

Original Research Article

FACILITY MANAGEMENT DIGITALIZATION AND SERVICE QUALITY IN OGOJA'S HOTELS: A TECHNOLOGY ACCEPTANCE PERSPECTIVE

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Abstract: This study investigated the relationship between facility management digitalization and service quality in selected hotels within Ogoja, Cross River State, Nigeria, using the theoretical lens of the Technology Acceptance Model (TAM). Specifically, the study examined how the perceived usefulness and perceived ease of use of digitalized reservation systems, automated smart room controls, and digital maintenance scheduling platforms affect the dimensions of hospitality service quality (tangibles, reliability, and responsiveness). A descriptive survey research design was utilized. Structured questionnaires were administered to a sample of 384 respondents, comprising hotel frontline staff, facility managers, and frequent guests across registered hospitality establishments in Ogoja. Data analysis was carried out using descriptive statistics, Pearson product-moment correlation, and multiple linear regression analysis via SPSS version 27. The main findings revealed that the digitalization of facility management systems has a positive and statistically significant effect on hotel service quality. Perceived usefulness of smart property management systems emerged as the strongest predictor of reliability and responsiveness in service delivery. Furthermore, the perceived ease of use of maintenance scheduling applications significantly minimized facility downtime, thereby elevating the tangible quality of the hospitality environment. The study concluded that operational digitalization is a critical strategic imperative for rural and semi-urban hospitality sub-sectors aiming to optimize resource allocation and enhance customer retention. Based on these findings, it is recommended that hotel owners in Ogoja invest in scalable, user-friendly facility management applications, organize continuous digital literacy training for operational staff, and establish hybrid power alternatives to mitigate localized infrastructural challenges that disrupt digital service delivery.

Keywords: Facility Management, Digitalization, Service Quality, Technology Acceptance Model, Hospitality Operations, Ogoja Hotels.

1. INTRODUCTION

The global hospitality industry is undergoing an unprecedented digital shift, driven by the need for operational efficiency, cost reduction, and superior customer experiences. In contemporary hotel operations, facility management which involves coordinating the physical workspace with the human capital and core business of the organization has evolved from a traditional, manual maintenance role into a strategic driver of corporate value. In developing economies like Nigeria, the digitalization of facility management functions is no longer a luxury reserved for multi-national luxury brands; it has become an operational necessity for regional and semi-urban hospitality hubs trying to stay competitive in a changing market.

Ogoja, an ancient commercial and administrative hub in Cross River State, Nigeria, has seen a steady increase in hospitality investments due to localized economic growth, agribusiness expansion, and increased regional travels. However, hotels operating in semi-urban contexts like Ogoja face unique structural challenges. These include frequent power fluctuations, high infrastructural deterioration rates, and manual tracking of facility maintenance. These challenges often lead to room downtime, plumbing system failures, and administrative delays that negatively impact service quality. While urban centers like Lagos or Abuja have integrated advanced Building Management Systems (BMS) and smart Property Management Systems (PMS), hotels in Ogoja continue to balance manual operations with emerging digital options.

The connection between technology deployment and operational outcomes is deeply rooted in the Technology Acceptance Model (TAM). According to TAM, the successful implementation of any digital innovation is driven by two main cognitive factors: perceived usefulness (the extent to which a user believes the technology will improve job performance) and perceived ease of use (the degree to which a user expects the system to be free of physical and mental effort). In a hotel setting, if frontline personnel and facility managers perceive digital tools as overly complicated or irrelevant to their daily workflows, the technology will be underutilized, and service quality dimensions such as reliability, responsiveness, and tangible environment upkeep will suffer.

Despite the established link between technology and service delivery in major cities, empirical research analyzing facility management digitalization within semi-urban hospitality markets remains scarce. Most existing literature focuses on generic electronic booking platforms or digital marketing strategies, leaving a notable gap regarding internal facility automation, maintenance scheduling, and room infrastructure tracking. This study addresses this research gap by evaluating how the digitalization of facility management functions, viewed through the lens of technology acceptance, shapes service quality outcomes in Ogoja's hospitality landscape.

The primary objective of this study was to examine the impact of facility management digitalization on service quality in Ogoja's hotels. Specifically, the study sought to analyze how the perceived usefulness of automated property management systems influences service reliability, assess the effect of digital maintenance scheduling platforms on facility tangibles, and determine the role of perceived ease of use in enhancing staff responsiveness during service breakdowns. By addressing these core areas, the study provides a practical blueprint for regional hospitality administrators looking to optimize facility spending and improve customer experiences.

2. METHODOLOGY

A descriptive survey research design was adopted for this study to obtain empirical data regarding facility management practices and service quality dimensions within the Ogoja hospitality industry. The target population consisted of hotel facility managers, operational staff (front desk, maintenance, and housekeeping), and corporate guests who frequently stay at registered hotels in Ogoja, Cross River State.

Given the absence of a centralized, static ledger of every single daily hotel consumer and staff member across the municipality, the total active population was treated as infinite. Consequently, Cochran's sample size determination formula for unknown populations was used:

$$n = \frac{Z^2 \cdot p \cdot q}{e^2}$$

Where:

- n = the sample size required for the study.
- Z = the standard normal coefficient corresponding to a 95% confidence level (1.96).
- p = the expected prevalence or proportion of the attribute within the population (set at 0.5 to maximize sample size safety).
- $q = 1 - p = 0.5$.
- e = the acceptable limit of precision or margin of error (0.05).

The mathematical derivation is structured as follows:

$$n = \frac{(1.96)^2 \cdot (0.5) \cdot (0.5)}{(0.05)^2} = \frac{3.8416 \cdot 0.25}{0.0025} = 384$$

A total sample size of 384 respondents was established. A multi-stage sampling technique was utilized: first, purposive sampling was used to select 15 prominent registered hotels in Ogoja that have adopted at least one digitalized facility component (such as electronic key cards, digital maintenance tracking software, or cloud-based front office dashboards). Second, simple random sampling was applied to distribute the questionnaires among staff and guests within those selected establishments.

The data collection instrument was a structured questionnaire titled *Facility Management Digitalization and Service Quality Questionnaire (FMDM-SQQ)*, scaled on a 5-point Likert format ranging from Strongly Agree (5) to Strongly Disagree (1). The independent variables were operationalized through TAM constructs: Perceived Usefulness

of Digitalized Systems (PUDS) and Perceived Ease of Use of Facility Platforms (PEU-FP). The dependent variable, Service Quality (SQ), was measured using modified indicators from the SERVQUAL framework, specifically focusing on tangibles, reliability, and responsiveness.

To ensure the instrument's validity, it was reviewed by three senior academics in marketing and business technology management at the University of Calabar, who confirmed its face and content validity. To determine reliability, a pre-test was conducted on 40 respondents in a neighboring municipality (Ikom). The data from this pilot test were subjected to internal consistency checks using Cronbach's alpha coefficient. All constructs exceeded the accepted exploratory baseline of 0.70, as documented in Table A.

Table A: Reliability Diagnostics for Research Constructs

Variables / Sub-scales	Measured Items	Cronbach's Alpha (\alpha)	Decision
Perceived Usefulness of Digital Systems (PUDS)	5	0.856	Highly Reliable
Perceived Ease of Use of Platforms (PEU-FP)	5	0.814	Highly Reliable
Hotel Service Quality (HSQ)	8	0.882	Highly Reliable

Source: Field Pilot Survey, 2026

The primary data obtained from the field were converted into statistical code and analyzed using SPSS version 27. The descriptive trends were evaluated using means and standard deviations, while the hypothesis testing was performed using Pearson Product-Moment Correlation and Multiple Linear Regression Analysis. The regression equations were modeled as:

$$HSQ = \alpha_0 + \beta_1 PUDS + \beta_2 PEU_FP + e$$

Where:

- HSQ = Hotel Service Quality
- α_0 = Regression intercept
- PUDS = Perceived Usefulness of Digitalized Systems
- PEU_FP = Perceived Ease of Use of Facility Platforms
- β_1, β_2 = Beta weights of the predictors
- e = Stochastic disturbance error term

3. RESULTS

Out of the 384 copies of the questionnaire systematically distributed across the sampled hospitality organizations in Ogoja, 355 copies were recovered with clean, complete, and verifiable responses. This represents an effective response recovery rate of 92.4%, which is statistically robust for empirical generalizations.

Table B: Descriptive Metrics and Covariance Matrix

Statistical Measures	Sample Mean	Standard Dev.	PUDS	PEU-FP	HSQ
Perceived Usefulness (PUDS)	4.08	0.61	1.000		
Perceived Ease of Use (PEU-FP)	3.82	0.69	0.485*	1.000	
Hotel Service Quality (HSQ)	4.15	0.58	0.642*	0.518*	1.000

* Correlation is significant at the 0.01 level (2-tailed). Source: Field Data Analysis, 2026

Table B outlines the summary parameters and linear correlations among the variables under review. The mean score of 4.08 for Perceived Usefulness suggests that hospitality operators and users recognize the functional value of digitalized facility management. The bivariate correlation indexes show positive linear associations between the independent TAM variables and hotel service quality, with Perceived Usefulness having the strongest correlation ($r = 0.642$, $p < 0.01$).

Table C: Model Fit Summary for Regression

Model	Multiple R	R Square (R^2)	Adjusted R^2	Estimate Standard Error	Durbin-Watson Metric
Model 1	0.698a	0.487	0.484	0.417	1.914

a. Predictors: (Constant), PEU-FP, PUDS b. Dependent Variable: HSQ Source: Computer Field Analysis, 2026

The model fit summary in Table C indicates a Multiple Correlation Coefficient (R) of 0.698, showing a strong simultaneous relationship between the predictors and service quality. The Coefficient of Determination ($R^2 = 0.487$) shows that 48.7% of the total change in hotel service quality across Ogoja is accounted for by facility management

digitalization parameters (PUDS and PEU-FP). The remaining 51.3% is explained by other operational variables outside the scope of this regression model.

Table D: Analysis of Variance (ANOVA)

Model Components	Sum of Squares Matrix	Degrees of Freedom (df)	Mean Square Values	Computed F-Statistic	Significance Probability
Model 1: Regression	58.214	2	29.107	167.378	0.000b
Model 1: Residual	61.211	352	0.174		
Model 1: Total	119.425	354			

a. Dependent Variable: HSQ b. Predictors: (Constant), PEU-FP, PUDS Source: Field Data Modeling, 2026

The ANOVA diagnostics presented in Table D show a highly significant variance output ($F = 167.378$, $p < 0.001$). This confirms that the joint combination of perceived usefulness and perceived ease of use within facility digitalization significantly explains variations in hospitality service quality delivery.

Table E: Linear Coefficients and Multicollinearity Diagnoses

Predictor Paths	Unstandardized B Weight	Standard Error	Standardized Beta (β)	Calculated t-Value	Sig. Level	Tolerance Index	VIF Value
Model 1: (Constant)	1.115	0.142		7.852	0.000		
Path: PUDS $\rightarrow$ HSQ	0.512	0.041	0.538	12.488	0.000	0.765	1.307
Path: PEU-FP $\rightarrow$ HSQ	0.218	0.036	0.257	6.055	0.000	0.765	1.307

a. Dependent Variable: HSQ Source: Statistical Field Output, 2026

The individual parameter analysis in Table E details the structural changes caused by each predictor path. Both dimensions of technology acceptance exert statistically significant positive effects on service quality. The path from Perceived Usefulness (PUDS) to Hotel Service Quality (HSQ) produced the highest standardized effect ($\beta = 0.538$, $t = 12.488$, $p < 0.001$). The path for Perceived Ease of Use (PEU-FP) was also significant ($\beta = 0.257$, $t = 6.055$, $p < 0.001$). Testing for multi-collinearity showed a Variance Inflation Factor (VIF) of 1.307 for both variables, which is well below the standard concern threshold of 10.0, validating the statistical independence of the regression estimates.

4. DISCUSSION

The statistical results demonstrate a strong relationship between facility management digitalization and service quality in Ogoja's hospitality establishments. The primary finding that the perceived usefulness of digital tools has a significant effect on service quality ($\beta = 0.538$) aligns with the fundamental principles of the Technology Acceptance Model. This indicates that when hotel workers and administrators recognize that digital tools such as automated smart property systems and integrated front-office consoles directly improve job efficiency, they use these tools more effectively. This systematic adoption helps minimize administrative errors, stabilizes booking workflows, and ensures service reliability, which is a core pillar of guest satisfaction.

Furthermore, the significant positive impact of Perceived Ease of Use ($\beta = 0.257$) highlights a critical operational reality in semi-urban business environments. In regions like Ogoja, where technical training opportunities can be limited, the user interface of adopted systems matters significantly. When facility maintenance applications, plumbing monitors, and housekeeping software are easy to navigate, staff are more likely to record and track physical facility defects in real time. This ease of use reduces the time between identifying an issue and resolving it. As a result, facilities experience less downtime, public spaces are better maintained, and the tangible quality of the hotel environment remains consistently high.

These findings show that upgrading to digital facility systems directly prevents service failures. When maintenance scheduling is digitalized rather than tracked manually on paper, preventative maintenance for critical assets like generators, water treatment systems, and commercial cold rooms happens systematically. This structural consistency reduces unexpected breakdowns during guest stays, directly improving the hotel's responsiveness and reliability. This empirical evidence challenges the view that advanced digital facility operations are only useful in metropolitan hotels, demonstrating that semi-urban hospitality businesses can also benefit from digitalization.

5. CONCLUSION AND RECOMMENDATIONS

This study demonstrated that facility management digitalization is a key driver of service quality within Ogoja's hotel industry, analyzed through the Technology Acceptance Model (TAM). The findings show that both the perceived usefulness and the perceived ease

of use of facility technologies are critical to improving service outcomes like reliability, responsiveness, and physical environment maintenance. If systems are too complex or poorly adapted to local infrastructure, their potential benefits are lost. Therefore, successful digitalization requires a balance between functional software capabilities and user-friendly interfaces tailored to operational staff.

Based on the empirical insights generated from this study, the following recommendations are provided:

1. **Strategic Deployment of User-Centric PMS:** Hotel owners and operators in Ogoja should prioritize investing in property management software that features simple, accessible visual interfaces. This reduces the learning curve for frontline workers and promotes comprehensive system adoption.
2. **Institutionalization of Digital Maintenance Trackers:** Hospitality managers should move away from manual paper logs and implement digital maintenance scheduling applications. This transition allows for real-time tracking of asset depreciation and minimizes room breakdown periods.
3. **Continuous Capacity Building:** Hotel management should establish ongoing digital literacy and tech-acceptance workshops for operational staff. This training helps minimize technical anxieties and improves overall system utilization.
4. **Infrastructural Resilience Buffering:** To safeguard digitalized workflows from localized infrastructure challenges, hotel owners should invest in reliable alternative power sources, such as solar inverters and dedicated backup systems, ensuring continuous software and network availability.

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