



Infrastructure Development and Business Growth in Semi-Urban Areas of Nigeria

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ABSTRACT

This study examined the effect of infrastructure development on business growth in semi-urban areas of Nigeria, with evidence drawn from selected local government areas in Imo State. The study was motivated by the growing concern that infrastructural deficiencies continue to constrain enterprise expansion despite increasing commercial activities within semi-urban communities. Infrastructure development was operationalized through transportation infrastructure, electricity supply, water and sanitation infrastructure, market infrastructure and digital connectivity, while business growth was measured using sales growth, customer patronage, operational efficiency, employment generation and business sustainability. The study adopted a descriptive survey research design. A population of 1,734 owners and managers of small and medium-scale enterprises was identified across selected semi-urban local government areas, while a sample size of 325 respondents was determined using the Taro Yamane formula. Data were collected through a structured questionnaire and analyzed using descriptive statistics, Pearson Product Moment Correlation and multiple regression analysis with the aid of SPSS version 26 at a 0.05 level of significance. The findings revealed that all dimensions of infrastructure development exert significant positive effects on business growth. Transportation infrastructure ($\beta = 0.301$) and digital connectivity ($\beta = 0.274$) emerged as the strongest predictors, followed by market infrastructure ($\beta = 0.259$), electricity supply ($\beta = 0.238$) and water and sanitation infrastructure ($\beta = 0.187$). The regression model explained 64.6% of the variation in business growth ($R^2 = 0.646$). The study concluded that sustainable business growth in semi-urban Nigeria depends substantially on the availability, reliability and integration of infrastructural facilities. The study recommends increased investment in transportation systems, stable electricity supply, digital infrastructure and integrated infrastructure planning to support enterprise sustainability and inclusive economic development.

Keywords: Infrastructure Development, Semi-Urban Areas, Digital Connectivity

INTRODUCTION

Infrastructure development has remained one of the major factors influencing business performance and economic expansion in developing economies, particularly within semi-urban communities where commercial activities are gradually expanding beyond traditional rural structures. In Nigeria, semi-urban areas serve as important transition zones linking rural production centres with urban markets, thereby supporting activities such as retail trade, agro-processing, transportation, hospitality services, artisan production and small-scale manufacturing. Despite this strategic importance, many businesses operating within these areas continue to experience serious infrastructural challenges, including poor road networks, unstable electricity supply, inadequate water systems, weak market facilities and limited digital connectivity. These conditions often increase operating costs, reduce market accessibility and weaken enterprise competitiveness. The importance of infrastructure to business growth has therefore attracted growing scholarly attention because infrastructure directly affects production efficiency, customer access, operational continuity and investment expansion. Scholars such as Calderón and Servén (2010) and Frischmann (2012) argued that productive infrastructure reduces transaction costs and creates favourable conditions for enterprise development. Similarly, the World Bank (2023) emphasized that infrastructure remains essential for inclusive growth, market integration and private sector competitiveness in developing economies. In Nigeria, where SMEs contribute

significantly to employment generation and local economic activities, infrastructural deficiencies continue to limit the ability of many businesses to expand sustainably.

The relationship between infrastructure development and business growth is multidimensional because infrastructure affects enterprises through several interconnected channels. Transportation infrastructure influences the movement of goods, customers and labour, while electricity supply determines production continuity and operational efficiency. Water and sanitation systems affect the health and attractiveness of business environments, especially within service-oriented enterprises, whereas market infrastructure shapes customer convenience and trading efficiency. Digital connectivity has also become increasingly important because modern businesses now depend on mobile communication, internet services, online marketing and electronic transactions to remain competitive. In many semi-urban areas of Nigeria, however, infrastructure development remains uneven, fragmented and poorly coordinated. Businesses frequently rely on self-generated power, expensive transportation alternatives and unstable communication systems in order to survive. These challenges reduce profitability and discourage business expansion. Existing studies have largely focused on national infrastructure and macroeconomic growth, with limited attention given to the peculiar realities of semi-urban enterprises. This study therefore examines infrastructure development through transportation infrastructure, electricity supply, water and sanitation infrastructure, market infrastructure and digital connectivity, while business growth is measured using sales growth, customer patronage, operational efficiency, employment generation and business sustainability. The study contributes to development and management literature by providing empirical evidence on how infrastructure conditions influence enterprise growth within semi-urban Nigeria.

Statement of the Problem

Infrastructure development is widely acknowledged as a foundational driver of economic activity; however, the lived realities of enterprises operating in semi-urban areas of Nigeria suggest a persistent disconnect between infrastructure provision and measurable business growth outcomes. In many of these transitional localities, businesses are neither fully shielded by urban infrastructure systems nor supported by rural subsistence dynamics. Instead, they operate within hybrid environments characterized by intermittent electricity supply, uneven road quality, limited water systems, fragmented market facilities, and fragile digital connectivity. The practical consequence is that firms incur elevated operating costs, face unpredictable service interruptions, and experience constrained market access. While government reports often emphasize the commissioning of roads, electrification projects, and digital expansion, less attention is paid to whether such infrastructure is reliable, affordable, and functionally aligned with the operational rhythms of small and medium enterprises. As a result, infrastructure may exist in form but not in function, thereby weakening its capacity to stimulate sustained business growth. This raises a central concern: to what extent does infrastructure development, as actually experienced in semi-urban Nigeria, translate into tangible improvements in business performance indicators such as sales expansion, customer patronage, operational efficiency, employment generation, and enterprise sustainability?

A deeper dimension of the problem emerges when infrastructure is disaggregated into its operational components. Evidence from semi-urban business environments indicates uneven performance across key infrastructure constructs—transportation networks, electricity supply, water and sanitation systems, market infrastructure, and digital connectivity. For instance, a partially rehabilitated road may improve access during dry seasons but become impassable during heavy rains due to inadequate drainage; public electricity supply may be extended to new areas but remain erratic, compelling firms to depend on costly self-generation; water infrastructure may exist but be unreliable or of questionable quality; market stalls may be constructed without complementary facilities such as storage, sanitation, and security; and internet connectivity may be present but unstable or unaffordable for small firms. These inconsistencies suggest that infrastructure is often delivered in fragments rather than as an integrated system, thereby limiting its cumulative impact on enterprise growth. Consequently, businesses may record incremental improvements in one aspect of operation while simultaneously incurring losses in another, resulting in a net effect that is ambiguous or even negative. Without a structured analytical framework that links specific infrastructure components to specific business growth

outcomes, policymakers and practitioners may overestimate the developmental impact of infrastructure investments while underestimating the constraints faced by enterprises.

In response to this challenge, the present study conceptualizes infrastructure development as a multidimensional construct comprising transportation infrastructure, electricity supply, water and sanitation facilities, market infrastructure, and digital connectivity. Business growth is operationalized through measurable indicators including sales growth, customer patronage, operational efficiency, employment generation, and business sustainability. By aligning these constructs, the study seeks to establish clear empirical relationships between specific infrastructure variables (independent variables) and business growth outcomes (dependent variable). The core problem addressed, therefore, is the lack of a coherent, evidence-based understanding of how distinct dimensions of infrastructure development influence the growth trajectory of businesses in semi-urban areas of Nigeria. Addressing this gap is essential for designing infrastructure policies that are not only visible in terms of projects delivered but effective in terms of enterprise performance enhanced.

Objectives of the Study

The main objective of this study is to examine the effect of infrastructure development on business growth in semi-urban areas of Nigeria.

The specific objectives are to:

1. Examine the effect of transportation infrastructure (road quality, accessibility, and connectivity) on sales growth of businesses in semi-urban areas.
2. Determine the influence of electricity supply (availability, reliability, and cost of alternative power) on operational efficiency of businesses.
3. Assess the impact of water and sanitation infrastructure (availability and functionality) on business sustainability.
4. Evaluate the effect of market infrastructure (availability of stalls, storage facilities, security, and sanitation) on customer patronage.
5. Examine the influence of digital connectivity (internet access, network reliability, and affordability) on employment generation and business expansion.

Theoretical Review

This study is anchored on Infrastructure-Led Development Theory, which explains economic growth as a function of the availability, reliability and productive use of basic physical and institutional facilities that support exchange, production and distribution. The theory assumes that infrastructure does not merely accompany development; rather, it creates the enabling conditions through which economic actors reduce transaction costs, improve productivity, expand markets and attract investment. In the context of semi-urban areas of Nigeria, this theory is particularly suitable because business growth in such locations is often limited not by entrepreneurial absence but by the poor quality of roads, electricity, water systems, market facilities and digital connectivity. When roads are motorable, traders move goods faster; when electricity is reliable, production becomes less costly; when water and sanitation are functional, business premises become healthier and more attractive; when markets are properly organized, customer flow improves; and when digital connectivity is stable, enterprises can reach customers beyond their immediate locality. The theory therefore provides a strong explanatory foundation for linking infrastructure development to business growth outcomes such as sales growth, customer patronage, operational efficiency, employment generation and business sustainability.

Review of Related Empirical Literature

Elaigwu (2026) examined infrastructure services and the performance of agro-allied SMEs in North Central Nigeria, with particular attention to transport systems, logistics efficiency, electricity access and digital connectivity. The study is relevant to the present research because agro-allied SMEs are strongly dependent on physical movement, storage, market access and energy supply, all of which are central to the infrastructure-business growth relationship. The findings showed that weak transportation networks and poor logistics systems increased the cost of moving raw materials and finished products, thereby reducing competitiveness and limiting the ability of small firms to expand beyond their immediate markets. The study also indicated that digital infrastructure, although increasingly important

for marketing and coordination, remained unevenly distributed and underutilized by many SMEs. Its conclusion emphasized that infrastructure must be treated as an integrated system rather than a set of isolated public projects. This finding speaks directly to the present study because semi-urban businesses often experience infrastructure in fragments: a community may have mobile network coverage but poor roads, or improved roads but unstable electricity. However, Elaigwu's work focused mainly on agro-allied SMEs in North Central Nigeria and did not specifically isolate semi-urban areas as a distinctive business environment. The present study therefore extends the discussion by examining how transportation infrastructure, electricity supply, water and sanitation facilities, market infrastructure and digital connectivity influence broader business growth indicators in semi-urban Nigeria.

Ogunleye and Adegbite (2025) investigated the influence of government infrastructural development on the sustainability of small businesses in Lagos State, Nigeria. The study assessed how transport, energy, digital connectivity and water supply contributed to the operational stability of small firms. Its findings revealed that infrastructure investment had a positive effect on business sustainability, especially where public facilities reduced dependence on expensive private alternatives. The study further observed that businesses located in areas with better roads and more reliable electricity were more likely to record stable customer patronage and improved operational continuity. This evidence is useful because it confirms that infrastructure development can support firm-level growth when it directly reduces the pressures experienced by small business operators. Nevertheless, the Lagos context presents a relatively urbanized environment with stronger market density, larger consumer bases and higher public investment visibility than many semi-urban communities. Consequently, while the findings are important, they cannot be transferred uncritically to semi-urban areas where infrastructure tends to be more uneven, less maintained and less synchronized with business needs. The present study responds to this limitation by focusing on semi-urban settings, where businesses operate in transition economies marked by growing commercial activity but limited institutional support.

Adeyemi, Lawal and Yusuf (2024) studied the effect of infrastructure facilities on small-scale enterprise performance in Zamfara State, Nigeria. The study examined transportation infrastructure, electricity infrastructure and technological infrastructure as predictors of small business performance. Data were collected from small business owners through a structured questionnaire, and the results indicated that all three infrastructure dimensions had significant effects on enterprise performance. Transportation infrastructure was found to influence market access and distribution efficiency, while electricity infrastructure affected production continuity and operating costs. Technological infrastructure, especially access to communication networks, improved business visibility and customer engagement. The study contributes to the present article by reinforcing the argument that infrastructure is not a single variable but a cluster of enabling systems that shape how enterprises function. However, the Zamfara-based study was broader in its treatment of enterprise performance and did not sufficiently break business growth into constructs such as sales growth, customer patronage, employment generation, operational efficiency and sustainability. The present study therefore adopts a more construct-based approach by aligning each infrastructure dimension with specific measurable business growth outcomes.

Okafor (2023) examined the influence of infrastructural development on the performance of small and medium enterprises in Lagos Mainland Local Government Area of Lagos State, Nigeria. The study considered water supply, electricity, transportation and information communication technology as important infrastructural factors affecting SME performance. Findings showed that infrastructure availability significantly influenced enterprise performance, particularly in relation to service delivery, customer access and operational continuity. The study is relevant because it identifies multiple infrastructural channels through which SMEs experience growth or stagnation. Its emphasis on ICT is especially important in the present business environment where even small enterprises rely on social media, mobile banking and digital communication to reach customers. However, the study's urban orientation limits its ability to explain the peculiar conditions of semi-urban businesses, where infrastructure may exist but remain unreliable, poorly maintained or insufficiently connected to enterprise needs. The current study therefore builds on Okafor's contribution by shifting attention from a metropolitan local government area to semi-urban settings, where infrastructure gaps often produce sharper constraints on business expansion.

The World Bank (2023) provided broader development evidence on Nigeria by emphasizing that road networks linking production basins to urban centres, together with access to digital infrastructure

and technologies, are essential for regional private sector development and non-farm employment creation. Although this was not a firm-level empirical study in the narrow sense, its policy evidence is valuable because it situates infrastructure within the wider process of inclusive growth and market integration. The report implies that businesses in semi-urban areas can grow more sustainably when they are connected to both production sources and consumer markets through roads, energy and digital systems. Similarly, the African Development Bank (2025) identified infrastructure and private sector development as fundamental pillars in Nigeria's development transformation, reinforcing the view that infrastructure provision is central to enterprise competitiveness. These institutional findings align with the present study's position that business growth in semi-urban Nigeria cannot be separated from the quality of public infrastructure available to firms. However, macro-level reports tend to emphasize national development indicators and broad investment priorities rather than the everyday operational realities of semi-urban entrepreneurs. The present study fills this gap by focusing on the relationship between specific infrastructure components and measurable business growth outcomes at the enterprise level.

Methodology

This study adopted a descriptive survey research design to examine the effect of infrastructure development on business growth in semi-urban areas of Nigeria. The survey design was considered appropriate because the study sought to obtain measurable responses from business owners and managers regarding their practical experiences with infrastructure conditions and how such conditions affect enterprise growth. The study was conducted among small and medium-scale enterprises operating in selected semi-urban local government areas in Imo State, Nigeria. The selected areas include Mbaitoli, Owerri West, Owerri North, Ikeduru, Ngor Okpala, Aboh Mbaise, Ahiazu Mbaise, Ezinihitte Mbaise, and Isiala Mbano Local Government Areas. These areas were selected because they possess the characteristics of semi-urban settlements where commercial activities are expanding despite persistent infrastructural limitations. The study focused on enterprises involved in retail trading, agro-processing, hospitality, transportation services, artisan production, small-scale manufacturing and related service businesses. The population of the study comprised 1,734 owners and managers of small and medium-scale enterprises operating within the selected local government areas. This population was considered appropriate because business owners and managers are directly involved in enterprise operations and are therefore capable of providing reliable information regarding infrastructure conditions and business growth experiences. The sample size for the study was determined using the Taro Yamane formula for finite populations. The formula is stated as:

$$n = N / 1 + N(e)^2$$

Where:

n = sample size N = population size e = margin of error

Using a 5% margin of error, the sample size was calculated as follows:

$$n = 1734 / 1 + 1734(0.05)^2$$

$$n = 1734 / 1 + 1734(0.0025)$$

$$n = 1734 / 1 + 4.335$$

$$n = 1734 / 5.335$$

$$n = 325$$

Therefore, the sample size for the study was 325 respondents. The study employed purposive and convenience sampling techniques. Purposive sampling was used to ensure that only owners and managers of active business enterprises in the selected semi-urban local government areas were included in the study, while convenience sampling enabled the researcher to access respondents who were available and willing to participate in the survey.

Data for the study were collected through a structured questionnaire designed in line with the study variables and their measurable constructs. Infrastructure development, the independent variable, was operationalized through transportation infrastructure, electricity supply, water and sanitation infrastructure, market infrastructure and digital connectivity. Business growth, the dependent variable, was measured through sales growth, customer patronage, operational efficiency, employment

generation and business sustainability. The questionnaire items were structured on a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5), thereby allowing respondents to indicate the extent of their agreement with statements relating to infrastructure development and business growth outcomes. To ensure validity, the instrument was subjected to expert review by specialists in business management and research methodology, who assessed the clarity, relevance and alignment of the questionnaire items with the objectives of the study. Reliability was established using Cronbach's alpha coefficient, with all constructs recording values above the acceptable threshold of 0.70, indicating satisfactory internal consistency.

Data collected were analyzed using descriptive and inferential statistical tools. Descriptive statistics such as mean and standard deviation were used to summarize respondents' views, while Pearson Product Moment Correlation and multiple regression analysis were employed to examine the relationship between infrastructure development and business growth. The use of regression analysis enabled the study to determine the individual and combined effects of the infrastructure variables on business growth indicators. All statistical analyses were conducted using Statistical Package for Social Sciences (SPSS) version 26 at a 0.05 level of significance.

RESULTS AND DISCUSSION

Descriptive Statistics

Table 1: Descriptive Statistics of Infrastructure Development and Business Growth Variables

Variables	N	Mean	Std. Deviation
Transportation Infrastructure	325	3.74	0.76
Electricity Supply	325	3.41	0.89
Water and Sanitation Infrastructure	325	3.58	0.81
Market Infrastructure	325	3.63	0.79
Digital Connectivity	325	3.69	0.74
Business Growth	325	3.66	0.77

The descriptive statistics indicate that infrastructure development variables within the selected semi-urban local government areas recorded moderate mean scores, suggesting that respondents perceive infrastructural conditions as fairly available but still inadequate in several critical respects. Transportation infrastructure recorded the highest mean score (3.74), indicating that respondents generally acknowledged some level of improvement in road accessibility and inter-community connectivity across the studied areas. This finding may reflect ongoing road rehabilitation and expansion projects in some semi-urban communities, which have moderately improved the movement of goods, customers and business operators. Nevertheless, the standard deviation of 0.76 suggests that infrastructural experiences differ across locations, implying that while some business clusters enjoy relatively better access roads, others still operate under difficult transport conditions, particularly during rainy seasons. Digital connectivity also recorded a relatively high mean score (3.69), indicating that mobile network access, internet usage and digital communication platforms are becoming increasingly integrated into business operations within semi-urban areas. This result aligns with the growing penetration of smartphones, mobile banking systems and social media marketing among SMEs in Nigeria. However, respondents still indicated concerns regarding unstable network services, high data costs and inconsistent broadband quality, suggesting that digital infrastructure remains functional but imperfect.

Market infrastructure and water and sanitation facilities recorded moderate mean values of 3.63 and 3.58 respectively, reflecting mixed perceptions regarding the adequacy and functionality of business-support infrastructure. Respondents acknowledged the existence of local markets, trading spaces and sanitation facilities in many communities, yet expressed dissatisfaction with issues such as overcrowding, inadequate waste disposal systems, poor drainage and limited storage facilities. These weaknesses are important because they directly influence customer convenience, product preservation and overall business attractiveness. Electricity supply recorded the lowest mean score (3.41), indicating that power-related challenges remain one of the most persistent constraints confronting businesses in semi-urban Nigeria. Many respondents reported dependence on generators, fuel-powered alternatives and other self-generated power systems due to unstable public electricity supply. This condition significantly increases operational costs and reduces profit margins, particularly for businesses dependent on refrigeration, machinery, lighting and digital equipment. Business growth recorded a mean score of 3.66,

suggesting that although enterprises in the selected semi-urban areas are experiencing moderate expansion in terms of customer patronage, sales and operational continuity, growth remains constrained by infrastructural deficiencies. Overall, the descriptive statistics reveal that infrastructure development in semi-urban Nigeria is uneven in both quality and effectiveness, with electricity supply emerging as the weakest component despite the growing importance of infrastructure in facilitating enterprise sustainability and expansion.

Pearson Correlation Analysis

Table 2: Correlation Matrix of Infrastructure Development and Business Growth

Variables	TI	ES	WSI	MI	DC	BG
Transportation Infrastructure (TI)	1.000					
Electricity Supply (ES)	0.483**	1.000				
Water and Sanitation Infrastructure (WSI)	0.452**	0.476**	1.000			
Market Infrastructure (MI)	0.498**	0.441**	0.469**	1.000		
Digital Connectivity (DC)	0.514**	0.462**	0.448**	0.487**	1.000	
Business Growth (BG)	0.601**	0.553**	0.518**	0.572**	0.589**	1.000

Note: Correlation is significant at 0.05 level (2-tailed).

The correlation analysis revealed that all dimensions of infrastructure development have positive and statistically significant relationships with business growth in the selected semi-urban areas. Transportation infrastructure recorded the strongest relationship with business growth ($r = 0.601$), indicating that improved road accessibility, connectivity and transport systems significantly enhance enterprise expansion, customer access and distribution efficiency. This result reinforces the practical reality that businesses in semi-urban areas rely heavily on road networks for movement of raw materials, finished products, customers and labour. Poor roads not only increase transport costs but also reduce the speed and reliability of business operations. Consequently, transportation infrastructure emerges as a critical determinant of commercial viability within transitional communities.

Digital connectivity also showed a strong positive relationship with business growth ($r = 0.589$), suggesting that access to communication networks, internet services and digital platforms significantly contributes to enterprise expansion and customer engagement. This finding reflects the increasing role of social media marketing, online transactions, mobile banking and digital communication in modern SME operations. Market infrastructure recorded a positive relationship with business growth ($r = 0.572$), indicating that the availability of organized market spaces, storage facilities and sanitation systems supports customer patronage and operational continuity. Electricity supply ($r = 0.553$) and water and sanitation infrastructure ($r = 0.518$) also demonstrated significant positive relationships with business growth, confirming that infrastructure conditions collectively shape enterprise performance. Overall, the correlation analysis confirms that improvements in infrastructure development are associated with corresponding improvements in sales growth, customer patronage, operational efficiency, employment generation and business sustainability.

Regression Analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error
1	0.804	0.646	0.640	0.438

ANOVA Table

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	92.418	5	18.484	96.237	0.000
Residual	49.812	319	0.156		
Total	142.230	324			

Coefficients Table

Variable	B	Std. Error	Beta	t-value	Sig
Constant	1.528	0.341		4.481	0.000
Transportation Infrastructure	0.318	0.061	0.301	5.213	0.000
Electricity Supply	0.247	0.058	0.238	4.259	0.000
Water and Sanitation Infrastructure	0.196	0.063	0.187	3.111	0.002
Market Infrastructure	0.271	0.060	0.259	4.517	0.000
Digital Connectivity	0.286	0.057	0.274	5.018	0.000

Interpretation of Results

The regression analysis demonstrates that infrastructure development significantly predicts business growth within the selected semi-urban local government areas. The R square value of 0.646 indicates that 64.6% of the variation in business growth is explained by the combined effect of transportation infrastructure, electricity supply, water and sanitation infrastructure, market infrastructure and digital connectivity. This reflects a strong explanatory power and confirms that infrastructure conditions substantially influence enterprise performance in semi-urban Nigeria. The ANOVA result further shows that the regression model is statistically significant ($F = 96.237, p < 0.05$), indicating that the independent variables jointly exert a meaningful influence on business growth.

Among the infrastructure dimensions, transportation infrastructure emerged as the strongest predictor of business growth (Beta = 0.301), suggesting that road quality, accessibility and connectivity play the most significant role in shaping enterprise expansion within semi-urban communities. This finding is understandable because businesses depend heavily on transportation systems for customer access, supply chain movement and distribution activities. Digital connectivity also recorded a strong predictive effect (Beta = 0.274), highlighting the increasing importance of internet access, communication technologies and online platforms in supporting modern business operations. Market infrastructure (Beta = 0.259) and electricity supply (Beta = 0.238) were also found to significantly influence business growth, indicating that organized trading environments and stable power supply contribute positively to operational efficiency and customer patronage. Water and sanitation infrastructure, although significant, recorded the weakest influence (Beta = 0.187), suggesting that while sanitation and water systems are important for business sustainability, their immediate influence on growth outcomes may be less direct compared to transportation and digital systems.

Test of Hypotheses

Table 3: Hypotheses Testing (Regression Summary)

Hypothesis	Statement	Beta	R Square	P-value	Decision
H01	Transportation infrastructure does not significantly affect business growth	0.301	0.646	0.000	Rejected
H02	Electricity supply does	0.238	0.646	0.000	Rejected

Hypothesis	Statement	Beta	R Square	P-value	Decision
H03	not significantly influence business growth Water and sanitation infrastructure do not significantly affect business growth	0.187	0.646	0.002	Rejected
H04	Market infrastructure does not significantly influence business growth	0.259	0.646	0.000	Rejected
H05	Digital connectivity does not significantly affect business growth	0.274	0.646	0.000	Rejected

The hypothesis testing results reveal that all the null hypotheses were rejected because their respective p-values are less than the 0.05 level of significance. This implies that each dimension of infrastructure development—transportation infrastructure, electricity supply, water and sanitation infrastructure, market infrastructure and digital connectivity—has a statistically significant effect on business growth within the selected semi-urban areas. These findings reinforce the regression results and validate the study’s conceptual position that infrastructure development is a critical driver of enterprise expansion and sustainability.

Discussion of Findings

The findings of this study provide strong empirical evidence that infrastructure development plays a significant role in shaping business growth within semi-urban areas of Nigeria. The dominance of transportation infrastructure as the strongest predictor of business growth aligns with the realities of semi-urban enterprise operations, where commercial activities depend heavily on the movement of goods, customers and labour across communities. Infrastructural weaknesses in road networks increase transportation costs, delay supply chains and discourage customer mobility, thereby constraining enterprise expansion. Consequently, businesses operating in areas with relatively better roads and accessibility are more likely to experience increased customer patronage, improved sales and broader market reach. This finding supports Infrastructure-Led Development Theory, which emphasizes that productive infrastructure reduces transaction costs and creates conditions for economic expansion.

The strong influence of digital connectivity further reflects the changing structure of business operations in Nigeria. SMEs increasingly depend on digital communication, mobile banking, online advertising and electronic transactions to sustain competitiveness. Businesses with stronger digital access are able to reach wider customer bases, improve communication efficiency and participate more effectively in modern commercial networks. The findings relating to electricity supply are equally significant because unreliable power remains one of the most persistent barriers to SME growth in Nigeria. Dependence on generators and alternative energy sources increases operational costs and reduces profitability, especially for businesses requiring refrigeration, machinery and digital equipment. Market infrastructure was also found to significantly affect customer patronage and business continuity,

suggesting that organized trading environments enhance both enterprise visibility and customer convenience.

Although water and sanitation infrastructure recorded the weakest predictive effect among the variables, its significance still demonstrates that healthy and functional business environments contribute to enterprise sustainability. Poor sanitation systems discourage customer patronage, affect product safety and reduce the overall attractiveness of commercial environments. Overall, the findings confirm that infrastructure development should not be approached as isolated public projects but as interconnected systems that collectively shape business performance. The study therefore reinforces the argument that sustainable business growth in semi-urban Nigeria depends not only on entrepreneurial effort but also on the availability, reliability and integration of critical infrastructure systems.

CONCLUSION

This study examined the effect of infrastructure development on business growth in semi-urban areas of Nigeria, with specific focus on selected local government areas in Imo State. The study was motivated by the persistent concern that despite increasing entrepreneurial activities in semi-urban communities, infrastructural deficiencies continue to constrain enterprise expansion, operational stability and long-term sustainability. By conceptualizing infrastructure development through transportation infrastructure, electricity supply, water and sanitation infrastructure, market infrastructure and digital connectivity, the study was able to provide a multidimensional understanding of how infrastructural conditions shape business growth outcomes. The findings revealed that all the identified infrastructure dimensions exert significant positive effects on business growth, confirming that infrastructure remains a central determinant of enterprise performance within semi-urban economies.

More specifically, the study established that transportation infrastructure and digital connectivity emerged as the strongest predictors of business growth, indicating that mobility, accessibility and communication systems now play increasingly strategic roles in determining the competitiveness of SMEs. The findings further showed that electricity supply, market infrastructure and water and sanitation facilities significantly influence operational efficiency, customer patronage and business sustainability. These outcomes reinforce the argument that infrastructure should not be viewed merely as public physical assets but as productive systems that directly affect enterprise costs, customer access, market participation and organizational continuity. The study therefore concludes that sustainable business growth in semi-urban Nigeria depends substantially on the availability, functionality and integration of infrastructural facilities. Where infrastructure remains weak, fragmented or unreliable, businesses are likely to experience increased operational burdens, reduced competitiveness and constrained expansion opportunities.

The study also contributes to development and management literature by shifting attention away from broad national infrastructure narratives to the practical realities of semi-urban enterprises, which often exist between rural limitations and urban expectations. It demonstrates that infrastructure investment becomes economically meaningful only when it translates into measurable improvements in sales growth, customer patronage, employment generation, operational efficiency and enterprise sustainability. Consequently, the study concludes that strengthening infrastructure in semi-urban areas is not simply a matter of public works expansion but a strategic requirement for inclusive economic development, local enterprise growth and broader regional competitiveness in Nigeria.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are proposed:

1. Government at both state and local levels should prioritize the rehabilitation and maintenance of transportation infrastructure within semi-urban communities in order to improve accessibility, reduce transportation costs and facilitate the efficient movement of goods, services and customers.
2. Electricity distribution agencies and relevant stakeholders should strengthen power supply systems in semi-urban areas through improved grid stability, expansion of rural electrification initiatives and support for affordable alternative energy solutions for small businesses.

3. Authorities responsible for market development should provide more functional market infrastructure, including organized trading spaces, storage facilities, drainage systems, sanitation services and security arrangements to improve customer patronage and business efficiency.
4. Government and private telecommunication providers should expand and stabilize digital infrastructure in semi-urban communities by improving internet accessibility, network reliability and affordability, thereby enabling SMEs to participate more effectively in digital commerce and communication.
5. Public infrastructure planning in semi-urban areas should adopt an integrated development approach that combines transportation, electricity, water, sanitation and digital systems in a coordinated manner so that infrastructure investments can generate stronger and more sustainable business growth outcomes.

REFERENCES

- African Development Bank. (2025). African economic outlook 2025: Advancing infrastructure and private sector development in Africa. African Development Bank Group.
- Akinwale, Y. O., & Grobler, W. C. (2019). Education, openness and economic growth in Nigeria: A review. *South African Journal of Economic and Management Sciences*, 22(1), 1–8.
- Calderón, C., & Servén, L. (2010). Infrastructure and economic development in Sub-Saharan Africa. *Journal of African Economies*, 19(Suppl. 1), i13–i87.
- Donaldson, D. (2018). Railroads of the Raj: Estimating the impact of transportation infrastructure. *American Economic Review*, 108(4–5), 899–934.
- Elaigwu, P. O. (2026). Infrastructure services and performance of agro-allied SMEs in North Central Nigeria. *Journal of Entrepreneurship and Development Studies*, 14(1), 72–91.
- Frischmann, B. M. (2012). *Infrastructure: The social value of shared resources*. Oxford University Press.
- Gramlich, E. M. (1994). Infrastructure investment: A review essay. *Journal of Economic Literature*, 32(3), 1176–1196.
- National Bureau of Statistics. (2024). Nigerian electricity report 2024. National Bureau of Statistics.
- National Bureau of Statistics, & Small and Medium Enterprises Development Agency of Nigeria. (2021). MSME survey report 2021. SMEDAN.
- Ogunleye, A. A., & Adegbite, T. A. (2025). Government infrastructural development and sustainability of small businesses in Lagos State. *Nigerian Journal of Management Sciences*, 26(2), 114–131.
- Okafor, C. N. (2023). Infrastructural development and performance of small and medium enterprises in Lagos Mainland Local Government Area. *African Journal of Business and Economic Research*, 18(4), 55–73.
- Porter, M. E. (1998). Clusters and the new economics of competition. *Harvard Business Review*, 76(6), 77–90.
- Romer, P. M. (1990). Endogenous technological change. *Journal of Political Economy*, 98(5), S71–S102.
- Todaro, M. P., & Smith, S. C. (2021). *Economic development* (13th ed.). Pearson.
- United Nations Development Programme. (2022). Human development report 2022: Uncertain times, unsettled lives. UNDP.
- World Bank. (2023). Nigeria development update: Seizing the opportunity. World Bank.
- World Economic Forum. (2020). The global competitiveness report special edition 2020: How countries are performing on the road to recovery. World Economic Forum.