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Communication and Sanitation Infrastructure: Determinants of Business Continuity of Msmes in Bayelsa State

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ABSTRACT

This study examined the effect of communication and sanitation infrastructure on the business continuity of micro, small, and medium enterprises (MSMEs) in Bayelsa State. A cross-sectional survey research design was adopted, with primary data collected from a sample of 400 respondents drawn from a population of 741,093 registered MSMEs using the Taro Yamane formula and Bowley's proportional allocation formula. A structured questionnaire designed on a five-point Likert scale served as the research instrument. Validity was established through expert review, while reliability was confirmed using Cronbach's alpha at a threshold of 0.7. Data were analyzed using simple linear regression via SPSS version 26. The findings revealed that communication infrastructure had a positive and significant effect on business continuity ($R^2 = 0.967$; $\beta = 1.020$), and sanitation infrastructure equally had a positive and significant effect on business continuity ($R^2 = 0.944$; $\beta = 1.074$). The study concluded that communication and sanitation infrastructure significantly enhance the business continuity of MSMEs in Bayelsa State. It is recommended that telecommunication networks and internet access be expanded, and that local authorities improve sanitation services, waste management, drainage systems, and clean water supply to support uninterrupted MSME operations.

INTRODUCTION

Business continuity, however, is not static; it depends largely on the capacity of enterprises to adapt to changing circumstances and respond effectively to emerging risks. In a globalized and uncertain environment, MSMEs confront challenges that include supply chain interruptions, fluctuating demand patterns, technological changes, and environmental pressures that can destabilize routine operations. Their ability to anticipate, prepare for, and recover from such disruptions determines the sustainability of their activities and their long-term competitiveness (Steen *et al.*, 2024). According to Aladejebi and Oladimeji (2021), adaptive capacity enhances organizational resilience by enabling enterprises to reorganize resources and strategies in response to external pressures. Business continuity in this sense involves embedding resilience within organizational systems, managerial practices, and operational processes so that enterprises are not easily destabilized by shocks. Resilient MSMEs are better positioned to adjust production schedules, diversify suppliers, adopt alternative distribution channels, and maintain customer relationships even during crises. This capacity for adjustment ensures that disruptions remain temporary rather than catastrophic. The emphasis on resilience therefore shifts attention from mere survival to strategic preparedness and sustainable adaptation. Enterprises that cultivate flexibility and learning mechanisms are more likely to maintain operational stability and recover swiftly from setbacks. Business continuity thus reflects both the strength of internal management systems and the stability of the external environment within which enterprises function (Rađenović & Živković, 2022; Assibi, 2024).

Closely linked to this resilience is the broader environment within which MSMEs operate, particularly the availability and quality of infrastructure that supports economic activities. Infrastructure, encompassing both physical and digital systems, forms the backbone of modern production and service delivery processes. For MSMEs, access to reliable infrastructure directly shapes their ability to operate efficiently, minimize operational disruptions, and sustain continuity over time (Akyuz & Opusunju, 2020). Essential business processes such as sourcing inputs, transporting goods, communicating with customers, and powering machinery depend on the adequacy of infrastructural facilities. Where these facilities are insufficient or unreliable, even innovative and well managed enterprises may struggle to maintain stable operations and consistent output (Agu *et al.*, 2018). The growing reliance on technology, logistics networks, and integrated supply chains further intensifies the need for strong infrastructural support, particularly in developing regions where infrastructural deficits remain evident (Akyuz & Opusunju, 2020). Infrastructural development therefore involves not only the provision of facilities but also their expansion, modernization, and maintenance to meet evolving economic demands. Adequate infrastructure reduces transaction costs, improves efficiency, enhances connectivity, and creates an enabling environment for enterprise sustainability. In contrast,

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infrastructural inadequacies introduce uncertainties that may weaken enterprise stability and compromise business continuity.

However, scholars have largely focused on general indicators of MSME performance such as profitability, growth, and operational efficiency, with limited attention to business continuity as a distinct outcome (Abdullahi *et al.*, 2015; Akinyele *et al.*, 2016; Agu *et al.*, 2018). Studies examining continuity have often considered contexts such as cyber resilience, leadership strategies, or crisis management in regions outside Bayelsa State, rather than investigating how infrastructural and operational factors collectively influence sustained MSME operations (Sonna *et al.*, 2026; Addai *et al.*, 2026). Research in Nigeria has largely concentrated on Lagos, Ogun, Kano, and the Federal Capital Territory (Olawale & Olayemi, 2016; Akyuz & Opusunju, 2020), leaving Bayelsa State underexplored despite its unique environmental and infrastructural challenges, including flooding, poor road networks, and limited public utilities. In addition, sanitation infrastructure has received minimal attention, and evidence on the combined effects of transportation, energy, communication, and sanitation remains inconsistent (Adelakun & Babajide, 2022). In response to these gaps, this study examines the effect of infrastructural development on the business continuity of MSMEs in Bayelsa State, among other factors affecting their ability to remain consistent in operations. Specifically, the study explores transportation infrastructure, energy infrastructure, communication infrastructure and sanitation infrastructure affect the capacity of MSMEs to maintain business continuity and sustain their operations over times.

LITERATURE REVIEW

Conceptual overview

Communication Infrastructure

Communication infrastructure refers to the physical and technological frameworks that enable the transmission and exchange of information across locations and platforms. It comprises telecommunication towers, fiber optic cables, broadband networks, satellite systems, data centers, switching stations, base transceiver stations, and other digital transmission facilities that support voice, data, and video communication. Unlike the broader concept of communication systems, communication infrastructure emphasizes the structural backbone that makes connectivity possible (Molokomme *et al.*, 2020). Adeola and Nwankwo (2019) explain that effective communication infrastructure strengthens economic activities by supporting real time information exchange across sectors. In modern economies, business operations, financial transactions, public administration, and social interactions depend heavily on well developed communication networks. However, infrastructural gaps such as limited broadband penetration, weak network coverage, and poor maintenance often restrict communication efficiency in developing regions. Continuous investment in telecommunication facilities, network expansion, and digital infrastructure upgrades is therefore essential to meet rising data demands and technological advancement (Abiodun, 2025).

The evolution of communication infrastructure has transformed from fixed line telephony to integrated digital networks that support mobile communication, broadband internet, and cloud based services. Uche and Bello (2021) note that improvements in fiber optic deployment and mobile network expansion have significantly increased connectivity and reduced geographical barriers. The introduction of advanced technologies such as 4G and 5G networks has further strengthened communication capacity by increasing transmission speed, reducing latency, and expanding bandwidth (Akinyemi *et al.*, 2020). These infrastructural advancements provide the foundation for emerging technologies including digital commerce, electronic banking, and remote service delivery. Nevertheless, infrastructural development requires substantial capital investment, regulatory stability, and technical expertise. Communication infrastructure development therefore involves expanding network coverage, upgrading digital transmission systems, and ensuring equitable access to connectivity services across urban and rural areas (Onoja & Ajala, 2022).

Reliability and security are central dimensions of communication infrastructure. As digital transactions increase, the stability of telecommunication networks and the protection of data transmission channels have become critical concerns (Olayemi & Adepoju, 2022). Weak infrastructure can result in network congestion, service interruptions, slow internet speeds, and vulnerability to cyber threats. Adedayo (2023) emphasizes that resilient communication infrastructure is necessary to maintain uninterrupted services in sectors such as finance, healthcare, and emergency management where timely information flow is essential. Infrastructure reliability depends on proper maintenance of transmission equipment, redundancy systems, stable power supply, and cybersecurity mechanisms. Governments and private sector actors therefore invest in network upgrades, data protection systems, and regulatory frameworks to strengthen digital resilience. Effective communication infrastructure enhances confidence in digital platforms and supports sustainable economic activities (Chowdhury, 2022).

Communication infrastructure also plays a central role in business expansion and economic integration. According to Adebayo (2020), communication infrastructure provides the technological base that enables data transmission and digital interaction among economic actors. Adekunle (2018) views it as the interconnected network facilities that sustain real time communication across multiple channels. Ojo and Sanni (2019) describe it as the structural network environment that allows seamless information exchange within and across organizations. Oyedele (2021) highlights its role in facilitating organizational

connectivity and digital collaboration, while Olaniyan and Musa (2022) emphasize its importance in ensuring secure and efficient communication flows. As businesses increasingly adopt digital platforms for marketing, supply chain coordination, customer engagement, and financial transactions, strong communication infrastructure becomes indispensable. For the purpose of this study, communication infrastructure is conceptualized as the availability and reliability of telecommunication services, internet connectivity, and digital communication systems that facilitate business transactions and information flow among micro, small, and medium enterprises.

Sanitation Infrastructure

Sanitation infrastructure refers to the physical facilities, public systems, and environmental services established to manage waste, wastewater, storm water, and general environmental cleanliness within a given locality. It encompasses drainage channels, sewage systems, refuse collection points, landfill sites, waste treatment plants, recycling facilities, public toilets, and street cleaning mechanisms designed to maintain hygienic surroundings (Lambiasi *et al.*, 2024). Sanitation infrastructure forms a critical component of urban and rural development because it directly influences public health outcomes, environmental quality, and economic productivity (Kerpaci & Lako, 2024). According to Akinbile and Yusoff (2019), effective sanitation systems reduce exposure to environmental hazards and prevent the spread of communicable diseases associated with poor waste management. Similarly, Ezeah and Roberts (2020) argue that well structured sanitation facilities enhance urban functionality by ensuring that solid and liquid wastes are properly collected, transported, treated, and disposed of without contaminating the environment. In many developing regions, inadequate drainage systems, irregular waste collection, and poorly managed dumpsites create environmental degradation and health risks. The absence of structured sanitation infrastructure often results in flooding, pollution, and unsanitary surroundings that undermine commercial activities. Therefore, sanitation infrastructure is not merely a public health necessity but also a foundational element of economic stability and sustainable development (Abubakar *et al.*, 2022).

The development of sanitation infrastructure involves coordinated planning, investment, regulation, and maintenance to ensure efficiency and sustainability. It requires the construction of drainage networks to prevent water stagnation, establishment of waste sorting and recycling centers, and implementation of structured refuse evacuation systems. Ogwueleka (2018) notes that efficient solid waste management infrastructure improves environmental aesthetics and promotes safer living and working conditions. In addition, Nwafor (2021) explains that proper drainage facilities play a significant role in flood control, especially in urban business districts where blocked channels can disrupt transportation and commercial activities. The effectiveness of sanitation infrastructure also depends on institutional capacity, regulatory enforcement, and community participation in environmental practices. Without adequate funding and maintenance culture, sanitation facilities deteriorate rapidly, leading to environmental hazards and increased operational challenges for businesses. Moreover, sanitation infrastructure must be designed to accommodate population growth and expanding commercial clusters to prevent system overload. Strategic investment in environmental sanitation services therefore strengthens urban resilience, enhances environmental sustainability, and promotes orderly development.

Business Continuity

Several definitions of business continuity have emerged over the years, each providing different angles on the subject. According to Adebola and Fatoye (2017), business continuity refers to the integrated strategies and measures that organizations deploy to sustain operations during unforeseen disruptions. In contrast, Olumide and Adebayo (2019) describe it as the process of preparing for, responding to, and recovering from business disruptions to safeguard an organization's assets. Dlamini (2021) highlights business continuity as the proactive effort of ensuring that essential business functions can be maintained without interruption, emphasizing the importance of both technological and human elements in sustaining operations. Additionally, Uche and Bakare (2022) define it as the framework that helps organizations quickly adapt to risks while protecting people, processes, and profits. Additionally, Ng'ang'a and Kamau (2023) view business continuity as a critical risk management practice aimed at protecting the organization from threats that could impede its ability to operate. Drawing from these perspectives, this study conceptualizes business continuity as the ability of an organization to remain functional and deliver critical services amidst various forms of disruptions, using adaptive and efficient recovery measures.

Beyond mere definitions, the importance of business continuity has been well-documented in recent literature. Researchers agree that, in today's highly volatile business environment, the need for organizations to implement business continuity plans is no longer optional but imperative (Olawale, 2021; Kanaan *et al.*, 2025; Ogutu, 2025). Business continuity strategies help organizations reduce downtime, limit financial losses, and ensure customer satisfaction during crises. For instance, the COVID-19 pandemic brought the relevance of robust business continuity measures to the forefront, with many companies realizing their preparedness levels were inadequate for prolonged disruptions (Ibrahim & Okonjo, 2022). Moreover, Adeyemi and Babajide (2023) assert that the ability of an organization to survive and thrive after a crisis is directly tied to how well its business continuity strategy is designed and executed.

Theoretical Premise

Resource Dependence Theory (Pfeffer & Salancik, 1978)

Resource Dependence Theory (RDT), first introduced by Pfeffer and Salancik (1978), offers a foundational perspective on how organizations interact with and depend on their external environments for critical resources. The theory argues that organizations cannot be fully self-sufficient and, therefore, must engage in strategic actions to manage their dependencies on external resources such as finances, raw materials, labor, and technology. RDT stresses that an organization's survival is contingent upon securing these external resources, and its behavior is shaped by the power dynamics associated with its relationships with resource providers (Pfeffer & Salancik, 1978). This means organizations must continuously navigate these dependencies, sometimes altering their strategies or forming alliances to ensure access to the necessary resources. While the theory was originally developed in the context of large corporations, its applicability extends to organizations of various sizes, including micro, small, and medium-sized enterprises (MSMEs), which often face significant resource constraints (Hillman, Withers, & Collins, 2009). This perspective highlights the need for organizations to be adaptable and strategic in their pursuit of external resources to mitigate the uncertainty that arises from these dependencies.

A key assumption of RDT is that organizations are not isolated but exist in a web of relationships with other entities that control critical resources. These external entities often hold power over the organization by controlling access to resources essential for the organization's operations. The theory assumes that organizations seek to minimize uncertainty in their operations by managing these relationships, either by securing long-term contracts, forming alliances, or even diversifying their sources of critical resources (Pfeffer & Salancik, 1978). A significant tenet of RDT is that organizations are not passive in their relationships with external actors; instead, they actively seek to reduce dependence and maintain a level of control over their resource flows (Casciaro & Piskorski, 2005). This can be achieved through various strategies, such as vertical integration or collaborative partnerships, which aim to increase the organization's autonomy.

Hypotheses Development

Adelakun and Babajide (2022) investigated the impact of communication infrastructure on MSME performance, emphasising how dependable communication systems may raise customer satisfaction and operational effectiveness in Ibadan, Nigeria. The research used a cross-sectional survey approach and simple random sampling to choose 380 MSMEs from a population of 1,700. The data gathered via the distribution of questionnaires was analysed using regression analysis. The findings demonstrated that insufficient communication infrastructure, including erratic internet connections and telecommunications networks, significantly hindered MSMEs' ability to maintain business continuity, particularly in customer service and supply chain management.

Gebreyesus (2017) investigated how communication networks affected MSMEs in Addis Ababa, Ethiopia, in terms of customer interactions and operational effectiveness. A sample size of 400 MSMEs was chosen using stratified random selection from a population of 1,650 MSMEs. Structured questionnaires were utilised to gather the data, which were then analysed using regression and correlation. The findings demonstrated that poor communication systems, such as restricted access to dependable phone and internet networks, had a major detrimental effect on MSMEs' operational effectiveness, limiting their capacity to interact with suppliers and customers in an efficient manner and endangering business continuity. Based on the review studies the null hypothesis was formulated:

$H_{01:}$ Communication infrastructure has no significant effect on business continuity of MSMEs in Bayelsa State.

The social and economic effects of road and drainage infrastructure development on MSME players in Kelurahan Sempakata were examined by Siregar *et al.* (2026) in order to determine the adaptation tactics they used in response to the new infrastructure. The study used a qualitative descriptive methodology, gathering data via participant observation, in-depth interviews, documentation, and literature reviews. MSME owners from a variety of industries, including trade, services, culinary, and workshops, as well as local leaders who reflect the socioeconomic background of the area, served as informants. The results showed that infrastructure development has had positive effects, including increased distribution efficiency, better accessibility, and the creation of new economic prospects. However, owing to restricted the customer access, several MSMEs saw operating delays and a drop in revenue during the construction period. Following project completion, the majority of MSME players were able to adjust by improving product quality, reorganising their businesses, and innovating their services.

Addai *et al.* (2026) investigated the moderating influence of crisis severity in the link between transformative leadership and business continuity, as mediated by crisis management. 384 owners of small and medium-sized businesses in Accra, Ghana, completed questionnaires as part of a cross-sectional study. The JASP and PROCESS models were used to analyse the data. The results showed that the beneficial association between transformational leadership and business continuity is mediated by crisis management. Furthermore, the association between transformative leadership and company continuity was attenuated by the intensity of the crisis. Crisis severity, however, considerably reduced the association between transformational leadership and business continuity via crisis management, even while it had no direct effect on

the relationship between transformational leadership and crisis management.

Based on the review studies the null hypothesis was formulated:

H_{02}: Sanitation infrastructure has no significant effect on business continuity of MSMEs in Bayelsa State.

MATERIALS AND METHODS

The research used a cross-sectional survey design, gathering data at a singular time from registered micro, small, and medium firms in Bayelsa State. The research population included 741,093 registered MSMEs, including 548,349 micro firms, 193,088 small enterprises, and 656 medium companies, as sourced from SMEDAN. The sample size of 400 respondents was calculated using the Taro Yamane technique, and Bowley's proportionate allocation formula was used to disperse the sample across the MSME groups. A simple random sample method was used to ensure each enterprise had an equal probability of selection and to reduce sampling bias.

Primary data were gathered using a structured questionnaire based on a five-point Likert scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (5). The instrument's validity was confirmed by expert and supervisor evaluation, while its reliability was assessed using Cronbach's alpha. A threshold value of 0.7 was deemed acceptable, and all variables satisfied this criterion, indicating that the instrument was reliable. The data gathered for the research were analysed by inferential statistical methods, employing simple linear regression to evaluate the hypotheses and assess the effect of communication infrastructure and sanitation infrastructure on the business continuity of MSMEs in Bayelsa State. The analysis was conducted with the aid of Statistical Package for Social Sciences (SPSS) version 26.

The general form of the simple linear regression model for the study is specified as:

$BC = \alpha_0 + \beta_1 Xi + \mu_i$

where Xi represents each specific infrastructure dimension (CI or SI), consistent with standard regression notation for separate models

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$BC = \alpha 0 + \beta 1CI + \mu i$ …….. (1)

$BC = \alpha 0 + \beta 1SI + \mu i$ …… (2)

Where:

BC = Business Continuity of MSMEs

CI = Communication Infrastructure

SI = Sanitation Infrastructure

α_0 = Intercept

β_1 = Regression coefficient

μ_i = Error term

RESULTS AND DISCUSSIONS

Inferential analysis was conducted using simple linear regression to test the study's hypotheses. The regression coefficient was examined to assess the magnitude and direction of the effects. Hypotheses were tested at a 5% significance level, with p-values below 0.05 indicating statistical significance.

Table 1 : Model Summary of the Effect of Communication Infrastructure on Business Continuity of MSMEs

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.983a	.967	.967	1.03885	.967	10134.320	1	343	.000
a. Dependent Variable: Business Continuity									
b. Predictors: (Constant), Communication Infrastructure									
Source: Survey Data, 2026									

The regression model summary of how communication infrastructure affects MSMEs' business continuity is shown in Table 4.1a. According to the R Square value of 0.967, communication infrastructure accounts for 96.7% of the variance in business continuity, with other variables not included in the model accounting for the remaining 3.3%. The model's stability and resilience are further supported by the Adjusted R Square of 0.967. The model is statistically significant according to the F Change value of 10,134.320 at a significance level of 0.000. This finding suggests that MSMEs' business continuity in Bayelsa State is significantly affected by communication infrastructure.

Decision: Based on the significance value (p = 0.000) which is less than the 0.05 level of significance, the null hypothesis, which states that communication infrastructure has no significant effect on business continuity of MSMEs, is rejected. The study therefore concludes that communication infrastructure positively and significantly affects the business continuity of MSMEs in Bayelsa State.

The regression coefficients for the effect of communication infrastructure on MSMEs' business continuity are shown in Table 4.1b. With an unstandardised coefficient (B) of 1.020, the findings demonstrate that communication infrastructure positively and statistically

Table 2 : Coefficient of the Effect of Communication Infrastructure on Business Continuity of MSMEs

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.109	.135		.811	.418	-.156	.374
	Communication Infrastructure	1.020	.010	.983	100.669	.000	1.000	1.040
a. Dependent Variable: Business Continuity								
Source: Survey Data, 2026								

Table 3 : Model Summary of the Effect of Sanitation Infrastructure on Business Continuity of MSMEs

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.972a	.944	.944	1.35649	.944	5801.965	1	343	.000
a. Dependent Variable: Business Continuity									
b. Predictors: (Constant), Sanitation Infrastructure									
Source: Survey Data, 2026									

Table 4 : Coefficient of the Effect of Sanitation Infrastructure on Business Continuity of MSMEs

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.568	.172		3.300	.001	.229	.907
	Sanitation Infrastructure	1.074	.014	.972	76.171	.000	1.046	1.102
a. Dependent Variable: Business Continuity								
Source: Survey Data, 2026								

significantly affects business continuity. This shows that MSMEs' business continuity rises by 1.020 units for every unit improvement in communication infrastructure. The standardised coefficient (Beta) of 0.983 indicates that, in comparison to other factors, communication infrastructure has a very high effect. A significance level of 0.000 and a t-value of 100.669 attest to the effect's strong importance. The reliability of this positive effect is further supported by the 95% confidence interval for B (1.000 to 1.040), which shows that improvements in communication infrastructure significantly improve MSMEs' business continuity in Bayelsa State.

The regression model summary of the effect of sanitation infrastructure on MSMEs' business continuity is shown in Table 4.2a. Sanitation infrastructure accounts for 94.4% of the variance in business continuity, with other variables not included in the model accounting for the remaining 5.6%, according to the R Square value of 0.944. The model's stability and robustness are further supported by the adjusted R Square of 0.944. The model is statistically significant, as shown by the F Change value of 5801.965 at a significance level of 0.000. This finding suggests that the business continuity of MSMEs in Bayelsa State is significantly affected by sanitation infrastructure.

Decision: Given that the significance value (p = 0.000) is less than the 0.05 level of significance, the null hypothesis, which states that sanitation infrastructure has no significant effect on business continuity of MSMEs, is rejected. The study therefore concludes that sanitation infrastructure positively and significantly affects the business continuity of MSMEs in Bayelsa State.

The regression results for the effect of sanitation infrastructure on MSMEs' ability to continue operating

are shown in Table 4.2b. With an unstandardised coefficient (B) of 1.074, the findings demonstrate that sanitation infrastructure has a favourable and statistically significant effect on business continuity. This suggests that MSMEs' business continuity increases by 1.074 units for every unit improvement in sanitation infrastructure. Sanitation infrastructure has a relatively significant effect in comparison to other factors, as shown by the standardised coefficient (Beta) of 0.972. This effect is shown to be extremely significant by the t-value of 76.171 and the significance level of 0.000. The reliability of this positive effect is further supported by the 95% confidence interval for B (1.046 to 1.102), which demonstrates that improvements in sanitation infrastructure significantly improve MSMEs' business continuity in Bayelsa State.

Discussion

The first objective focused on the effect of communication infrastructure on business continuity of MSMEs. The hypothesis stated that communication infrastructure has no significant effect on business continuity. The findings revealed that communication infrastructure positively and significantly affects business continuity. This indicates that access to reliable telecommunication networks, internet services, and other communication tools enables MSMEs to coordinate operations, respond to customer needs promptly, and maintain business relationships effectively. This finding presents a novel contribution to literature as there are no direct studies specifically addressing the effect of communication infrastructure on business continuity of MSMEs in Bayelsa State. Related studies, such as Gebreyesus (2017) in Ethiopia and Adelakun and Babajide (2022) in Ibadan, Nigeria, examined the influence of communication infrastructure on operational efficiency and customer service, but they did not focus on business continuity or the Bayelsa State context specifically.

Policy-wise, this highlights the necessity for regulatory agencies and telecommunication providers to improve network coverage and internet access across Bayelsa State. Theoretically, the result aligns with information processing theory, which emphasizes that effective communication systems reduce uncertainty and support decision-making. Practically, MSME operators should integrate modern communication technologies into their operations to enhance coordination, customer service, and overall business continuity.

The second objective was to assess the effect of sanitation infrastructure on the business continuity of MSMEs. The hypothesis stated that sanitation infrastructure has no significant effect on business continuity. The results show that sanitation infrastructure positively and significantly affects business continuity. This suggests that proper waste management, clean water supply, and hygienic environmental conditions contribute to a healthy workforce, minimize disease outbreaks, and create a conducive business environment for continuous operations. This finding presents a novel contribution to literature as there are no direct studies specifically addressing the effect of sanitation infrastructure on business continuity of MSMEs in Bayelsa State. Related studies, such as Siregar *et al.* (2026), focused on broader infrastructure developments including roads and drainage, noting operational disruptions during construction, but did not isolate sanitation infrastructure as a determinant of continuous business operations.

From a policy perspective, this finding emphasizes the need for local government and environmental agencies to invest in sanitation services that support MSME operations. Theoretically, it aligns with the stakeholder theory, which highlights that meeting environmental and social expectations enhances organizational sustainability. Practically, MSME owners should ensure that their business environments are hygienic and comply with sanitation standards to maintain uninterrupted operations and protect both employees and customers.

CONCLUSION

This study investigated the effect of communication and sanitation infrastructure on the business continuity of MSMEs in Bayelsa State, Nigeria. Drawing from the Resource Dependence Theory, the study established that MSMEs do not operate in isolation but depend heavily on external infrastructural resources to sustain their operations. The inferential results confirm that communication infrastructure positively and significantly affects the business continuity of MSMEs in Bayelsa State, underscoring the critical role of reliable telecommunication networks, internet connectivity, and digital communication systems in enabling MSMEs to coordinate operations, engage customers, and respond effectively to market demands. Similarly, sanitation infrastructure positively and significantly affects the business continuity of MSMEs, demonstrating that hygienic environmental conditions, proper waste management, and functional drainage systems are not merely public health concerns but essential enablers of uninterrupted enterprise operations. Collectively, these findings reinforce the argument that infrastructural development is a strategic imperative for MSME sustainability in resource-constrained environments such as Bayelsa State, and call for deliberate policy intervention by government agencies, regulators, and private sector stakeholders to bridge existing infrastructural gaps.

Recommendations

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

1. Government agencies and telecommunication regulators should prioritize the expansion of telecommunication networks and broadband internet access across Bayelsa State, particularly in underserved and rural areas where MSMEs operate. Telecom providers should be incentivized through policy frameworks to extend network coverage, while MSMEs should be encouraged to adopt modern digital communication

tools to enhance operational coordination, customer engagement, and business continuity.

2. Local government authorities and environmental agencies should intensify investment in sanitation infrastructure, including waste management systems, drainage channels, and clean water supply facilities in MSME operating environments. In addition, MSME owners should institutionalize hygiene and sanitation compliance practices within their business premises to maintain a conducive and healthy operational environment that supports uninterrupted business activities.

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