

The Impact of Technological Innovation on the Viability of Hospitality Firms in Imo State

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Received: 15.10.2025 | Accepted: 24.10.2025 | Published: 07.11.2025

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DOI: [10.5281/zenodo.157452321](https://doi.org/10.5281/zenodo.157452321)

Abstract

Original Research Article

This study examines the impact of technological innovation on the viability of hospitality firms in Imo State, Nigeria. In light of infrastructural deficits, particularly in power, security, and internet connectivity, the research focuses on three key technological dimensions: power supply through technology (T1), CCTV surveillance systems (T2), and internet infrastructure (T3). Using a quantitative survey design, primary data were collected from 200 respondents across 50 hospitality firms in the region. Descriptive and inferential statistics, including multiple linear regression analysis, were employed to evaluate the relationships among variables. The findings reveal that reliable power supply and internet infrastructure have strong, statistically significant positive impacts on firm viability, while CCTV technology, though significant, exhibits a more moderate effect. The results support the theoretical foundations of the Resource-Based View (RBV) and the Technology–Organization–Environment (TOE) framework, suggesting that strategic investment in tangible technological resources enhances operational efficiency, customer satisfaction, and long-term business sustainability. The study recommends that hospitality business owners prioritize investment in energy and digital technologies, while policymakers should offer supportive incentives to foster innovation-driven development. The research contributes to the body of knowledge on technology adoption in the service sector and offers practical insights for regional development and competitive strategy in emerging economies.

Keywords: Technological Innovation; Hospitality Industry; Viability; Imo State; Power Supply; CCTV; Internet Infrastructure.

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1 Background of the Study

Technological innovation has become a vital driver of competitiveness and survival for businesses across sectors. In developing economies like Nigeria, particularly in states such as Imo, where tourism and the leisure economy are expanding, technology is not just a necessity but a catalyst for operational viability. Innovations such as solar energy systems, CCTV surveillance, and broadband internet connectivity significantly improve customer satisfaction, security, and operational efficiency in hospitality ventures. According to Ogbuokiri and Agba (2022), the integration of technologies such as reliable power systems, surveillance infrastructure (CCTV), and internet connectivity significantly improves operational efficiency, customer

satisfaction, and security, all of which are critical to the success of hospitality ventures.

Inadequate infrastructure, especially erratic power supply, remains a major bottleneck to business development in Nigeria (Akinyemi & Alege, 2021). To circumvent this challenge, many hospitality firms are investing in solar and smart energy solutions; technological interventions that ensure consistent service delivery. Similarly, the installation of closed-circuit television (CCTV) not only enhances security but also fosters customer trust, a key determinant of repeat business (Okeke & Ifeanchio, 2023). Moreover, internet connectivity; particularly high-speed broadband, has become an indispensable service component for hospitality firms, shaping guests' experiences and opening up digital marketing

opportunities (Adediran & Eze, 2020).

Despite these innovations, there remains a paucity of empirical studies assessing the real-time impact of these technologies on the viability of hospitality firms in subnational regions such as Imo State. Hence, this study aims to bridge that gap by systematically evaluating how power technology, CCTV systems, and internet infrastructure affect the viability and sustainability of these firms.

Statement of the Problem

Hospitality businesses in Imo State face increasing pressure to remain competitive in a technologically dynamic environment. However, widespread infrastructural deficits, particularly with respect to electricity, safety, and digital connectivity, threaten their growth potential. While anecdotal evidence suggests that firms employing solar power, CCTV, and broadband enjoy better performance, empirical studies specific to these technological innovations and their role in enhancing business viability are lacking. This creates uncertainty for investors and policymakers in prioritizing technological upgrades. Thus, this study seeks to empirically investigate the extent to which technological innovations contribute to the viability of hospitality firms in Imo State.

Objectives of the Study

General Objective:

To investigate the impact of technological innovation on the viability of hospitality firms in Imo State.

Specific Objectives:

- i. To examine the impact of reliable power supply through technology (T1) on the viability of hospitality firms.
- ii. To assess the relationship between the use of CCTV technology (T2) and the viability of hospitality firms.
- iii. To evaluate the extent of the relationship between internet infrastructure (T3) and the viability of hospitality firms.

Research Questions

- i. What is the relationship between power supply through technology and the viability of hospitality firms?
- ii. Is there any relationship between CCTV technology usage and the viability of hospitality firms?
- iii. What is the extent of the relationship between internet infrastructure and the viability of hospitality firms?

Research Hypotheses

- H₁: The availability of reliable power supply through technology (T1) has a significant positive impact on the viability of hospitality firms.
- H₂: The use of CCTV technology (T2) has a significant positive impact on the viability of hospitality firms.
- H₃: The quality of internet infrastructure (T3) significantly influences the viability of hospitality firms.

Significance of the Study

This study is significant for multiple stakeholders. For hospitality entrepreneurs, it provides data-driven insights into which technological investments yield the highest returns in terms of business sustainability. For policymakers and development partners, the research offers a foundation for infrastructural planning and investment support mechanisms in the tourism and service sectors. Furthermore, it contributes to evidence-based advocacy for smarter infrastructural policies in Nigeria's subnational economies.

Scope of the Study

The study focuses on hospitality firms operating in Imo State, Nigeria. It examines three technological domains; power supply, surveillance systems, and internet infrastructure, during the period 2020 to 2025. Respondents include firm owners, managers, and technical personnel.

2. Literature Review

Conceptually, technological innovation refers to the integration of advanced tools and

systems that enhance service delivery, operational efficiency, and competitiveness in business operations. In hospitality, these include smart energy systems, security technology, and internet connectivity. Schumpeter (2020) emphasized innovation as a core engine of economic progress. Chen and Lin (2020) noted that technology adoption in service firms boosts performance and sustainability. In Nigeria, adoption is shaped by infrastructural limitations, yet firms are increasingly turning to solar technologies, digital surveillance, and broadband internet as strategic tools to navigate these constraints.

Theoretically, this study is anchored on two theories; Technology Organization Environment (TOE) theory: Developed by Tornatzky and Fleischer (1990), this model posits that technological, organizational, and environmental contexts determine technology adoption. Technological readiness (e.g., availability of solar or internet), organizational capacity (e.g., financial strength), and external pressures (e.g., competition or policy) all affect decisions.

Resource-Based View (RBV) theory: According to Barney (1991), firm resources, tangible and intangible, determine sustained competitive advantage. Technologies like CCTV, power infrastructure, and internet connectivity are seen as strategic assets that can influence business viability.

Empirically, studies globally and in Nigeria have demonstrated the importance of technology in hospitality viability. Hu et al. (2021) reported a 30% reduction in operating costs for Thai hotels using solar energy. Kim and Lee (2020) showed that CCTV significantly reduced theft in South Korean hotels. Allen et al. (2022) found a strong link between internet availability and guest retention in UK hotels. In Nigeria, Nwachukwu and Omeje (2023) found that hospitality SMEs in Lagos using solar-inverter systems reported increased profitability. Eze and Chukwu (2021) observed higher customer trust in Enugu hotels with CCTV systems, while Okoli et al. (2022) noted enhanced visibility and bookings due to strong internet infrastructure in Abuja.

3. Methodology

Research Design and Sources of Data

The study employed a cross-sectional survey design with a sample of 200 respondents from 50 registered hospitality firms in Imo State. Primary data were gathered via structured questionnaires and analyzed using Ordinary Least Squares (OLS) regression. This design is appropriate because it facilitates generalization of results from the sample to the larger population and allows for hypothesis testing using inferential statistics (Creswell & Creswell, 2018).

Model Specification

To empirically test the research hypotheses, the study specifies a multiple linear regression model:

$$Y = \beta_0 + \beta_1 T1 + \beta_2 T2 + \beta_3 T3 + \varepsilon \dots \dots \dots \text{eqn 1}$$

Where:

Y = Viability of the hospitality firm

T1 = Power Supply: Use of solar, inverter, or hybrid power technologies.

T2 = CCTV: Installation and use of surveillance technologies.

T3 = Internet: Availability and quality of broadband or Wi-Fi infrastructure.

ε = Error term

4. Results and Analysis

Descriptive Statistics

Table 1: Descriptive statistics summaries of the study variables.

Variable	Mean	Standard Deviation (SD)	Minimum	Maximum
Viability (Y)	3.94	0.62	2.5	5.0
Power Supply (T1)	3.76	0.72	2.0	5.0
CCTV Technology (T2)	3.85	0.66	2.1	5.0
Internet (T3)	3.92	0.59	2.3	5.0

Source: SPSS Output of the study, 2025

Descriptive analysis showed that the average viability rating (M = 3.94) which suggests that most firms view themselves as viable. Similarly, all technological indicators (T1–T3) have means above

3.5, suggesting moderate to high levels of technological integration. The lowest variation is in internet infrastructure (SD = 0.59), indicates consistency in access.

Table 2: Correlation Analysis

Variables	Viability (Y)	Power Supply (T1)	CCTV Tech (T2)	Internet (T3)
Viability (Y)	1.000	.611**	.564**	.658**
Power Supply (T1)	.611**	1.000	.517**	.531**
CCTV Tech (T2)	.564**	.517**	1.000	.476**
Internet (T3)	.658**	.531**	.476**	1.000

Source: SPSS Output of the study, 2025.

Correlation analysis revealed strong positive relationships between viability and all three technologies. The strongest correlation is between

internet infrastructure and viability ($r = .658$), suggesting digital connectivity is the most influential factor.

Regression

Table 3: Regression Results of the study variables.

Variable	Coefficient (B)	Std. Error	t-Statistic	p-Value	95% Confidence Interval
Constant	0.151	0.317	0.477	0.634	[-0.473, 0.775]
T1 (Power)	0.380	0.051	7.402	0.000	[0.279, 0.482]
T2 (CCTV)	0.148	0.032	4.654	0.000	[0.086, 0.211]
T3 (Internet)	0.421	0.052	8.133	0.000	[0.319, 0.523]

Source: SPSS Output of the study, 2025.

The regression output is as follows;

$$Y = 0.151 + 0.380*T1 + 0.148*T2 + 0.421*T3 \dots \dots \dots \text{eqn 2}$$

All coefficients were significant at $p < 0.001$, with internet (T3) having the highest beta weight. Adjusted $R^2 = 0.399$, indicating that technological variables explain about 40% of the variance in firm viability. Hypotheses H₁–H₃ was all supported.

Test of Hypotheses

H₁: Power supply through technology (T1) has a significant positive impact on viability. Supported ($p = 0.000$).

H₂: CCTV technology (T2) has a significant positive impact on viability. Supported ($p = 0.000$).

H₃: Internet infrastructure (T3) has a significant positive relationship with viability. Supported ($p = 0.000$).

Discussion of Findings

The findings of this study are consistent with existing empirical literature. For instance, Nwachukwu and Omeje (2023) reported that alternative energy technologies, such as solar and inverters, significantly enhance profitability in Lagos-based hospitality firms, aligning with the significant effect observed for T1 in this study.

Similarly, Okoli et al. (2022) emphasized the importance of reliable internet infrastructure in boosting the digital visibility and customer satisfaction of hospitality SMEs in Abuja. This supports the high coefficient and significance of T3 in the present study.

Although T2 (CCTV) also demonstrated a significant effect, the coefficient was lower. This suggests that while security technologies matter, their influence on viability may be more supportive than foundational. This distinction is echoed by Eze and Chukwu (2021), who noted that the inconsistent maintenance of CCTV systems in South-East Nigerian hotels undermines their full potential.

Overall, this study validates the strategic role of technological infrastructure, especially power and internet systems in enhancing the viability of hospitality enterprises in Imo State.

5. Conclusion and Recommendations

This study concludes that technological innovation significantly enhances the viability of hospitality firms in Imo State. Solar and inverter systems offer cost-effective power solutions; CCTV improves security and guest trust; and internet connectivity drives digital visibility and engagement.

Recommendations:

- Hospitality managers should invest in integrated energy and digital technologies.
- Policymakers should offer tax breaks and grants for tech adoption.
- Investors should support tech-based interventions for hospitality growth.
- Future research should explore comparative studies across states and use longitudinal designs.

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