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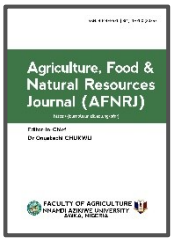

Original Article

Awareness and adoption of cloud computing in hotel management: A case study of Osun State, Nigeria

OPEN ACCESS

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ABSTRACT

Cloud computing is transforming business operations worldwide, yet its adoption in Nigeria's hospitality sector remains limited due to awareness, cost, and infrastructure challenges. This study examines the awareness, knowledge, and adoption of cloud computing among hotel staff in Osun State, Nigeria. A structured questionnaire was administered to 185 staff members across six hotels in three senatorial districts. Both descriptive and inferential statistics was employed in the analysis of data obtained. The results from the descriptive statistics revealed that 63.2% of respondents were aware of cloud computing, but only 49.7% reported using it. The primary barriers to adoption were lack of awareness (32.3%) and cost (32.3%), followed by security concerns (15.1%) and poor internet connectivity (16.1%). Regression analysis showed that awareness and knowledge significantly influenced adoption ($F(1,183) = 38.04$, $p < .001$, $R^2 = .172$), indicating that other factors also contribute to adoption challenges. Findings highlight the need for targeted training programs, policy interventions, and infrastructure improvements to enhance cloud computing adoption in the hospitality sector. The study recommends capacity-building initiatives and strategic investments to support digital transformation in Nigeria's hotel industry.

KEYWORDS: *Factors, Hospitality sector, Infrastructure, Policy interventions, Regression analysis, Training*

INTRODUCTION

The hospitality industry plays a vital role in Nigeria's economy, driven by its rich cultural heritage, scenic landscapes, and expanding tourism sector (Adebayo, 2017). However, as technological advancements reshape industries worldwide, the competitiveness of Nigerian hotels increasingly depends on their ability to adopt digital innovations. Among these, cloud computing has emerged as a transformative force, revolutionizing service delivery and operational models in the hospitality sector (Srinivasan, 2021). Cloud computing refers to the delivery of computing services including storage, processing, and networking using the internet rather than through local hardware (Aaqib *et al*., 2019). It offers numerous benefits, such as cost-effectiveness, scalability, and improved customer service, making it an attractive option for hospitality firms aiming to enhance efficiency (Sharma *et al*., 2023).

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According to Swati *et al*. (2016), cloud computing enables real-time service optimization, allowing hotels to adapt swiftly to changing market demands.

Despite these advantages, the extent of cloud computing adoption within Nigeria's hospitality industry remains insufficiently documented, particularly in regions like Osun State. Previous studies suggest that barriers such as high implementation costs, data security concerns, and limited technical knowledge have impeded its adoption in Nigerian industries, including hospitality (Al-Sharairi & Thnaibat, 2018; Okuboye, 2019). The Nigerian hospitality sector contributes approximately 3.4% to the country's GDP, supported by a growing economy and increasing tourism activities (World Travel & Tourism Council, 2020). However, persistent challenges such as operational inefficiencies, high costs, and complex data management continue to hinder its growth (Adebayo, 2017). Cloud computing presents a viable solution, streamlining operations and reducing expenditures (Emoghene *et al*., 2017).

Security concerns and inadequate internet infrastructure remain significant obstacles to cloud computing adoption in developing economies like Nigeria (Al-Sharairi & Thnaibat, 2018). These challenges are exacerbated by gaps in digital literacy and inconsistent technological infrastructure. Nonetheless, cloud computing offers diverse applications in hotel management, from reservation systems and customer relationship management to workflow optimization and data-driven decision-making (Srinivasan, 2021). Studies have shown that in technologically advanced regions, cloud computing facilitates seamless operations and enhances guest experiences (Kim & Lee, 2019). However, research focused on Nigeria, particularly studies by Adebayo (2017) and Emoghene *et al*. (2017), indicates that adoption rates remain low due to inadequate awareness and infrastructural challenges.

Osun State, a key center for cultural heritage and tourism in Nigeria (Oladipo, 2020), provides an ideal setting for investigating cloud computing adoption in the hospitality industry. While tourism significantly contributes to the state's economy, the hospitality sector struggles to leverage modern technologies to meet evolving customer expectations (Eze & Mbarika, 2018). Addressing this gap requires targeted studies to assess the level of awareness, adoption barriers, and readiness for cloud computing integration.

This study aimed to evaluate the awareness and adoption of cloud computing within Osun State's hospitality sector, offering insights that can inform policy decisions, encourage innovation, and enhance competitiveness. By focusing on this region, the research seeks to provide a detailed understanding of broader trends and challenges affecting Nigeria's hospitality industry.

MATERIALS AND METHODS

Study Area and Sampling

This study was conducted in Osun State, Nigeria, one of the country's 36 states, with its capital in Osogbo. Located within the tropical rainforest zone (latitude 7.1333° N; 7.7698° N and longitude 4.5565°E; 4.5886°E), Osun State covers approximately 14,875 km². The study focused on six hotels across three senatorial districts; Osogbo (Central), Ife (East), and Ede (West). These hotels were chosen for their proximity to tourist attractions to assess how cloud computing tools are adopted in service delivery. The study used staff-based surveys, including both operational personnel and management to capture awareness and adoption perspectives, similar to the methods described by Gheibdoust et al. (2023) and the cloud computing framing in Nadda et al. (2020).

Sampling Procedure and data analysis.

A purposive sampling technique was used to select six hotels, ensuring representation across the three senatorial districts. Data collection was conducted using structured, closed-ended questionnaires, distributed in person by the researcher and trained assistants to maximize response accuracy. Completed questionnaires were retrieved upon completion, while a total of 202 staff members participated, the valid retrieved questionnaires was 185 and this was used in the analysis.

Analysis was conducted using Statistical Package for the Social Sciences (SPSS) 21.0, employing descriptive statistics, and regression modeling.

Table 1: Sample Distribution for questionnaire administration

Hotel Name	District	Staff Surveyed	Staff Selected
Aenon Suite and Hotels	Osogbo (Central)	32	32
Leisure Spring Hotel	Osogbo (Central)	33	30
Ife Grand Resort	Ife (East)	37	35
Hotel De Treasure	Ife (East)	30	27
Western Sun International	Ede (West)	50	41
Oasis Grand Hotel	Ede (West)	20	20
Total	3 Districts	202	185

Source: Field Survey (2024)

RESULTS AND DISCUSSION

Cloud Computing Awareness and Adoption

The result obtained and presented in Table 2, indicate that 63.2% of respondents had heard about cloud computing, but only 49.7% reported using it. The primary barriers to adoption were lack of awareness (32.3%) and cost (32.3%), followed by security concerns (15.1%) and poor internet connectivity (16.1%).

The findings align with the observations of Sharma *et al*, (2023), who identified cost and limited awareness as primary barriers to cloud computing adoption in the hospitality sector. Comparatively, Osuolale *et al*. (2020) reported similar trends in Nigerian SMEs, suggesting that these barriers may be systemic across industries. The relatively high level of awareness (63.24%) highlights progress compared to earlier studies (Buhari *et al*, 2022), which reported much lower awareness levels in Nigeria's IT adoption landscape.

Table 2: Awareness and Adoption of Cloud Computing

Variable	Freq.	Percentage (%)
Heard of cloud computing?		
Yes	117	63.2
No	68	36.8
Are you using cloud computing?		
Yes	92	49.7
No	93	50.3
Reasons for Not Adopting		
Lack of awareness	30	32.3
Cost	30	32.3
Security concerns	14	15.1
Poor internet connectivity	15	16.1
Others	4	4.3

Source: Field Survey (2024)

Knowledge of Cloud Computing Technologies

Table 3 with the result shows that, Respondents demonstrated varying levels of knowledge regarding cloud computing concepts. Familiarity with cloud computing applications had the highest mean score (3.31), followed by knowledge of cloud computing concepts (3.13) and awareness of best practices (3.12). The relatively high familiarity with cloud computing technologies reflects the growing exposure to digital solutions among hotel staff. These findings are consistent with Aaqib *et al*. (2019), who noted that global trends in cloud technology are gradually influencing industries in developing regions. However, the results contrast with Al-Sharairi & Thnaibat (2018), who found significantly lower familiarity levels in Jordan's hospitality sector.

Table 3: Knowledge of Cloud Computing Technologies

Variable	Mean Score
Familiarity with cloud computing	3.31
Knowledge of cloud computing concepts	3.13
Awareness of best practices	3.12

Source: Field Survey (2024)

Regression Analysis: Impact of Awareness and Knowledge on Adoption

As shown in Table 4, the result of the Regression analysis indicated that awareness and knowledge significantly predicted cloud computing adoption ($F(1,183) = 38.04$, $p < .001$). The model explained 17.2% of the variance ($R^2 = .172$), suggesting that additional factors, such as infrastructure and policy support may influence adoption rates. These findings align with the work of Emoghene *et al*. (2017), who reported that awareness and training significantly impact cloud adoption rates. However, the modest R^2 value indicates room for improvement in addressing other factors, such as infrastructure and stronger government policies which could further enhance adoption. In comparison, studies by Okuboye (2019) noted that strong government policies in countries like South Africa helped explain higher adoption rates despite similar levels of awareness.

Table 4: Regression Analysis of Awareness and Knowledge on Adoption

Variable	β-Value	t-Value	p-Value
Awareness & knowledge	38.040	6.168	0.000**
Model Fit			
R	0.415		
R^2	0.172		
Adjusted R^2	0.168		

*Note: *p < 0.05, **p < 0.01. Source: Field Survey (2024)*

Comparative Analysis of Cloud Service Usage

Results shown in Table 5, reveal varying levels of familiarity and usage across different cloud computing services and platforms. Among the surveyed respondents, database services emerged as the most familiar aspect of cloud computing, with a mean score of 3.74, followed by email services (M = 3.40), and mobile applications (M = 3.27). Interestingly, Alibaba Cloud services, despite being one of the major global cloud providers, recorded a slightly lower familiarity score of 3.2. In terms of platform-specific usage, Amazon Web Services (AWS) was the most utilized among participants (M = 3.36), followed by Google Cloud Platform (GCP) with a mean of 3.21.

These results are consistent with previous research and industry reports. For example, Alasmary & Ibrahim (2022) found that AWS remains the leading cloud platform adopted in higher education and enterprise environments, with Google Cloud also gaining traction, particularly in academic contexts. This mirrors the current findings, where AWS had a slight edge over GCP in terms of usage. The high familiarity with database and email services also aligns with the results of Liu & Wang (2020), who identified these services as the most well-known among IT professionals in academic institutions. They suggested that such services are often the entry point for users engaging with cloud technologies, contributing to their widespread familiarity.

Table 5: Familiarity with Cloud Computing Services

A. Cloud Services	Mean
Databases	3.74
Email	3.4
Mobile Applications	3.27
Ali baba	3.2
B. Cloud Platform Usage Platforms	
Amazon Web Services (AWS)	3.36
Google Cloud Platform (GCP)	3.21

Source: Field Survey (2024)

The relatively lower familiarity with Alibaba Cloud observed in this study is also supported by the work of Ali *et al.* (2019), who noted that while Alibaba Cloud holds a dominant market share in China and parts of Southeast Asia, its recognition and usage remain limited in regions outside Asia.

CONCLUSION AND RECOMMENDATION

The study found moderate levels of awareness and adoption of cloud computing in Osun State's hospitality sector. However, cost, lack of awareness, and infrastructure limitations remain key barriers. This study therefore recommends regular workshops and training sessions for hotel staff. Also, as part of the hotels' cost reduction strategies, there should be Government incentives or financial support for cloud adoption in hotels. Equally important is improved Infrastructure with investments in internet connectivity to address reliability concerns.

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Author's Contributions

Author T.T. collected the data, performed data analysis, and wrote the first draft of the manuscript. A.F., conceptualized the study, fine-tuned the methodology of the study, and proof read the entire manuscript with O.F who also provided more literature searches. All authors read and approved the final draft of the manuscript.

Ethical Statement

Prior to data collection, ethical considerations were addressed by obtaining informed consent from participants. The research adhered to principles of confidentiality, anonymity, and voluntary participation to ensure the ethical integrity of the study.

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