



Emerging Technologies and Hospitality Entrepreneurship: An Analytical Review of Opportunities and Adoption Challenges in Zanzibar, Tanzania

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ABSTRACT

Background: Emerging technologies are reshaping hospitality entrepreneurship by transforming service delivery, customer engagement, operational decision-making, innovation, and value creation in the industry. Despite the growing adoption of emerging technologies in hospitality, existing studies remain fragmented across individual technologies and operational contexts, resulting in a limited and fragmented understanding of the opportunities and barriers that influence hospitality entrepreneurship.

Objective: This study critically examines the opportunities created by emerging technologies for hospitality entrepreneurship and synthesizes the major factors constraining their adoption and diffusion within the hospitality sector in Zanzibar.

Method: An analytical literature review guided by the Diffusion of Innovation Theory was conducted, drawing on secondary sources, including peer-reviewed articles published between 2010 and 2025, identified through Google Scholar, Scopus, and Emerald Insight. This review covered 33 published articles. Sources were included if they addressed emerging technologies, hospitality entrepreneurship, opportunities for technology adoption, and implementation challenges in the industry. The selected literature was analyzed thematically and analytically using Diffusion of Innovations Theory as the guiding framework. The analysis focused on recurring themes related to technological opportunities and adoption barriers.

Results: The review shows that emerging technologies create opportunities for hospitality entrepreneurship through service personalization, automation, forecasting, pricing decisions, operational efficiency, sustainability, digital marketing, and platform-based business models. Specifically, artificial intelligence (AI), robotics, and big data support decision-making and responsiveness; the Internet of Things (IoT) improves smart facility control, monitoring, maintenance, and personalized services; cloud computing enhances scalability and coordination; blockchain enhances transaction trust; and virtual, augmented, and metaverse applications support customer engagement and experience-based marketing. However, adoption is constrained by high costs, weak infrastructure, cybersecurity and privacy risks, regulatory uncertainty, weak data governance, limited digital skills, and employee or guest resistance.

Conclusion: Emerging technologies provide significant opportunities for innovation, competitiveness, service personalization, and operational transformation in hospitality entrepreneurship. However, their successful diffusion depends not only on technological benefits but also on organizational readiness, stakeholder acceptance, digital capabilities, responsible data governance, and supportive institutional environments.



Unique Contribution: This study provides an integrated framework for understanding how emerging technologies create entrepreneurial opportunities while simultaneously generating barriers to adoption, thereby addressing fragmentation in hospitality technology literature.

Key Recommendation: Entrepreneurs should adopt technologies through a phased implementation approach, staff training, governance safeguards, and public–private partnerships.

Keywords: Digitalization, Value creation, diffusion Innovation, Hospitality entrepreneurship, Innovation.

INTRODUCTION

The hospitality and tourism industries are undergoing a technology-driven transformation in which service design, delivery, and consumption are increasingly mediated by digital platforms and data-intensive tools (Kansakar et al., 2022). This transformation is evident across hotels, restaurants, events, cruise lines, and theme parks, where entrepreneurs increasingly rely on technology to create value, improve operational performance, and respond to the expectations of digitally informed guests (Choudhary et al., 2024; Verma et al., 2024). Digital platforms and social networks have also expanded tourists' access to information, booking alternatives, and real-time reviews, intensifying competition and increasing the demand for transparency, innovation, and rapid responsiveness (Đikanović & Jakšić, 2022).

Emerging technologies offer significant opportunities for hospitality entrepreneurship by enabling service innovation, customer engagement, operational coordination, and value creation. Technologies such as artificial intelligence, big data analytics, virtual and augmented reality, the Internet of Things, cloud computing, blockchain, and metaverse-related applications are increasingly used to improve efficiency, personalization, sustainability-oriented practices, digital marketing, and innovative business models (Ersoy, 2024). Cloud technologies, for example, can facilitate collaboration and innovation across distributed teams and are associated with improved performance outcomes among SMEs, including financial and environmental performance (Hui & Michael, 2015; Hui & Mohamed, 2024). Similarly, digital reservation systems and other platform-based tools can strengthen trust, customer loyalty, and sustainability-oriented hospitality entrepreneurship (Saura et al., 2024).

Despite these opportunities, the adoption of emerging technologies in hospitality entrepreneurship remains complex and uneven. This uneven adoption constitutes an important practical problem because many hospitality entrepreneurs, particularly those operating in small- and medium-sized enterprises and developing-economy contexts, face financial, infrastructural, organizational, and human resource constraints that limit their ability to adopt and integrate technologies effectively (Akpan et al., 2022; Kalsi et al., 2023). These challenges include cybersecurity risks, high implementation costs, limited digital skills, weak data governance, and resistance to change. Consequently, hospitality entrepreneurs' ability to benefit from emerging technologies depends not only on the availability of technological tools but also on



organizational readiness, stakeholder acceptance, regulatory support, and the capacity for strategic implementation.

Although technology-related studies in hospitality have expanded rapidly, existing evidence is fragmented across individual technologies, operational functions, and geographical contexts. Existing studies often focus on specific applications, such as artificial intelligence, blockchain, cloud computing, the Internet of Things, and immersive technologies, without providing an integrated understanding of how these emerging technologies collectively influence operations in the hospitality and entrepreneurship industries. Although previous reviews have examined digital transformation and technology adoption in hospitality, limited attention has been given to synthesizing technology-specific entrepreneurial opportunities alongside the organizational, financial, infrastructural, human, ethical, and regulatory barriers that influence the successful adoption of these technologies. This gap limits a holistic understanding of how emerging technologies shape hospitality entrepreneurship and why their adoption yields different outcomes across ventures.

To address this gap, this review synthesizes evidence across multiple technology domains and links adoption opportunities and barriers to hospitality entrepreneurship. Guided by the Diffusion of Innovations Theory, this review considers how perceived relative advantage, compatibility, complexity, trialability, and observability explain the adoption and diffusion of emerging technologies in the hospitality industry. Accordingly, this review focuses on five major technology domains: artificial intelligence and big data analytics, virtual and augmented reality, the Internet of Things, cloud computing, and blockchain technology. It examines entrepreneurship-relevant outcomes, including guest experience and personalization; operational efficiency; innovation and value creation; and adoption constraints related to finance, infrastructure, security, privacy, ethics, and human resistance.

This review pursues two objectives: first, to evaluate the opportunities emerging technologies offer for hospitality entrepreneurship; and second, to identify and analyze the challenges that hinder their adoption and effective implementation in the hospitality industry.

LITERATURE REVIEW

IoT-enabled Connectivity and Smart Environment

The Internet of Things (IoT) contributes to hospitality entrepreneurship by enabling connected, responsive, and data-driven service environments. Rather than a single technology, the IoT is an integrated network of sensors, devices, and digital systems that enable real-time communication, automation, monitoring, and service coordination in hospitality operations (Shani et al., 2023).

The strongest evidence of IoT benefits appears in areas where automation and real-time monitoring directly improve operational efficiency. IoT-enabled systems support the automated control of lighting, temperature, security, energy consumption, and equipment performance,



thereby reducing waste, improving maintenance responsiveness, and supporting sustainability-oriented operations (Kalsi et al., 2023; Kansakar et al., 2022). Collectively, these studies suggest that IoT contributes to operational efficiency primarily through automation and predictive maintenance. However, the benefits appear contingent upon organizational readiness and infrastructure quality.

Artificial Intelligence in Service Automation and Decision Support

Studies have shown that artificial intelligence contributes to hospitality entrepreneurship by strengthening service automation and managerial decision-making. Rather than simply replacing human labor, these technologies appear to create value by automating repetitive tasks, processing large volumes of operational data, improving forecasts, and enabling faster responses to guests' needs. Applications such as chatbots, booking systems, predictive analytics, and data-driven pricing tools provide a clear relative advantage by improving responsiveness, occupancy planning, service consistency, and operational intelligence (Arapou & Kapiki, 2025).

Using the Diffusion of Innovations Theory as an analytical lens, AI is more likely to be adopted when hospitality entrepreneurs perceive these technologies as offering visible and measurable benefits. Their relative advantage lies in their ability to reduce routine workloads, support real-time decision-making, and enable employees to focus on personalized, emotionally sensitive interactions with customers and guests (Kansakar et al., 2022).

However, the literature also indicates that their compatibility and complexity constrain AI. In hospitality, service quality is often associated with warmth, empathy, and personal interactions. Therefore, technologies that automate guest-facing services may be less acceptable when perceived as incompatible with the hospitality industry's relational and human-centered nature. This explains why guest resistance may occur, especially among customers who value direct human contact with hotel staff. Similarly, employee concerns about job displacement, role uncertainty, and work-related stress reflect the social complexity of adoption, not merely technical difficulties alone. These concerns can slow diffusion when staff and guests perceive AI as threatening rather than as a supportive tool for their work and stay experiences.

The findings further suggest that successful adoption depends on reducing perceived complexity through training, gradual implementation, and clear communication of workplace roles. Trialability is particularly important because pilot testing allows hospitality entrepreneurs to assess whether AI chatbots' predictive analytics tools meet their operational needs before full-scale implementation. Observability is also important because visible improvements, such as faster response times, reduced service delays, improved forecasting accuracy, and higher guest satisfaction, can strengthen managerial confidence and employee acceptance.



Collectively, AI offers significant opportunities for hospitality entrepreneurship by enhancing automation, decision support, service responsiveness, and operational efficiency. Nevertheless, their value depends on more than just technical capabilities.

Immersive technologies and the Metaverse

Virtual reality, augmented reality, and metaverse-related applications are becoming important tools for hospitality entrepreneurs to expand their capabilities in designing, marketing, and delivering customer experiences. Unlike conventional digital marketing tools, immersive technologies allow prospective guests to virtually explore hotel rooms, facilities, destinations, and tourism experiences before purchase. This creates a clear relative advantage by reducing uncertainty, strengthening destination appeal, supporting the “try-before-you-buy” approach, and improving customer confidence in hospitality products (Laachach et al., 2024).

Anchored in the Diffusion of Innovations Theory, the relative advantages of immersive technologies are most visible in marketing, customer engagement, and experiential differentiation. These technologies enable hospitality entrepreneurs to present services in more vivid and interactive ways, which can influence booking intentions, customer satisfaction, and return intentions when users perceive them as useful, easy to engage with, and innovative (Garbin & Mandić, 2020; Lim et al., 2024). In this regard, immersive technologies do not merely support promotion; they also create new entrepreneurial possibilities through virtual events, digital tourism products, and destination preview experiences that may supplement physical hospitality offerings (Laachach et al., 2024). However, the diffusion of immersive technologies in hospitality entrepreneurship is constrained by compatibility and complexity. Their adoption depends on alignment with the customer's digital readiness, infrastructure, technical expertise, and financial capacity.

Thus, trialability and observability are critical. Hospitality entrepreneurs are more likely to adopt immersive technologies when they can test smaller applications, such as virtual room tours, augmented destination maps, and digital event previews, before making larger investments. Visible outcomes, including higher online engagement, improved booking conversions, and greater customer satisfaction.

Opportunities of Emerging Technologies in Hospitality Entrepreneurship

Kalgi et al. (2024) identified several promising areas for hospitality entrepreneurship, including hotels, coffee shops, restaurants, bakeries and patisseries, food franchises, travel agencies, contract catering, pubs and nightclubs, event management, and facility management. These opportunities suggest that hospitality entrepreneurship is not limited to accommodation services but also extends to food services, events, tourism support services, and facility-based business models. Analytically, these opportunities are strengthened by emerging technologies, which not only create new business opportunities but also reshape traditional hospitality ventures.



However, the extent to which entrepreneurs benefit from these opportunities depends on their firm size, financial capacity, digital skills, infrastructure readiness, and market positioning. SMEs' hospitality ventures can benefit from affordable digital tools and platforms. However, they may also face difficulties adopting advanced technologies due to costs, limited expertise, and weak technological infrastructure. Therefore, emerging technologies should be understood as opportunity-enabling resources whose value depends on the entrepreneur's ability to align technology adoption with business goals, customer expectations, and operational capacity.

Although existing studies show that emerging technologies create opportunities for hospitality entrepreneurship, several gaps remain. First, the available studies often examine individual technologies. Consequently, there is limited synthesis of how multiple technologies create opportunities for hospitality entrepreneurship. Secondly, there is limited evidence from developing countries, where hospitality entrepreneurs often face unique constraints. Finally, few studies have provided an analytical analysis of both the opportunities and barriers. Many studies emphasize technological benefits, while less attention is paid to the combined effects of constraints on successful technology adoption in the hotel industry. Addressing these gaps is necessary to understand how emerging technologies shape hospitality entrepreneurship and to guide entrepreneurs, policymakers, and technology developers toward more effective adoption strategies.

Venture Creation

Emerging technologies support venture creation in hospitality entrepreneurship by enabling the development of new business models. Digital tools enable hospitality startups and small ventures to enter markets more flexibly, reach customers through online channels, and compete with innovative service designs. In accommodation ventures, technologies such as cloud-based systems, AI, digital reservation tools, and data analytics can reduce the need for substantial upfront investments while supporting booking management, customer relationship management, pricing decisions, and service personalization. This provides a relative advantage to small hotels, guesthouses, and boutique accommodation businesses that require scalable and cost-effective systems to improve their visibility and operational control. Blockchain can enhance trust in digital transactions, whereas immersive technologies and metaverse-related applications can support virtual tours, destination previews, and concierge-like experiences (Laachach et al., 2024; Sharma et al., 2024).

However, creating technology-enabled hospitality ventures depends on more than just access to digital tools. Entrepreneurs must assess whether a technology is compatible with their business model, target customers, service culture, infrastructure, and financial capacity. However, they may also be too complex or costly for smaller hospitality start-ups unless introduced gradually through pilot projects or partnerships with larger corporations. Trialability and observability are



important because entrepreneurs are more likely to adopt technologies when they can test their usefulness and observe the measurable outcomes.

Market Analysis and Opportunity Identification

Cloud technologies support opportunity identification by enabling international entrepreneurial activity and expanding firms' access to global customers, digital sales platforms, and cross-border collaboration, thereby increasing innovation. Simultaneously, AI and big data analytics enhance market analysis by processing large datasets to detect demand patterns, customer preferences, and emerging trends that may be difficult for human analysts to identify. This is especially valuable in volatile settings, such as hospitality, where rapid shifts can affect strategic decisions (Ross & Michael, 2015).

However, evidence from the hospitality sector indicates that AI's contribution to market-opportunity identification is contingent: effective entrepreneurial strategies strengthen the link between AI use and opportunity identification, whereas market volatility weakens it, implying that AI benefits are partly realized through the quality of managerial and entrepreneurial execution (Alshurideh et al., 2024). Beyond analytics, AR and VR can further differentiate firms by enhancing their marketing experience and optimizing their operational processes (Vadym et al., 2024).

Guest Service, Personalization, and Experience Enhancement

Studies indicate that emerging technologies create significant opportunities for hospitality entrepreneurship by enhancing guest services, personalization, and delivery. Self-service systems, predictive analytics, AI-enabled support tools, biometrics, and immersive technologies help hospitality firms increase convenience, responsiveness, and tailored services while also strengthening satisfaction, loyalty, and competitive differentiation (Arapou & Kapiki, 2025; Singh et al., 2021; Sinha & Praveen, 2024; Ward, 2024; Kumar & Sharma, 2024; Das et al., 2024; Garbin & Mandić, 2020; Lim et al., 2024). However, in line with the Diffusion of Innovations Theory, the entrepreneurial value of these technologies depends on how hospitality firms perceive their relative advantage, compatibility, complexity, trialability, and observability, as these attributes shape firms' willingness and ability to adopt and integrate them effectively into guest service processes.

Operational Efficiency

Studies suggest that emerging technologies create operational opportunities for hospitality entrepreneurship by improving efficiency, reducing costs, and strengthening service delivery. Kalsi et al. (2023) emphasize that IoT and smart building systems improve cost management and operational sustainability through precise monitoring of energy and water consumption. However, Habineza (2024) and Wiboonrat (2014) highlight the enabling role of cloud computing, arguing that its scalable and flexible infrastructure makes digital capabilities more



affordable and accessible, particularly for smaller or budget-oriented hospitality businesses, while also improving productivity and reducing time and operating costs. Collectively, these studies indicate that emerging technologies support hospitality entrepreneurship by combining intelligent resource management, service automation, and scalable digital infrastructure. This suggests that opportunities lie not in any single technology but in the combined ability of these technologies to improve their operational efficiency.

Support Innovation and Creativity

Innovation and creativity are central to entrepreneurial success because they help entrepreneurs differentiate their products and services, respond to customer needs, and maintain a competitive advantage. Continuous innovation also enables entrepreneurs to identify emerging opportunities, develop novel solutions, and adapt to changing market conditions (Kabangire & Korir, 2023). Emerging technologies are major catalysts for creativity in the hospitality and entrepreneurship sectors. Tools such as AI, VR, and contactless systems are reshaping service delivery, streamlining operations, and enhancing customer experience, thereby opening new pathways for innovation and competitiveness (Reynolds, 2024)

Challenges to the Integration of Emerging Technologies in Hospitality Entrepreneurship

The reviewed evidence shows that adoption is shaped by interrelated financial, infrastructural, technological, organizational, ethical, and human constraints. Rather than operating as isolated barriers, these challenges interact to determine whether hospitality entrepreneurs can translate technological possibilities into sustainable business value. Analytically, the most significant constraint is not merely the availability of technology but also the degree to which firms possess the financial capacity, digital infrastructure, managerial readiness, and stakeholder acceptance required for effective implementation.

Financial and infrastructural barriers appear to be the most persistent constraints, particularly for SMEs in the hospitality sector and businesses operating in emerging markets. The evidence converges on the view that technologies such as the IoT, AI, and immersive systems require not only initial capital investment but also continuous spending on maintenance, upgrades, staff training, and system integration (Kansakar et al., 2022; Saeed et al., 2022; Shani et al., 2023). Comparatively, these barriers are more severe for smaller hospitality enterprises than for larger firms because SMEs often have limited access to finance and weaker IT capacity. This suggests that the relative advantage of emerging technologies may be difficult to realize when implementation costs and infrastructure demands exceed a business's operational capacity.

Interoperability and technological complexity further weaken readiness for adoption. Many hospitality firms continue to operate with older reservation, payment, customer management, and operational systems, making the integration of new technologies costly and technically demanding (Kansakar et al., 2022).



Viewed through the lens of the Diffusion of Innovations Theory, these barriers reflect the concept of complexity, where technologies perceived as difficult to understand, integrate, and maintain tend to diffuse more slowly. This is particularly evident in metaverse-related tourism applications, where high technical requirements, limited expertise, and uncertain business value make adoption more difficult for hospitality entrepreneurs (Laachach et al., 2024).

Security, privacy, and ethical risks add another layer of complexity because hospitality technologies increasingly depend on customer data, connected systems, and automation. The literature converges on the argument that the same technologies that enable personalization and operational efficiency also increase exposure to cybersecurity threats, privacy violations, surveillance concerns, and trust-related risks (Arapou & Kapiki, 2023; Arapou & Kapiki, 2025). This creates strategic tension for hospitality entrepreneurs: greater data use can improve service responsiveness, but weak governance can damage customer confidence and regulatory compliance. Therefore, successful adoption depends not only on technological capability but also on responsible data governance, privacy safeguards, transparent data practices, and cybersecurity preparedness.

Human factors and resistance to change remain equally important because hospitality is a people-centered industry in which service quality depends heavily on trust, empathy, and interpersonal interaction. Employees may resist emerging technologies because of technostress, fear of job displacement, role uncertainty, and pressure to acquire new digital skills. Simultaneously, some guests may reject technology-heavy service models when they perceive them as reducing human warmth or creating digital inconvenience, especially in premium and luxury hospitality contexts (Arapou & Arthur, 2026; Arapou & Kapiki, 2025).

Limited information and weak knowledge transfer also reduce the entrepreneurial value of emerging technology. Even when small hospitality businesses recognize the potential benefits of digital tools, gaps in professional development, staff education, and structured knowledge sharing limit their ability to leverage these technologies for innovation, market segmentation, service adaptation, and operational improvement (Kuvačić et al., 2018). In analytical terms, this shows that technology adoption does not automatically lead to innovation; firms must possess the absorptive capacity to interpret, adapt, and apply digital knowledge to their specific business contexts. The absence of common standards and weak interoperability frameworks further limits the responsiveness and integration of guest-facing technologies and personal devices (Kansakar et al., 2019).

Synthesizing the evidence, the challenges to adopting emerging technologies in hospitality entrepreneurship are multidimensional and mutually reinforcing. Financial constraints limit acquisitions, infrastructural weaknesses increase complexity, cybersecurity risks undermine trust, and human resistance hinders technology acceptance. Consequently, successful integration depends on more than just purchasing advanced technologies. It requires strategic readiness,



compatible infrastructure, secure governance, staff capabilities, customer acceptance, and continuous organizational learning.

THEORETICAL FRAMEWORK

Diffusion of Innovations Theory

The Diffusion of Innovations Theory (DOI), developed by Rogers, explains how new ideas and technologies spread through a social system over time. The theory categorizes adopters into five groups based on innovativeness: innovators, early adopters, early majority, late majority, and laggards, showing that technology adoption usually occurs gradually rather than simultaneously (Rogers, 2003). The DOI further proposes that diffusion is shaped by four core elements: the innovation itself, communication channels, time, and the social system in which adoption occurs (Rogers, 2003).

In hospitality entrepreneurship, DOI offers a useful analytical lens for understanding the adoption of emerging technologies. According to this theory, adoption is influenced by five perceived attributes of innovation: relative advantage, compatibility, complexity, trialability, and observability. Relative advantage refers to the perceived benefits of a technology compared with existing practices; compatibility concerns the fit between the technology and existing values, operations, and customer expectations; complexity refers to the perceived difficulty of understanding and using the technology; trialability refers to the possibility of testing the technology before full adoption; and observability concerns the visibility of the benefits of adoption. When these attributes are favorable, hospitality entrepreneurs are more likely to adopt technologies that improve their business's performance.

The use of a DOI is particularly relevant to the research problem addressed in this study. Although previous hospitality studies have examined individual technologies, limited research has synthesized how the innovation attributes proposed by DOI influence the adoption of multiple emerging technologies across hospitality entrepreneurship. Existing studies often focus separately on AI, blockchain, cloud computing, IoT, or immersive technologies, while giving less attention to how these technologies collectively create opportunities and barriers for entrepreneurial hospitality ventures. Consequently, DOI provides an appropriate framework for understanding the opportunities and constraints associated with technology diffusion in this sector.

The DOI also helps explain why technology adoption can be slow or uneven among hospitality industry entrepreneurs. In small hotels, restaurants, tourism startups, guesthouses, and other small- and medium-sized hospitality ventures, adoption decisions are often shaped by limited financial resources, weak digital infrastructure, limited technical expertise, and uncertainty regarding return on investment. These conditions may reduce the perceived relative advantages of emerging technologies and increase their perceived complexities. Similarly, technologies may



diffuse slowly when they are incompatible with existing service routines, customer preferences, or employee skills. Trialability and observability are particularly important for hospitality SMEs. Entrepreneurs with limited resources may be more willing to adopt emerging technologies if they can test them through pilot projects, demonstrations, or phased implementations before committing to full-scale investments. Observable benefits can reduce uncertainty and strengthen confidence in technology adoption. Thus, DOI explains why some hospitality entrepreneurs adopt emerging technologies earlier than others and why adoption requires visible value, manageable complexity, and alignment with business realities.

METHODOLOGY

This study employed an analytical literature review to examine the opportunities and challenges of adopting emerging technologies in hospitality entrepreneurship, with a specific focus on Zanzibar, Tanzania. This focus was necessary because technological adoption, digital infrastructure, entrepreneurial capacity, and institutional support vary across regions and countries. Relevant literature was drawn from peer-reviewed journal articles, conference papers, and book chapters published between 2015 and 2025. Sources were identified using Google Scholar with keywords related to emerging technologies, hospitality entrepreneurship, technology adoption, AI, IoT, cloud computing, blockchain, virtual and augmented reality, digital transformation, hospitality SMEs, and developing countries.

The review included sources addressing emerging technologies, hospitality entrepreneurship, SMEs, accommodation ventures, restaurants, guesthouses, tourism startups, digital service innovation, opportunities for adoption, and implementation challenges. The selected literature was analyzed thematically and analytically using DOI Theory as the guiding framework. The analysis focused on recurring themes, including technological opportunities, adoption barriers, organizational readiness, stakeholder acceptance, compatibility, complexity, trialability, and observability.

CONCLUSION

This review shows that emerging technologies are reshaping hospitality entrepreneurship by improving service personalization, operational efficiency, sustainability, decision-making, and the development of new businesses. However, adoption remains constrained by financial limitations, weak infrastructure, cybersecurity and privacy risks, limited digital skills, regulatory uncertainty, and resistance from employees or guests who prefer human-centered services.

Consistent with DOI Theory, technologies are more likely to be adopted when entrepreneurs perceive their relative advantages, compatibility with existing operations, manageable complexity, trialability, and observable benefits. Conversely, perceived constraints continue to slow down their diffusion.

This review contributes to the hospitality entrepreneurship literature by integrating fragmented evidence across multiple emerging technologies and demonstrating how opportunities and



barriers interact to shape the adoption outcomes. Therefore, successful technology adoption requires strategic investment, phased implementation, responsible data governance, staff capacity building, and supportive institutional environments.

RECOMMENDATIONS

Practical Implications for Hospitality Entrepreneurs

The evidence reviewed indicates that hospitality entrepreneurs should approach the adoption of emerging technologies as a value-realization strategy rather than an end goal for the business. Therefore, each investment should be anchored to a clearly defined operational or market challenge, matched with an appropriate technological capability, and assessed using measurable performance indicators. Hospitality entrepreneurs should assess organizational readiness, introduce technologies gradually, train staff, and evaluate outcomes against pre-established performance indicators before scaling their operations. Cybersecurity, privacy protection, and responsible data governance should be embedded from the beginning of the implementation. Entrepreneurs should establish access controls, transparent data practices, incident response procedures, and staff awareness mechanisms to protect guest information from cyberattacks.

Implications for technology developers

The findings further imply that hospitality technology developers should design solutions with adoption constraints in mind, particularly for SMEs in resource-constrained settings. Beyond technical performance, sustained uptake is influenced by affordability, scalability, interoperability with legacy systems, ease of implementation, and users' ability to understand and trust the technology. Therefore, developers should prioritize practical deployment features, such as phased adoption options, user-friendly interfaces for non-technical staff, and dependable post-sales support, including training materials and troubleshooting. In addition, privacy, security, transparency, and ethical responsibility should be embedded as core design requirements rather than being treated as optional features. Developers should adopt ethical design approaches when creating such technologies. This means designing systems that protect guest privacy and avoid replacing human interaction in ways that weaken the quality of service.

Policy Implications

Public interventions should prioritize broadband reliability, access to digital infrastructure, sector-relevant digital skills development, and partnerships between government agencies, hospitality associations, technology providers, and training institutions. Targeted financial incentives, such as grants, tax relief, subsidized credit, and innovation support schemes, may reduce the burden of adoption. Policy frameworks should address the increasingly international nature of digital hospitality services. There is a need for clearer cross-border data governance policies that protect guest information, enable legitimate data flows for reservations, personalization, payments, analytics, and service coordination, and ensure legal compliance.



Cybersecurity and privacy regulations should align with internationally recognized standards to strengthen trust in digital hospitality ecosystems. Policymakers should promote minimum cybersecurity requirements, incident reporting mechanisms, privacy protection rules, and capacity-building programs to help hospitality entrepreneurs implement secure digital systems to protect their data.

AI governance frameworks are also needed to ensure that AI-enabled hospitality technologies are transparent, explainable, fair, and accountable. Policies should encourage the responsible use of AI. This requires safeguards against algorithmic bias, opaque decision-making, irresponsible data use, and excessive automation, which may weaken service quality and/or customer trust.

Finally, global interoperability standards should be encouraged to ensure that emerging technologies are used across different hospitality systems, platforms, and vendors. Interoperability is important for reservation systems, payment technologies, customer data platforms, loyalty systems, smart room technologies, and tourism service networks.

Future Research Gaps

Although the existing literature demonstrates the growing relevance of emerging technologies in hospitality entrepreneurship, several important research gaps remain. These gaps can be prioritized to provide a clearer research agenda for scholars, practitioners, and policymakers.

Priority Gap 1: Technology Adoption by SMEs in Developing Countries

The most urgent gap concerns technology adoption among hospitality SMEs in developing countries. Much of the existing evidence focuses on larger hospitality firms or technologically advanced environments, while little is known about how small hospitality entrepreneurial ventures adopt emerging technologies under constrained conditions.

Priority Gap 2: Longitudinal Impact Studies

Second, their priority is on longitudinal studies examining the long-term effects of emerging technologies on hospitality entrepreneurship. Current research often captures short-term adoption benefits; however, there is limited evidence that technology produces sustained performance outcomes. Therefore, future studies should use longitudinal designs to capture measurable performance results.

Priority Gap 3: Technology Returns Measurements

The third gap concerns the measurement of return on investment and value realization. Existing studies often discuss the benefits of emerging technologies in broad terms; however, there is limited consistency in how technological value is measured in the hospitality industry. Future research should develop comparable indicators to assess the program's short-term efficiency gains and long-term benefits. This would allow for stronger comparisons and syntheses across studies.



Priority Gap 4: Metaverse and Immersive Technologies

The fourth priority concerns immersive technologies and metaverse-related applications. Although virtual, augmented reality, and metaverse platforms are increasingly being discussed as tools for destination marketing, guest engagement, and digital experience creation, empirical evidence of their profitability, user acceptance, long-term engagement, and practical implementation remains limited. Future research should conduct field-based evaluations and comparative studies across hospitality destinations and customer segments to determine whether these technologies generate measurable entrepreneurial value.

Priority Gap 5: Governance and Ethical Implementation

Finally, further research is required on governance and ethical issues related to its implementation. The questions regarding cybersecurity, privacy protection, algorithmic transparency, data governance, and ethical automation are becoming increasingly important. Future studies should examine which governance models are practical for hospitality SMEs.

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The authors declare no potential conflicts of interest regarding this study.

Author Contributions

All authors contributed equally to the conception and design of the study.

Artificial Intelligence (AI) Use Disclosure

During the preparation of this manuscript, the author(s) used Grammarly for language editing, grammar correction, readability improvement, and formatting. The author(s) carefully reviewed, revised, and verified all outputs generated by the tool and took full responsibility for the accuracy, originality, and integrity of the manuscript's content.

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