent with the complaints documented in Chapter One regarding the poor state of roads and the absence of organized drainage along Abacha Road and lends empirical support to the observation of Akanmu and Salisu (2024) that road and drainage infrastructure in rapidly growing Nigerian peri-urban centres deteriorate fastest

relative to other services. It is worth noting that satisfaction levels, although nominally above the criterion mean for four of the six items, were considerably more moderate than the corresponding availability scores in Table 3, suggesting that the mere presence of infrastructure does not automatically translate into high tenant satisfaction; the quality, reliability and consistency of service delivery appear to matter as much as availability itself.

Rental Values of Residential Properties in the Study Area (Objective Three)

The third objective sought to identify the rental values of residential properties in the study area. Respondents were asked to indicate the physical characteristics of the property they occupy or manage, and to state the annual rent paid or charged. Of the 122 valid responses, 110 (90.2%) provided a usable annual rental figure; the remaining 9.8 per cent either could not recall the exact figure or did not respond to this item, and were excluded from the rental value analysis that follows.

Table 5: Descriptive Statistics of Annual Rental Value (₦)

Statistic	Value (₦)
Valid responses (N)	110
Mean annual rent	2,199,273
Median annual rent	1,300,000
Standard deviation	2,761,453
Minimum annual rent	100,000
Maximum annual rent	15,000,000

Source: Field Survey, 2026 (computed from 110 valid responses)

The mean annual rental value of residential properties in Abacha Road is ₦2,199,273, while the median is considerably lower at ₦1,300,000. The wide gap between the mean and the median, together with the large standard deviation (₦2,761,453) relative to the mean, indicates that the distribution of rental values is positively skewed: a relatively small number of higher-value properties (duplexes and larger

flats with annual rents up to ₦15,000,000) are pulling the average upward, while the bulk of ordinary tenement, self-contained and one- to two-bedroom flats let for considerably less. This pattern is typical of rental markets in mixed-income peri-urban areas such as Abacha Road, where high-end and low-end housing stocks co-exist within the same locality (Onyejiaka & Okpala, 2020).

Table 6: Distribution of Annual Rental Values by Band

Rental Value Band (₦)	Frequency	Percentage of Valid Responses (%)
Below 500,000	24	21.8
500,000 – 999,999	20	18.2
1,000,000 – 1,999,999	25	22.7
2,000,000 – 4,999,999	27	24.6
5,000,000 and above	14	12.7
Total	110	100.0

Source: Field Survey, 2026

Table 6 shows that rental values are fairly dispersed across all bands, with no single band accounting for more than a quarter of valid responses. Properties renting between ₦2,000,000 and ₦4,999,999 per annum form the largest single band (24.6%), closely followed by the ₦1,000,000–₦1,999,999 band (22.7%) and properties renting below ₦500,000 (21.8%). This spread confirms the heterogeneous nature of the housing stock along Abacha Road and is consistent with the variety of property types reported in Table 12, ranging from single rooms to duplexes.

An independent samples comparison of rent figures reported by tenants and landlords shows that landlords reported a notably higher mean annual rent (₦3,083,784, $n = 37$) than tenants (₦1,750,959, $n = 73$), a difference that approached statistical significance ($t = -1.99$, $p = 0.053$). This gap may reflect the tendency of landlords to report the rent for an entire property or portfolio, while tenants more often report what

they personally pay for a single unit; it may also reflect genuine differences in the segment of the housing stock that landlords versus tenants in the sample were describing. This distinction is worth bearing in mind when interpreting average rental figures reported in this study.

Correlation between Infrastructure Availability and Rental Value

To directly test the Availability of infrastructure on rental value, a composite infrastructure availability index was computed for each respondent as the mean of the six availability items in Table 7 (road network, electricity, water, drainage, other basic infrastructure and security), and this index was correlated with the annual rental value reported by the same respondent using the Pearson Product Moment Correlation Coefficient.

Table 7: Pearson Correlation between Infrastructure Availability and Rental Value

Infrastructure Item	Pearson r	p-value	N	Decision ($\alpha = 0.05$)
Reliable electricity supply	0.027	0.778	110	Not significant
Good drainage system	0.024	0.803	110	Not significant
Good road network	-0.122	0.206	110	Not significant
Other basic infrastructure	-0.136	0.157	110	Not significant
Availability of water supply	-0.160	0.095	110	Not significant
Security services	-0.180	0.060	110	Not significant (borderline)
Composite infrastructure index	-0.122	0.205	110	Not significant

Source: Computed from Field Survey, 2026

Contrary to the conventional expectation that better infrastructure availability is associated with higher rental values, Table 7 shows that the composite infrastructure availability index recorded a weak negative correlation with rental value ($r = -0.122$, $p = 0.205$), which is not statistically significant at the 5 per cent level. Examined individually, electricity supply ($r = 0.027$) and drainage ($r = 0.024$) showed negligible positive associations, while road network ($r = -0.122$), other basic infrastructure ($r = -0.136$), water supply ($r = -0.160$) and, most notably, security services ($r = -0.180$, $p = 0.060$, borderline significant) showed weak negative associations with rental value. A supplementary check using the composite tenant satisfaction index (Table 4) produced a similar pattern, with a weak negative correlation against rental value ($r = -0.187$, $p = 0.051$), again falling just short of conventional statistical significance.

These results indicate that, within this sample, the relationship between infrastructure availability and rental value is statistically weak and inconsistent in direction. This is a notable departure from the findings of earlier studies in similarly growing Nigerian and African urban settlements, where infrastructure variables such as road access and electricity supply explained between 18 and 42 per cent of the variation in rental values (Ibrahim et al., 2022; Onyejiaka & Okpala, 2020; Bello et al., 2020; Sani et al., 2023). Several factors specific to Abacha Road may account for this

divergence. First, because infrastructure availability scores in this study clustered narrowly around the 'moderately available' to 'available' categories for almost all respondents (Table 7, grand mean = 3.31, with a fairly narrow range across items), there is comparatively little variation in the infrastructure index across the sample for rental value to track; when nearly everyone reports broadly similar infrastructure conditions, infrastructure cannot statistically explain why some pay much more rent than others. Second, the negative sign on several coefficients suggests that, at the level of an individual unit, rent in Abacha Road may be driven more strongly by property-specific characteristics (size, number of bedrooms, number of bathrooms, and overall property condition, as shown in Table 5) than by the surrounding neighborhood infrastructure, particularly since landlords who privately fund borehole water, generators or security guards on individual plots can command higher rents even where public infrastructure in the wider neighborhood remains moderate. This is consistent with the observation that private property developers in Karu often have to independently provide and upgrade services such as electricity, water and roads in the absence of adequate public provision, which would tend to decouple rental value from publicly assessed neighborhood infrastructure availability. Third, the weak negative correlation, particularly for security and water, may also partly reflect a 'value-for-money'

dynamic, in which tenants paying lower rents in less serviced parts of Abacha Road rate their satisfaction or perceived availability relatively higher because their expectations are correspondingly modest, while tenants paying premium rents for larger, better-finished units are more critical of even moderate service shortfalls.

It is important to interpret this finding within the limitations of the data. The rental value variable was self-reported in an open-text format and subject to recall and reporting inconsistencies, and the cross-sectional design captures a single snapshot rather than the same properties tracked consistently over time. Nonetheless, taken together with the general opinion finding that 95.1 per cent of respondents believe that improved infrastructure will increase rental values in Karu, the results suggest that while infrastructure is widely perceived, in principle, as a long-run determinant of rental value, the data collected in this study did not provide statistical evidence that current, moderate variations in infrastructure availability are driving observable differences in current rental value across the sampled properties in Abacha Road.

CONCLUSION

Based on the findings of this study, it is concluded that infrastructure in Abacha Road in Karu ward, Karu Local Government Area, has reached a moderate, fairly uniform level of availability, with road network being the most available and drainage the least available of the items examined. Tenant satisfaction broadly mirrors this moderate availability, except for road condition and drainage, where satisfaction trails close to the neutral midpoint, pointing to service quality concerns that availability scores alone do not capture. Residential rental values in the study area are considerably varied and are shaped primarily by the physical characteristics of individual properties, such as size, number of bedrooms and bathrooms, and overall condition, rather than by neighborhood level infrastructure availability as measured in this study.

The study also concludes that, contrary to the theoretical expectation drawn from the literature reviewed and contrary to the strongly held opinion of respondents themselves, the statistical evidence from this particular sample does not support a significant relationship between current infrastructure availability and current rental value in Abacha Road. This does not mean that infrastructure is unimportant to the housing market in Karu; rather, it suggests that because infrastructure provision across the sampled area is already relatively uniform and moderate, it does not, at this point in time, strongly differentiate one property's rent from another's. Infrastructure may yet prove to be a significant long-run driver of rental value as the gap between well-served and poorly-served areas within Karu widens, or as more precise, property-matched panel data become available; however, on the basis of the cross-sectional evidence gathered in this study, infrastructure development should be understood as a necessary foundation for a functional and liveable rental housing market in Karu, rather than as the dominant, statistically demonstrable driver of rental value differences in the area at the present time.

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