Network for Research and Development in Africa
International Journal of Information, Technology & Innovation in Africa
ISSN: 2360-9772, Volume 12, Issue 7
PP 93-100 (November, 2024)
DOI: 6732-0-183-066-35-1279
arcnjournals@gmail.com
https://arcnjournals.org

Assessment of Road Network Infrastructure and Tenants' Preference with Shop Properties in Gombe Metropolis

Lukman Garba Sani, Iroaganachi Nneoma Violet, Habu Malam Baba and Muhammad Usman Yahaya
Department of Estate Management and Valuation, Faculty of Environmental Technology, Abubakar Tafawa Balewa University, Bauchi Nigeria

***Abstract**: The road network is a product of urban development processes, and it plays a role in urban economic development. Additionally, road network has many influences on urban economic processes in a metropolitan area. Road networks play a pivotal role in shaping urban landscapes and influencing the dynamics of commercial property values within cities. The configuration and quality of road infrastructure significantly impact the spatial distribution of commercial properties and their respective values. This study examined the road network infrastructure and shop tenants' preferences in Gombe Metropolis, Nigeria. A descriptive research design was employed, collecting data from 289 shop property tenants using a structured questionnaire. Mean ranking analysis was utilized for both objectives. The analysis revealed that while the road network infrastructure in Gombe Metropolis demonstrated average performance, proximity to key destinations was a significant asset. Tenant preferences leaned towards proximity to potential customers, catchment area extension, and shop visibility. Recommendations include prioritizing road network improvements, focusing on location and visibility, tailoring shop properties to tenant preferences, setting realistic rental expectations, and continuously monitoring market trends. These recommendations can guide property owners and investors in optimizing rental income and attracting desirable tenants in Gombe Metropolis.*

INTRODUCTION

The road network is a product of urban development processes, and it plays a role in urban economic development. Additionally, road network has many influences on urban economic processes in a metropolitan area (Chiou, Zhou & Walters, 2021). Road networks play a pivotal role in shaping urban landscapes and influencing the dynamics of commercial property values within cities. The configuration and quality of road infrastructure significantly impact the spatial distribution of commercial properties and their respective values (Shao, Zhang, Cao, Yang & Yin, 2020). Understanding the intricate relationship between road networks and commercial property values is crucial for urban planners, policymakers, and real estate stakeholders to make informed decisions regarding infrastructure development and investment.

Transportation routes foster regional specialization, reduce transport costs, and enhance property values by improving connectivity and accessibility (Donaldson, 2018). The expansion and integration of transport routes can influence the real estate market dynamics by increasing the supply of commercial properties and improving suburban interconnectivity (Srinurak & Mishima, 2017). Improved accessibility to opportunities and services, facilitated by transportation infrastructure, has

a direct bearing on housing prices and commercial property values (Chen, Yazdani, Mojtahedi & Newton, 2019).

The rental values of commercial properties are influenced by various attributes such as neighbourhood, location and structural characteristics (Vandeviver & Bernasco, 2020). Zhang, *et al.,* (2016) demonstrated that commercial properties values in general increased for every kilometre of new road track constructed in a metropolitan area. The connectivity of transportation road network is among the number of factors that affect rental values of commercial properties (Richardson, 2020). A shop property is a multifaceted entity, serving as a hub for retail and commercial activities within a defined market area. Its design, amenities, and tenant mix are pivotal factors in attracting both tenants and shoppers. As outlined by the Ibrahim, Bon, Nawawi, Safian and Ibrahim (2018), the configuration and scale of a mall are intrinsically linked to the characteristics of its target market. Moreover, the evolution of malls has transformed them into not just shopping destinations but also social and recreational centers, offering diverse attractions such as children's play areas, cinemas, promotional zones, and dining establishments (Ibrahim, et al, 2018).

Consumer behavior within the realm of shopping malls has shifted towards selectivity, with patrons gravitating towards malls that offer a compelling array of shops aligned with their preferences. Consequently, retailers face the imperative of selecting locations within malls that cater to these evolving consumer demands. The location of a retail establishment within a mall profoundly influences customer footfall, sales revenue, market share, and profitability. A well-chosen location can sustain a business even in challenging economic climates or oversaturated markets, whereas a poorly situated one may lead to eventual failure (Ojuok, 2016).

In assessing the attractiveness and viability of a mall to both tenants and shoppers, the quality and accessibility of road networks play a crucial role. The components of road networks encompass various facets such as accessibility, connectivity, traffic density, level of service, compactness, and density of specific routes. The concept of "level of service" serves as a comprehensive metric for evaluating transportation infrastructure quality, considering factors beyond mere journey speed, including traffic density and congestion (Carenini, 2022).

The development and maintenance of a robust road network are imperative for sustainable urban growth and economic development (Walters, 2018). The veins and arteries of transportation routes not only facilitate the movement of people and materials but also serve as conduits for progress and development throughout the country (Baker, Lester & Beer, 2016; Depetris-Chauvin & Santos, 2018; Mirkatouli, Hosseini, & Samadi, 2018).

Gombe is a classic case study that exemplifies other Nigerian cities. Its designation as the capital of Gombe State in 1996 triggered a series of developments, including the enhancement of road infrastructure to accommodate the growing influx of pedestrians and vehicles. This transformation facilitated the rise of commercial activities such as banking, retail, wholesale trade, and professional services, drawn by the proximity to the seat of government. The clustering of these activities not only attracted consumers but also ancillary service providers, consequently driving up the demand for commercial space and influencing the values of commercial properties along the city's road network (Oni *et al.,,* 2015).

Urban economic theory underscores the notion that investments in transportation infrastructure, particularly road accessibility, have the potential to stimulate competition for land and increase property values (Jordaan et al.,, 2004). In Gombe, commercial properties are strategically positioned along road networks that experience significant pedestrian and vehicular traffic. Although rental values along these road networks have surged, the rate of increase varies across different rout.

1.2 Statement of the Problem

The success of a shop property depends on many factors, the major one being the shop attractiveness which determines preference by both the potential tenants and customers. It is argued that the shop property attractiveness is an important consideration to the tenants, developers, and visiting

customers. An attractive location and differentiation from competitors are important to the developers that chose the site of a shopping mall. Tenants also investigate the attractiveness of the property and thus make preference for locating in one shop and not another. It is documented that in the second half of 2015, in Nairobi there was a decline in the uptake of retail spaces (Knight Frank Africa Report, 2016) due to the huge competition that has been occasioned by the many shop properties already established.

Dziauddin (2019) investigated the connection between increases in property value in Tyne and Wear and transportation accessibility using the Geographically Weighted Regression (GWR) model, which solves the problem of spatial effects. Using weighted least squares, which links weights to observational distance and regression point position, the study embedded geographical coordinates with a set of local estimations into a regression model and discovered that the relationship between transport route and land value varied over space. Zhang, Li, Lownes and Zhang (2021) investigated how property values increased drastically as a result of road transportation. Road transportation has a good effect, especially when it comes to property values rising in value. However, the study put less emphasis on exact values, and some of the observed increase may be due to optimism of the markets rather than actual effects. Oroleye (2019) investigated the expansion of the intra-urban network in Ilorin, Nigeria, using graph theoretic analysis. The investigation discovered a number of network development indices that tracked the expansion of the town's intra-urban network. The study also discovered a strong correlation between the growth of cities and the construction of new roads, as well as a major impact on land development and transportation planning.

The emergence of major shopping properties in Nigeria has catalyzed a significant shift in the dynamics of retail, prompting a nuanced exploration of mall preference decisions by both retailers and consumers. While extensive research on the success factors of shopping malls has been conducted globally over the past decade, the Nigerian context remains relatively underexplored in scholarly discourse. Moreover, existing research in Nigeria has predominantly focused on consumer patronage rather than delving into the preferences of retailers and tenants, representing a notable knowledge gap within the field (Prus & Sikora, 2021).

Understanding the preferences of shop properties' tenants is paramount, as their choices directly influence the composition and vitality of shopping malls. Factors such as foot traffic, demographic profiles, consumer spending patterns, and proximity to anchor tenants play pivotal roles in shaping retailers' decisions regarding mall location. By elucidating these preferences, this study seeks to provide actionable insights for mall developers and managers aiming to optimize tenant satisfaction and enhance the overall appeal of their properties.

Furthermore, the quality and accessibility of the road network serve as critical determinants of a shopping mall's attractiveness to both tenants and consumers. A well-designed and efficiently managed road network facilitates seamless access to the mall, mitigates congestion, and enhances the overall shopping experience. Rental costs directly impact operational expenses and profit margins, making it imperative for retailers to assess the value proposition offered by different shop relative to their financial constraints and business objectives.

Against this background, this research endeavors to scrutinize the pattern of Gombe road networks, assess their levels of accessibility, connectivity, and traffic density, and analyze the corresponding patterns of shop property values. By examining these variables, the study aims to elucidate the intricate relationship between road networks and commercial rentals in Gombe, Nigeria. Understanding the relationship between road networks and shop property values in Gombe is essential for guiding urban development policies, optimizing land use, and fostering inclusive economic growth.

This study aims to offer valuable insights into the complex decision-making processes underlying mall preference and the effect of road network on shop rental values among shop tenants within the Gombe market in Nigeria. This research endeavors to elucidate the multifaceted dynamics underlying

this relationship, offering valuable insights for urban planners, policymakers, and real estate stakeholders alike.

1.3 Research questions

i. What is the pattern of road network infrastructure in Gombe metropolis?
ii. What is the shop tenants' preference with road network infrastructure in the study area?

1.4 Aim of the study

The aim of this study is to assess **Road Network Infrastructure and Tenants' Preference in Gombe Metropolis** with a view to examining how the condition and accessibility of roads influence the values of commercial properties in Gombe.

A. Road Network Infrastructure

Key	Road Network Infrastructure	Mean	Std. D	Rank
RNI1	Road Traffic Congestion during peak hours	3.84	1.167	7th
RNI2	Road width	4.01	1.121	3rd
RNI3	Road straightness	4.03	1.089	2nd
RNI4	Proximity to Public Transportation	3.93	1.151	5th
RNI5	Linkage to main road	3.62	1.217	8th
RNI6	Road intersection that links to other roads	3.59	1.280	9th
RNI7	Traffic Volume	3.96	0.991	4th
RNI8	Road Condition	3.86	1.026	6th
RNI9	Connectivity with other roads	3.76	1.241	8th
RNI10	Road Proximity to Key Destinations (warehouse, companies etc)	4.15	1.156	1st
Road Network Infrastructure		**3.874**	**.8706**	

The road network infrastructure assessment revealed varying levels of performance across different attributes. Road proximity to key destinations emerged as the strongest asset, with a mean score of 4.15 and ranking first. Road width and road straightness also scored well, with mean scores of 4.01 and 4.03, respectively, securing the 3rd and 2nd positions. However, road traffic congestion during peak hours and linkage to main roads were identified as areas requiring improvement, with mean scores of 3.84 and 3.62, respectively, ranking 7th and 8th. Other attributes such as proximity to public transportation, traffic volume, road condition, and connectivity with other roads exhibited mixed performance, with mean scores ranging from 3.59 to 3.96. Overall, the road network infrastructure demonstrated an average performance, with a mean score of 3.87 and a standard deviation of 0.87.
Road traffic congestion during peak hours had a mean score of 3.84 (SD = 1.167), ranking 7th. Road width had a mean score of 4.01 (SD = 1.121), ranking 3rd. Road straightness had a mean score of 4.03 (SD = 1.089), ranking 2nd. Proximity to public transportation had a mean score of 3.93 (SD = 1.151), ranking 5th. Linkage to main road had a mean score of 3.62 (SD = 1.217), ranking 8th. Road intersection that links to other roads had a mean score of 3.588 (SD = 1.280), ranking 9th. Traffic volume had a mean score of 3.96 (SD = 1.001), ranking 4th. Road condition had a mean score of 3.858 (SD = 1.026), ranking 6th. Connectivity with other roads had a mean score of 3.754 (SD = 1.241), ranking 8th. Road proximity to key destinations had a mean score of 4.149 (SD = 1.156), ranking 1st.

B. Tenants' Preference of Shop Property Aggregate

Key	Tenants' Preference of Shop Property Aggregate	Mean	Std. D	Rank
TPSP1	The human traffic flow within the Shop	3.80	1.137	8TH
TPSP2	Accessibility of this Shop Property by road users	4.04	1.206	5TH
TPSP3	Proximity potential customers	4.12	.797	1ST
TPSP4	Extension of the catchment area of the Shop Property	4.10	.876	2ND
TPSP5	Sales and profit	4.08	1.007	4TH
TPSP6	The visibility of the Shop Property	4.09	.975	3RD
TPSP7	Availability of parking space	3.91	1.046	7TH
TPSP8	The layout of the Shop	4.01	.878	6TH
TPSP9	Cleanliness of the Shop area	3.84	1.021	8TH
Tenants' Preference of Shop Property Aggregate		3.874	0.732	

The tenants' preferences for shop properties were assessed across nine key factors, with proximity to potential customers (M=4.12, SD=.797) emerging as the most important. Other factors considered significant by tenants included the extension of the catchment area (M=4.10, SD=.876) and visibility of the shop property (M=4.09, SD=.975). Factors such as accessibility by road users (M=4.04, SD=1.206) and sales and profit (M=4.08, SD=1.007) were also deemed important. However, factors like human traffic flow (M=3.80, SD=1.137), parking space availability (M=3.91, SD=1.046), and the layout of the shop (M=4.01, SD=.878) were considered critical by tenants. Overall, the tenants' preferences for shop properties were relatively consistent, with a mean aggregate score of 3.874 and a standard deviation of 0.732.

Conclusion

This study's findings align with existing literature on the relationship between shop property attributes, road network infrastructure, and business performance. Previous research has consistently highlighted the significance of these factors in determining the success of commercial enterprises (Liu & Wang, 2018; Chen & Wang, 2020). The study's emphasis on the importance of road network infrastructure is supported by prior research. Adequate infrastructure facilitates access, transportation, and economic activities (Liu & Wang, 2018). Well-maintained roads, efficient traffic flow, and connectivity enhance business competitiveness and attract customers. Conversely, poor conditions, congestion, and limited connectivity can hinder operations and reduce customer satisfaction.

The study's findings on tenant preferences align with existing literature. Several studies have emphasized the significance of location-related factors, such as proximity to potential customers and accessibility, as key determinants of tenant satisfaction and business success (Smith & Jones, 2020; Lee et al., 2018). Kim & Park (2019) and Chen (2021) have highlighted the role of visibility and catchment area extension in attracting customers and driving sales. While the study considered human traffic flow, parking space availability, and shop layout as less critical, their significance cannot be entirely overlooked. Previous research has suggested that these factors can influence tenant satisfaction and operational efficiency (Brown & Davis, 2015; Zhang & Wang, 2022). For example, Brown & Davis (2015) found that adequate parking facilities are essential for attracting customers, especially in areas with limited on-street parking.

Based on these findings, it is recommended that property owners and investors in Gombe Metropolis prioritize the following

1. Investors should prioritize improved road network, particularly targeting where traffic congestion is less and the location that is enhanced with connectivity to main roads. This will enhance accessibility and attract potential customers.

2. Investors should select shop properties in locations with high foot traffic and visibility. This will increase the likelihood of attracting customers and generating higher rental income.
3. Tailor shop properties to meet the preferences of tenants. This includes providing modern amenities, ensuring accessibility, and creating a conducive environment for business operations.
4. While human traffic flow, parking space availability, and shop layout may be less critical than other factors, they should still be considered to enhance tenant satisfaction and operational efficiency.

REFERENCES

Baker, E., Bentley, R., Lester, L., & Beer, A. (2016). Housing affordability and residential mobility as drivers of locational inequality. *Applied geography*, 72, 65-75.

Brown, A., & Davis, J. (2015). The impact of parking facilities on retail store performance. *Journal of Retailing,* 91(3), 257-272.

Carenini, A. J. (2022). Dynamic congestion pricing: exploring the introduction of environmental management in congestion pricing along the 2026 Milan-Bormio Olympic route.

Chen, L. (2021). The role of catchment area in commercial property valuation. *Real Estate Economics,* 49(2), 283-305.

Chen, Y., & Wang, X. (2020). The impact of road network infrastructure on commercial property values: Evidence from China. *Journal of Transport and Logistics,* 10(3), 1-16.

Chen, Y., Li, Z., & Wu, X. (2021). Factors influencing commercial property rental values: A case study of Beijing. *Journal of Real Estate Research,* 12(3), 235-252.

Chen, Y., Yazdani, M., Mojtahedi, M. & Newton, S. (2019). The impact on neighbourhood Commercial properties valuations of a newly proposed public transport project: The Sydney Northwest Metro case study. *Transportation Research Interdisciplinary Perspectives,* 3, 1-8. http://dx.doi.org/10.1016/j.trip.2019.100070

Chiou, D., Zhou, J., & Walters, M. (2021). The leverage game: from offshore to onshore. In Understanding China's Real Estate Markets: Development, Finance, and Investment (pp. 139-157). Cham: *Springer International Publishing.*

Depetris-Chauvin, E., & Santos, R. J. (2018). Unexpected guests: the impact of internal displacement inflows on rental prices in Colombian host cities. *Journal of Development Economics,* 134, 289-309.

Donaldson, D. (2018). Railroads of the Raj: Estimating the impact of transportation. *Research in Transportation Economics*,

Dziauddin, M. F. (2019). Estimating land value uplift around light rail transit stations in Greater Kuala Lumpur: An empirical study based on geographically weighted regression (GWR). *Research in Transportation Economics*, 74, 10-20.

Esolyo, L. M. (2019). *Stategies Adopted By Knight Frank Kenya To Increase Market Share* (Doctoral dissertation, University of Nairobi).

Ibrahim, I., Bon, A. T., Nawawi, A. H., Safian, E. E. M., & Ibrahim, I. (2018). Shopping centre classification scheme: A comparison of international case studies. In *Proceedings of the International Conference on Industrial Engineering and Operations Management Bandung, Indonesia* (pp. 6-8).

Jordaan, A. C., Drost, B. E., & Makgata, M. A. (2004). Land value as a function of distance from the CBD: The case of the eastern suburbs of pretoria. *South African Journal of Economic and Management Sciences,* 7(3), 532–541. https://doi.org/10.4102/sajems.v7i3.1363

Kim, S., & Park, J. (2019). The effects of visibility on retail store performance: A study of street-level storefronts. *Journal of Urban Economics,* 113, 1-16.

Lee, H., Kim, Y., & Park, S. (2018). Location preferences of retail tenants: A study of shopping centers in Seoul, South Korea. *International Journal of Retail & Distribution Management,* 46(1), 70-89.

Lee, J., & Kim, S. (2022). The impact of road network infrastructure on commercial property rental values: Evidence from South Korea. *Urban Studies,* 59(1), 123-140.

Lee, K., Kim, S., & Park, J. (2021). The impact of security features on tenant satisfaction and retention in commercial properties. *Real Estate Economics,* 49(3), 321-345.

Lin, C., & Chen, H. (2019). Overfitting in regression models: Causes, detection, and prevention. Statistical Modeling, 9(2), 127-145.

Liu, Y., & Wang, Y. (2018). The influence of road network structure on commercial land use: A case study of Beijing, China. *Land Use Policy,* 75, 132-144.

Mirkatouli, J., Samadi, R. & Hosseini, A. (2018). Evaluating and analysis of socio-economic variables on land and housing prices in Mashhad, Iran. *Sustainable Cities and Society,* 41, 695-705.

Ojuok, P. O. (2016). Factors That Influence Tenants Preference Of Shopping Mall In Kenya , A Case of Thika Road Mall , Nairobi.

Oni, A. O., Ajibola, M. O., Iroham, O. C., & Akinjare, O. A. (2015). Analysis of accessibility impact on commercial property values in Ikeja, Nigeria. Proceedings of the 25th *International Business Information Management Association Conference - Innovation Vision 2020: From Regional Development Sustainability to Global Economic Growth,* IBIMA 2015, 3739–3755.

Oroleye, A. K. (2019). Appraisal of road transport policy reform in Nigeria: a case of infrastructural deficit. *Journal of Governance and Public Policy*, 6(3), 216-235.

Prus, P., & Sikora, M. (2021). The impact of transport infrastructure on the sustainable development of the region—Case study*. Agriculture,* 11(4), 279.

Richardson, L. (2021). The impact of COVID-19 on service charges in commercial properties. *Journal of Building Survey, Appraisal & Valuation*, *10*(1), 62-71.

Shao, Q., Zhang, W., Cao, X., Yang, J., & Yin, J. (2020). Threshold and moderating effects of land use on metro ridership in Shenzhen: Implications for TOD planning. *Journal of Transport Geography,* 89, 102878.

Smith, J., & Jones, D. (2023). The determinants of shop property rental values: A statistical analysis. *Journal of Property Management,* 35(4), 289-307.

Smith, J., & Jones, M. (2020). The importance of accessibility in commercial property development. *Urban Studies*, 57(1), 123-142.

Smith, J., Johnson, A., & Williams, M. (2022). Factors influencing tenant preferences in the retail sector. *Journal of Commercial Real Estate*, 15(2), 45-62.

Srinurak, N. & Mishima, N. (2017). Urban axis and city shape evaluation through spatial configuration in 'Lan Na'Northern Thailand historic city. *City, Territory and Architecture 4(10).*

Taylor, M., & Wilson, A. (2018). Modeling nonlinear relationships in real estate: A review. *Real Estate Economics,* 46(3), 523-545.

Taylor, R. (2017). The impact of visibility on retail store sales: A case study of high-street shopping districts. *Journal of Property Investment & Finance,* 35(3), 213-230.

Vandeviver, C., & Bernasco, W. (2020). "Location, location, location": Effects of neighborhood and house attributes on burglars' target selection. *Journal of Quantitative Criminology*, 36, 779-821.

Wang, Y., & Zhang, L. (2020). The role of economic conditions and competition in commercial property rental markets. *International Journal of Urban Economics,* 102(2), 189-210.

Wen, H., Xiao, Y., Hui, E. C. M., & Zhang, L. (2018). Education quality, accessibility, and Commercial properties price: Does spatial heterogeneity exist in education capitalization? *Habitat International,* 78, 68-82.

Zhang, X., & Wang, Y. (2022). The influence of store layout on customer behavior and purchase decisions. *Journal of Retailing and Consumer Services,* 67, 103038.

Zhang, X., & Wang, Y. (2022). The influence of store layout on customer behavior and purchase decisions. *Journal of Retailing and Consumer Services,* 67, 103038.