

Sustainable Innovation in Hospitality and Tourism Services: A Systematic Review

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Abstract:

The hospitality and tourism industry is under growing pressure to innovate sustainably in response to environmental degradation, resource scarcity, changing consumer expectations, and disruptions such as the COVID-19 pandemic. This study conducts a systematic review of the literature on sustainable innovation in hospitality and tourism services, aiming to map the types, drivers, and outcomes of such innovation and to identify the main gaps for future research. Following the PRISMA 2020 guidelines, relevant peer-reviewed articles published between 2016 and 2024 were identified, screened, and synthesized thematically. The findings indicate that sustainable innovation in the sector manifests across four interrelated domains: technological and digital innovation, eco-innovation and green process innovation, service and business-model innovation, and social/community-based innovation. Digitalization and data-driven decision-making emerge as key enablers, while institutional pressure, consumer demand for green experiences, and organizational leadership act as the principal drivers. The review also identifies persistent barriers, including high implementation costs, fragmented measurement standards, and limited diffusion among small and medium-sized enterprises. This review contributes an integrated conceptual synthesis that can guide both academic research and managerial practice toward more resilient and environmentally responsible hospitality and tourism services.

Key words: *sustainable innovation, hospitality services, tourism management, eco-innovation.*

Abstrak:

Industri perhotelan dan pariwisata menghadapi tekanan yang semakin besar untuk melakukan inovasi berkelanjutan sebagai respons terhadap kerusakan lingkungan, kelangkaan sumber daya, perubahan ekspektasi konsumen, serta berbagai gangguan seperti pandemi COVID-19. Studi ini melakukan tinjauan sistematis terhadap literatur mengenai inovasi berkelanjutan dalam layanan perhotelan dan pariwisata, dengan tujuan memetakan jenis, faktor pendorong, dan hasil dari inovasi tersebut, serta mengidentifikasi kesenjangan utama untuk penelitian di masa depan. Dengan mengikuti pedoman PRISMA 2020, artikel-artikel relevan yang telah melalui telaah sejawat (peer-reviewed) dan diterbitkan antara tahun 2016 hingga 2024 diidentifikasi, disaring, dan disintesis secara tematis. Temuan menunjukkan bahwa inovasi berkelanjutan di sektor ini terwujud dalam empat ranah yang saling terkait: inovasi teknologi dan digital; inovasi ramah lingkungan (eco-innovation) dan inovasi proses hijau; inovasi layanan dan model bisnis; serta inovasi sosial atau berbasis komunitas. Digitalisasi dan pengambilan keputusan berbasis data muncul sebagai faktor pemungkin utama, sementara tekanan institusional, permintaan konsumen akan pengalaman ramah lingkungan, dan kepemimpinan organisasi berperan sebagai faktor pendorong utama. Tinjauan ini juga mengidentifikasi hambatan yang masih terus ada, termasuk tingginya biaya implementasi, standar pengukuran yang terfragmentasi, serta terbatasnya penyebaran inovasi di kalangan usaha kecil dan menengah. Studi ini memberikan sintesis konseptual terintegrasi yang dapat

memandu penelitian akademis maupun praktik manajerial menuju layanan perhotelan dan pariwisata yang lebih tangguh dan bertanggung jawab terhadap lingkungan.

Kata kunci: inovasi berkelanjutan, layanan keramahtamahan, manajemen pariwisata, eko-inovasi.

A. Introduction

Innovation has become a central driver of competitiveness and long-term survival in the hospitality and tourism industry, particularly as the sector faces mounting environmental, social, and economic challenges. Innovation in tourism and hospitality is increasingly discussed not merely as a mechanism for economic growth, but as a strategic response to sustainability imperatives that follow and, at times, dictate broader trends such as globalization, digitization, and environmental responsibility (Gomezelj, 2016). Prior evidence also shows that innovation research in this sector is dominated by enterprise-level (micro) studies, where radical and collaborative innovation linked to service improvement and technology integration prevail, while destination-level and policy-oriented innovation remain comparatively underexplored (Gomezelj, 2016).

At the same time, the concept of sustainability has moved from the periphery to the core of tourism and hospitality management. Drawing on the United Nations World Tourism Organization's framework, sustainable tourism is understood as an approach that balances the environmental, economic, and socio-cultural dimensions of tourism development, seeking to minimize the cumulative negative effects generated by tourism activities while preserving the long-term viability of destinations and businesses (Santos, Sousa, Costa, & Au-Yong-Oliveira, 2021). The convergence of these two agendas, innovation and sustainability, has given rise to the concept of “sustainable innovation”, defined as the renewal or improvement of products, services, and processes that deliver not only improved economic performance but also enhanced environmental and social performance over both the short and long term (Elkhwesky, El Manzani, & Elbayoumi Salem, 2024).

The urgency of sustainable innovation has been further amplified by the COVID-19 pandemic, which exposed the fragility of hospitality and tourism businesses and accelerated the adoption of digital tools, contactless services, and resilience-oriented business models. Sustainable innovation has since been framed as a viable pathway for the hospitality and tourism (H&T) sector to cope with crisis conditions, build resilience, and ensure long-term survival in a rapidly changing operating environment (Elkhwesky et al., 2024).

Despite the growing body of literature on this topic, prior reviews have tended to focus either narrowly on eco-innovation and green practices, or broadly on general innovation typologies without a specific sustainability lens (Gomezelj, 2016; Santos et al., 2021). Methodological reviews of the broader tourism literature further indicate that systematic reviews in the field have tended to privilege quantitative, firm-level analyses, leaving qualitative and cross-thematic syntheses comparatively scarce (Pahlevan-Sharif, Mura, & Wijesinghe, 2019). There remains a need for an integrated review that synthesizes how sustainable innovation is conceptualized, operationalized, and evaluated specifically within hospitality and tourism services. This study addresses that gap through a systematic literature review guided by the following research questions: (1) What types of sustainable innovation are identified in hospitality and tourism services? (2) What are the main drivers and enablers of sustainable innovation in this sector? (3) What outcomes and barriers are associated with its implementation? (4) What are the key gaps that warrant further research?

B. Research Methode

This study employs a systematic literature review (SLR) approach, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines to ensure a transparent, replicable, and rigorous review process (Page et al., 2021).

Articles were included if they: (1) were published in peer-reviewed academic journals; (2) explicitly addressed sustainable, green, or eco-innovation within the hospitality or tourism services context; (3) were written in English; and (4) provided sufficient methodological detail to be assessed for relevance and quality. Articles were excluded if they were conference abstracts, editorials, or non-peer-reviewed sources, or if their focus was only tangentially related to sustainability or innovation in tourism and hospitality.

The selection process followed the four-stage PRISMA flow: identification, screening, eligibility assessment, and inclusion. Titles and abstracts were first screened for relevance, followed by full-text assessment of the remaining articles against the inclusion criteria. Data extracted from the final set of included studies were then organized and analyzed thematically, following an approach consistent with prior systematic reviews in the tourism and hospitality innovation literature (Gomezelj, 2016; Santos, Sousa, Costa, & Au-Yong-Oliveira, 2021). The synthesis was structured around four recurring themes identified across the literature: technological/digital innovation, eco-innovation and green processes, service and business-

model innovation, and social/community-based innovation, complemented by an analysis of drivers, outcomes, and barriers reported across studies.

C. Result and Discussion

1. Overview of the Reviewed Literature

Consistent with earlier systematic reviews of innovation in tourism, the literature on this topic has expanded substantially since 2017, coinciding with the United Nations' designation of that year as the International Year of Sustainable Tourism for Development. Prior reviews have shown that innovation research in hospitality and tourism can be broadly classified into micro-level (enterprise) and macro-level (destination or policy) studies, with micro-level, enterprise-focused innovation representing the majority of the literature (Gomezelj, 2016). Within this body of work, studies specifically addressing sustainability-oriented innovation remain comparatively concentrated in a small number of specialized journals, particularly Sustainability and the Journal of Sustainable Tourism (Santos et al., 2021).

2. Technological and Digital Innovation

Digital technologies represent one of the most prominent domains of sustainable innovation identified in the reviewed literature. The rapid expansion of information and communication technology (ICT) has fundamentally reshaped business models and consumer behavior in tourism, with implications that extend directly to the Sustainable Development Goals (Gössling, 2021). Big data, artificial intelligence, and platform-based services enable more efficient allocation of resources, demand forecasting, and personalized guest experiences, all of which can reduce operational waste when deployed strategically.

However, the literature also cautions that digital transformation does not automatically translate into sustainability gains. Gössling (2021) notes that despite the scale of the ICT economy's growth, there is limited systemic evidence that this transition is unambiguously beneficial to society or the environment, underscoring the importance of intentional design in aligning digital innovation with sustainability outcomes rather than assuming a direct causal link.

3. Eco-Innovation and Green Process Innovation

Eco-innovation constitutes a second major theme, encompassing practices such as energy efficiency, waste reduction, water conservation, and green certification schemes. These

practices are often adopted in response to regulatory pressure, cost-saving incentives, and increasing consumer preference for environmentally responsible accommodation and services. Community-level innovation in transport and mobility offers a further illustration: path-dependent infrastructure development, such as bicycle-friendly urban tourism systems, has been shown to generate lasting environmental and experiential benefits when integrated early into destination planning (Nilsson, 2019).

Nonetheless, the diffusion of eco-innovation across the hospitality sector remains uneven. Smaller enterprises, in particular, continue to face barriers such as high upfront investment costs, limited access to financing, and inconsistent methods for measuring the economic returns of sustainability initiatives, which collectively slow the pace of adoption despite growing government incentives and clearer regulatory frameworks in several markets.

4. Service and Business-Model Innovation

Beyond discrete technological or environmental interventions, literature highlights innovation at the level of the overall business model and service design. This includes the redesign of guest journeys to embed sustainable choices, the emergence of collaborative and sharing-economy models, and the development of hybrid service formats that combine digital and physical touchpoints. Such innovations were notably accelerated during the COVID-19 pandemic, which forced hospitality and tourism operators to reimagine service delivery around health, safety, and resilience while simultaneously pursuing sustainability objectives (Elkhwesky, El Manzani, & Elbayoumi Salem, 2024).

The pandemic period also revealed that sustainable innovation functions not only as an environmental strategy but as a resilience strategy: firms that had already invested in flexible, digitally enabled, and sustainability-oriented business models were better positioned to adapt to sudden demand shocks and operational constraints (Elkhwesky et al., 2024).

5. Social and Community-Based Innovation

The fourth theme concerns social innovation, including community-based tourism initiatives, stakeholder co-creation, and inclusive governance arrangements that distribute the benefits of tourism more equitably among local populations. This theme intersects closely with the broader sustainability literature, which emphasizes that innovation in tourism should not be evaluated solely on economic or environmental metrics, but also on its capacity to strengthen social cohesion and community resilience.

Methodologically, this theme is underrepresented relative to technological and eco-innovation research, echoing broader observations that systematic reviews within tourism have tended to privilege quantitative, firm-level analyses over qualitative, community-oriented inquiry (Pahlevan-Sharif, Mura, & Wijesinghe, 2019).

6. Drivers, Outcomes, and Barriers

Across the four thematic domains, several recurring drivers of sustainable innovation can be identified: regulatory and institutional pressure, competitive differentiation, consumer demand for sustainable experiences, and organizational leadership commitment. Reported outcomes include improved operational efficiency, enhanced brand reputation, stronger stakeholder trust, and, in several cases, measurable reductions in resource consumption and emissions.

At the same time, the literature consistently identifies barriers that constrain the scale and pace of sustainable innovation, particularly among small and medium-sized hospitality enterprises: limited financial resources, lack of technical expertise, fragmented or inconsistent sustainability measurement standards, and uncertainty regarding return on investment. Addressing these barriers requires coordinated efforts from policymakers, industry associations, and destination management organizations to lower entry costs and standardize sustainability reporting frameworks across the sector.

7. Synthesis and Conceptual Implications

Taken together, the reviewed literature suggests that sustainable innovation in hospitality and tourism services is best understood not as a single practice, but as an integrated system spanning technology, environmental process, business model, and social dimensions. These four domains are mutually reinforcing: digital tools enable more precise environmental management, environmentally responsible practices often necessitate business-model adjustments, and community engagement enhances the legitimacy and long-term viability of both technological and environmental initiatives. This integrated perspective extends earlier innovation-typology frameworks by explicitly foregrounding sustainability as a cross-cutting dimension rather than a separate category of innovation (Gomezelj, 2016; Santos et al., 2021).

D. Conclusion

This systematic review has synthesized the literature on sustainable innovation in hospitality and tourism services, identifying four interrelated domains: technological and digital innovation, eco-innovation and green process innovation, service and business-model

innovation, and social/community-based innovation. The findings indicate that sustainable innovation is driven primarily by regulatory pressure, competitive positioning, consumer demand, and organizational leadership, while its implementation continues to be constrained by cost barriers, fragmented measurement standards, and limited diffusion among smaller enterprises.

The review contributes to the literature by offering an integrated conceptual synthesis that connects previously fragmented streams of research on innovation and sustainability in tourism and hospitality. For practitioners and destination management organizations, the findings suggest that sustainable innovation strategies are more effective when technological, environmental, business-model, and social interventions are pursued in a coordinated rather than isolated manner.

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