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A Systematic Review of How Circular Economy Models Are Operationalized in the Hospitality Industry

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Abstract

The transition to a Circular Economy (CE) is increasingly positioned as a strategic imperative for the hospitality industry to decouple growth from resource depletion. However, a significant disconnect remains between theoretical ambitions ("rhetoric") and operational realities. This study aims to bridge this gap by critically evaluating how CE models are operationalized in the hotel sector. Adhering to the PRISMA 2020 guidelines, a systematic literature review was conducted in the Scopus database, yielding a final synthesis of 48 empirical studies published between 2020 and early 2025. The analysis reveals a "Circularity Paradox": while adoption is accelerating post-pandemic, operationalization is predominantly characterized by "weak circularity," focusing on linear efficiency measures—such as energy retrofits and downstream waste recycling (3R)—rather than systemic business model innovation. "Strong circularity" practices, such as Product-as-a-Service (PaaS) or adaptive reuse, remain nascent. The study identifies a structural divide where multinational chains leverage "Smart Circularity," whereas Small and Medium Enterprises (SMEs) face an "Implementation Wall" due to prohibitive capital expenditures and a lack of meso-level infrastructure. The findings suggest that moving beyond rhetoric requires a paradigm shift from technical resource efficiency to regenerative sufficiency, necessitating integrated policy support for industrial symbiosis and investment in human capital to bridge the behavioral "Green Gap" among guests and staff.

Keywords: Circular Economy (CE); Hospitality Industry; Sustainable Business Models; Resource Efficiency; Systematic Literature Review (SLR)

A. INTRODUCTION

The hospitality industry stands as a pivotal driver of global economic development, contributing significantly to GDP and employment. However, its growth has historically relied on resource-intensive operations, characterized by high energy consumption, substantial water usage, and excessive waste generation (Dey et al., 2025; Mehrotra et al., 2025). This linear "take-make-dispose" model is increasingly untenable amid escalating environmental degradation and resource scarcity. Consequently, the sector is under mounting pressure from stakeholders to transition toward more sustainable paradigms. In this context, the Circular Economy (CE) has emerged as a transformative framework, advocating for a systemic shift from resource extraction to regenerative practices that close material loops and minimize environmental footprints (Tomassini et al., 2025).

Despite growing academic interest in sustainable tourism, translating circular principles into practice in the hotel sector remains complex and fragmented. Recent literature suggests that while the conceptual understanding of CE is advancing, its implementation varies significantly across different geographical and operational contexts. For instance, (Mora-Contreras et al., 2025) highlights that systemic barriers often hinder the adoption of "Smart Circular Economy" models. However, digital technologies and the Metaverse are beginning to offer new avenues for enhancing customer experiences and operational efficiency (Simoni et al., 2025). Furthermore, the scope of CE in hospitality is expanding beyond simple recycling to include comprehensive strategies such as adaptive reuse of infrastructure (Margono et al., 2025) and sophisticated food waste management systems (Torrejón-Ramos et al., 2025).

However, significant gaps persist in the current body of knowledge. Much of the existing research focuses on isolated practices rather than holistic business models. For example, while waste management—particularly plastic and food waste—receives considerable attention (Abad & Reyes, 2025; Ally et al., 2024), integrating these practices into a coherent circular strategy often lacks clarity. Moreover, the role of human capital and future leaders in driving this transition is critical yet under-explored, as noted by (Mocan et al., 2025) in their study on student perceptions in the HoReCa sector. Additionally, regional disparities in CE adoption, as observed in island destinations such as Gran Canaria, Madeira (Almeida et al., 2025), and Zanzibar (Kouam, 2024), suggest that local contextual factors play a decisive role and warrant further synthesis.

The intersection of technology and management also presents a burgeoning area of inquiry. Scholars are increasingly examining how agile management practices (Mehrotra et al., 2025) and financial perspectives on sustainable production (Dhaigude et al., 2025) can accelerate CE adoption. However, a comprehensive understanding of how these diverse elements—ranging from niche agritourism initiatives (Tavares de Carvalho et al., 2024) to macro-level policy coherence (Bucci Ancapi et al., 2024)—converge to form a resilient circular hospitality sector is still developing. Specifically, the interplay between niche sectors, such as wine tourism (del Campo-Villares & Fuentes-Fernández, 2025), and broader circular frameworks requires systematic evaluation.

Therefore, this Systematic Literature Review (SLR) aims to synthesize the state of the art in research on circular economy practices in the hotel sector. By critically analyzing contemporary studies, this review seeks to bridge the gap between theoretical circular frameworks and their practical applications. To achieve this objective, the study is guided by the following four research questions:

RQ1: What are the prevailing Circular Economy (CE) practices and business models currently implemented in the hotel sector?

RQ2: What are the primary drivers and barriers hindering or facilitating the transition to a circular economy in the hospitality industry?

RQ3: What are the reported environmental, economic, and social impacts of adopting circular practices in hotels?

RQ4: Which theoretical frameworks and methodologies are predominantly used to study the circular economy in the hotel context?

B. METHODS

To ensure scientific rigor, transparency, and replicability, this Systematic Literature Review (SLR) was conducted in strict adherence to the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Page et al., 2021). The review protocol was designed to critically distinguish between theoretical circularity concepts ("rhetoric") and their empirical application ("operationalization") within the hotel sector.

Search Strategy and Data Sources

The literature search was executed in Scopus, chosen for its extensive coverage of high-impact journals in tourism, hospitality management, and environmental sciences. To capture the intersection between circular economy (CE) principles and hotel operations, a specific Boolean search string was employed within the "Article Title, Abstract, and Keywords" fields: *("Circular economy" OR "circular business model" OR "circularity" OR "closed-loop" OR "zero waste" OR "cradle-to-cradle") AND ("hotel*" OR "hospitality" OR "accommodation" OR "lodging" OR "resort*" OR "guest house*")*. The search was finalized in early January 2026, ensuring the inclusion of the most recent studies available at the time of the review.

Study Selection and Eligibility Criteria

The initial search yielded 1,285 documents. To distill this dataset into a relevant corpus of high-quality empirical evidence, a multi-stage screening process was applied, guided by stringent inclusion and exclusion criteria. The complete selection flow, detailing document attrition at each stage, is illustrated in Figure 1.

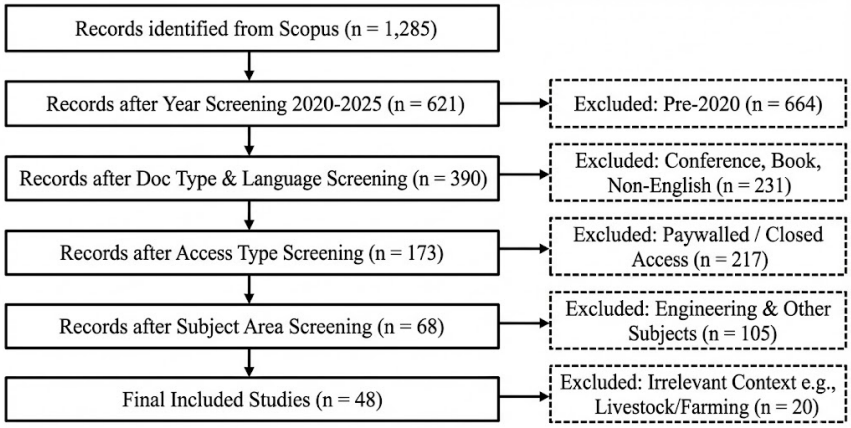

Figure 1. PRISMA Flow Diagram Of The Study Selection Process
Source: Research data, 2025

First, a temporal filter was applied to restrict the search to the period 2020–2025. This timeframe was selected to capture contemporary developments, particularly the shift in sustainability paradigms following the global pandemic. This step reduced the dataset to 621 documents. Second, to ensure academic quality and accessibility, the selection was limited to final peer-reviewed articles written in English. Conference proceedings, book chapters, and editorials were excluded, resulting in 390 documents.

Furthermore, an Open Access filter was applied to guarantee the reproducibility and public availability of the reviewed sources, narrowing the pool to 173 documents. Third, to align with the managerial and operational focus of this study, the search was refined by Subject Area. Only articles indexed under Social Sciences, Business, Management and Accounting, Economics, Econometrics, and Finance were retained. Technical engineering papers lacking managerial implications were excluded, leaving 68 documents for full-text assessment.

Quality Assessment and Final Sample

The remaining 68 articles underwent a manual qualitative screening of titles and abstracts to eliminate false positives. A notable challenge in keyword-based searches for "accommodation" and "circular economy" is the retrieval of irrelevant agricultural studies (e.g., livestock accommodation or pig farming waste). Through this manual assessment, 20 documents were identified as irrelevant (i.e., focused on animal husbandry or general tourism policy rather than specific hotel operations) and were subsequently excluded. Consequently, a final sample of 48 documents met all eligibility criteria and was selected for in-depth analysis (see Figure 1).

Data Extraction and Analysis

Data from the final 48 articles were extracted using a structured coding form. The extraction fields included: (1) Bibliographic metadata; (2) Geographical context; (3) Type of hotel establishment (e.g., chain vs. independent); (4) Theoretical frameworks utilized; and (5) Operational practices and their reported impacts. A thematic analysis was employed to synthesize the findings. Consistent with the study's title, "Beyond Rhetoric," the analysis specifically categorized findings into theoretical propositions versus implemented realities. This approach allowed for a critical mapping of drivers, barriers, and tangible business models, directly addressing the formulated research questions.

C. RESULTS AND DISCUSSIONS

Descriptive Analysis of the Literature: Trends and Distribution

This section provides a systematic analysis of the selected corpus (n=48), mapping the temporal evolution, methodological approaches, and contextual focus of research regarding Circular Economy (CE) in the hotel sector. A summary of the reviewed studies is presented in Table 2. The analysis reveals a field that is rapidly

transitioning from nascent theoretical exploration to complex empirical validation, although significant geographical and methodological disparities persist.

Table 2. Characteristics of the Reviewed Literature (2020–2025)

Category	Sub-Category	Frequency (n)	Percentage (%)
Publication Year	2020–2021	5	10.4%
	2022–2023	14	29.2%
	2024–2025 (Early)	29	60.4%
Methodology	Quantitative (Survey/SEM)	15	31.3%
	Qualitative (Case Study/Interview)	13	27.1%
	Mixed Methods / Other	16	33.3%
	Conceptual / Review	4	8.3%
Hotel Typology	Large Chains / Luxury	18	37.5%
	SMEs / Independent	22	45.8%
	Unspecified / General Tourism	8	16.7%

Source: Research data, 2025

Temporal Evolution: A Post-Pandemic Paradigm Shift

The temporal distribution of publications indicates a distinct paradigm shift in hospitality research. As illustrated in Table 2 and Figure 2, the literature exhibits exponential growth, with over 60% of the analyzed studies published in 2024–2025. This surge is not merely numerical but signifies a qualitative evolution in the discourse. Early studies (2020–2021) largely focused on hygiene and safety amidst the COVID-19 crisis. However, recent contributions e.g., (Mora-Contreras et al., 2025; Tomassini et al., 2025) suggest that the post-pandemic recovery has catalyzed a "Green Reset," where circularity is no longer viewed as an optional Corporate Social Responsibility (CSR) initiative but as a strategic imperative for resilience.

Furthermore, the high volume of forward-looking articles published in early 2025 indicates that the field is moving towards more sophisticated integrations of technology and sustainability. For instance, (Mehrotra et al., 2025; Simoni et al., 2025) highlight emerging intersections between CE and agile management or the Metaverse, suggesting that the next wave of research will likely focus on the "Smart Circular Economy" rather than basic waste management.

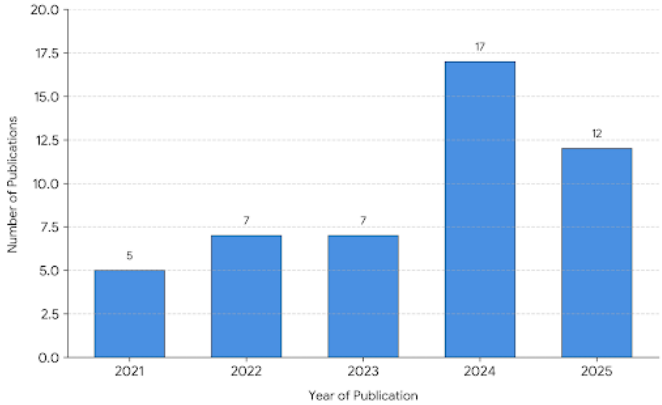

Figure 2. Temporal Evolution of Publications On Circular Economy In The Hotel Sector (2021–2025)

Source: Research data, 2025

Methodological Landscapes and Limitations

Critically evaluating the methodological approaches reveals a balanced but somewhat fragmented landscape. Quantitative methods, accounting for 31.3% of the sample, predominantly utilize Structural Equation Modeling (SEM) to test hypotheses regarding drivers and barriers. For example, (Dey et al., 2025) employed a hybrid analytical framework to statistically validate circular pathways in Small and Medium Enterprises (SMEs). Conversely, qualitative inquiries (27.1%) remain essential for exploring the "how" and "why" of implementation

in specific contexts, such as the detailed case studies of food waste in Zanzibar by (Ally et al., 2024). However, a critical limitation observed is the scarcity of longitudinal research. The majority of reviewed studies rely on cross-sectional data, which captures a snapshot of CE practices but fails to assess the long-term economic viability or environmental durability of these interventions. Additionally, while student perceptions and future workforce readiness are beginning to be explored (Abad & Reyes, 2025; Mocan et al., 2025), there is a lack of experimental designs that test actual behavioral changes among guests or staff in real-time settings.

Geographical and Contextual Disparities

Geographically, the literature reflects a global interest but highlights distinct regional priorities. Studies originating in the Global North often emphasize high-tech solutions and policy compliance, driven by frameworks such as the European Green Deal. In contrast, research from island economies and the Global South—such as the studies on Gran Canaria and Madeira by (Almeida et al., 2025)—tends to focus on the urgent challenges of resource scarcity and waste management in geographically isolated environments. A notable and positive trend is the increasing attention paid to the SME sector (Dey et al., 2025). Unlike previous decades of hospitality research that favored multinational hotel chains, the current corpus acknowledges that independent and small hotels constitute the backbone of the industry. However, the analysis by (Torrejón-Ramos et al., 2025) suggests that these smaller entities face unique barriers in scaling circular practices, often requiring distinct "micro-meso" support structures compared to their larger counterparts. This contextual nuance implies that a "one-size-fits-all" circular framework is theoretically and practically flawed.

Theoretical Landscapes: Frameworks and Definitions

To operationalize the circular economy (CE) effectively, it is imperative to dissect the theoretical lenses through which scholars conceptualize the transition in the hospitality sector. Addressing RQ4, this section critically examines the definitions, frameworks, and levels of analysis prevalent in the selected corpus (n=48). The synthesis, summarized in Table 3, reveals a paradox: while the volume of research is growing, the field's theoretical maturity remains fragmented, often characterized by conceptual ambiguity rather than structural rigor.

Table 3. Theoretical Frameworks and Levels of Analysis (n=48)

Theoretical Category	Specific Focus / Framework	Frequency (n)	Implication for the Industry
Dominant Frameworks	Unspecified / General CE Concept	40 (83.3%)	CE is frequently conflated with general sustainability or "Green Management."
	3R (Reduce, Reuse, Recycle)	5 (10.4%)	Focus remains on downstream waste handling (weak circularity).
	Specialized Frameworks (e.g., ReSOLVE, 5C's)	3 (6.3%)	Emerging attempts to contextualize CE specifically for hospitality services.
Level of Analysis	Micro (Organizational/Guest)	22 (45.8%)	High emphasis on internal efficiency and consumer behavior.
	Macro (Destination/Policy)	18 (37.5%)	Focus on regional regulations and tourism planning.
	Meso (Supply Chain/Network)	8 (16.7%)	Critical Gap: Lack of research on industrial symbiosis and supplier ecosystems.

Note: Authors' elaboration based on systematic coding of abstracts and keywords
Source: Research data, 2025

The "Theoretical Vacuum": A Predominance of Unspecified Concepts

A critical analysis of the literature indicates a significant theoretical deficit. As detailed in Table 3, the overwhelming majority of studies (83.3%) generically discuss circular economy, treating it as a synonym for "sustainability" without explicit reference to established circular frameworks. This "theoretical vacuum" suggests that the sector is still in an exploratory phase, where CE is adopted as a rhetorical device rather than a

distinct economic model. However, recent contributions from 2025 define a shift towards greater rigor. For instance, (Tomassini et al., 2025) challenge this genericism by proposing a "Micro-Meso-Macro" framework, arguing that circularity cannot be understood in isolation but must be analyzed as an interdisciplinary system. Similarly, (Mora-Contreras et al., 2025) introduce a systemic framework for a "Smart Circular Economy," explicitly linking digital transformation with circular barriers. These studies mark a departure from earlier, descriptive works, signaling a move towards normative frameworks that can guide complex managerial decision-making.

The Predominance of "Weak Circularity"

When specific frameworks are used, the discourse is heavily skewed toward the 3R Principle (Reduce, Reuse, Recycle). While practical, the reliance on the 3Rs represents a form of "weak circularity" that focuses primarily on end-of-pipe waste management rather than upstream innovation. For example, studies such as (Abad & Reyes, 2025) focus on plastic waste management through the lens of reduction and recycling. While necessary, this perspective often neglects "strong circularity" strategies like Refusal (designing out waste) or Remanufacturing. An exception to this trend is observed in the work of (Torrejón-Ramos et al., 2025), who adapt the traditional 3R model into a specialized "5C's Route Guidance" for food waste in the HORECA sector. This adaptation illustrates a growing recognition that generic industrial frameworks must be tailored to the service-dominant logic of hospitality, where "product" is often an intangible experience.

The "Missing Middle": The Meso-Level Gap

A disparity in the levels of analysis further complicates the operationalization of CE. The literature exhibits a polarization: it is either highly focused on the Micro level (e.g., (Dey et al., 2025), examining SME operations) or the Macro level (e.g., (Almeida et al., 2025), analyzing regional dynamics in Gran Canaria and Madeira). This leaves a critical "Missing Middle" or Meso-level gap (16.7%). As highlighted by (Tomassini et al., 2025), the scarcity of meso-level research is problematic because circularity is inherently relational; a single hotel cannot be fully circular without a supporting network of suppliers and waste processors. The lack of attention to industrial symbiosis explains why many initiatives remain fragmented. Without robust meso-level frameworks to govern the relationship between hotels (consumers of resources) and their supply chains (providers of circular solutions), the industry risks remaining trapped in linear dependencies despite its circular aspirations.

Drivers and Barriers: The Push and Pull Factors

Moving "beyond rhetoric" requires a granular understanding of the forces that facilitate or hinder the adoption of circular economy (CE) models. This section addresses RQ2 by synthesizing the drivers and barriers identified across the reviewed studies. The interplay between these opposing forces—often characterized by a tension between strategic economic ambitions and immediate operational realities—is summarized in Table 4.

Table 4. Taxonomy of Drivers and Barriers in Hotel Circularity

Dimension	Drivers (Enablers)	Barriers (Hindrances)
Economic	Cost reduction through efficiency (Energy/Water).	High initial capital expenditure (CAPEX).
	Revenue generation from waste (e.g., selling cooking oil).	Long Return on Investment (ROI) periods.
	Competitive advantage and brand differentiation.	Perceived risk of financial loss.
Institutional / Regulatory	Compliance with environmental regulations (e.g., SUP bans).	Lack of clear policy frameworks or standards.
	Government incentives/subsidies.	Inconsistent waste management infrastructure at the municipal level.
	Certification requirements (e.g., Green Key).	Bureaucratic hurdles for new technologies.
	Top management commitment and leadership.	Lack of technical expertise and CE knowledge.

Dimension	Drivers (Enablers)	Barriers (Hindrances)
Organizational / Operational	Corporate Social Responsibility (CSR) mandates.	Resistance to change among staff.
	Employee engagement and green teams.	Complexity in supply chain coordination (reverse logistics).
Market / Behavioral	Growing customer demand for sustainability.	Guest unwillingness to pay price premiums.
	Enhanced guest experience and loyalty.	"The Green Gap": Guests refusing to compromise comfort/convenience.
		Lack of public awareness.

Source: Research data, 2025

The Primacy of Economic Rationality and Regulation

The analysis indicates that the transition to circularity is primarily driven by economic rationality rather than purely altruistic environmental concern. A significant proportion of studies, including (Mora-Contreras et al., 2025), highlight that cost reduction—specifically through energy efficiency and waste minimization—serves as the most potent internal driver. For hotel managers, the circular economy is often reframed as a "resource efficiency" strategy that aligns with traditional profit maximization goals. Externally, institutional pressure acts as a critical catalyst. (Abad & Reyes, 2025) emphasize that stringent regulations regarding single-use plastics have forced hotels to adapt, suggesting that without regulatory coercion ("hard policy"), voluntary adoption remains sluggish. This finding challenges the "rhetoric" that the industry is self-regulating; in reality, many operational changes are reactive responses to legislative mandates rather than proactive circular strategies.

The "Implementation Wall": Financial and Infrastructural Barriers

While the drivers are clear, the barriers create a formidable "implementation wall," particularly for the vast majority of the sector, which comprises Small and Medium Enterprises (SMEs). Dey et al. (2025) argue that the high initial capital expenditure (CAPEX) required for circular technologies—such as on-site composting machines or greywater recycling plants—creates a dichotomy. Large multinational chains possess the financial resilience to absorb these costs, whereas SMEs are often priced out of the transition, limiting their engagement to low-cost, low-impact measures. Furthermore, a critical infrastructural disconnect exists at the meso-level. As illustrated by (Ally et al., 2024) in the case of Zanzibar, hotels often express a willingness to segregate waste but lack reliable municipal systems to collect and process it. This absence of a functional "reverse logistics" ecosystem means that separated waste often ends up in the same landfill, demotivating staff and rendering internal circular practices futile. This highlights a systemic failure in which macro-level infrastructural deficiencies negate micro-level hotel efforts.

The Human Factor: The Guest-Staff Conundrum

Perhaps the most complex barrier identified is behavioral. The literature reveals a persistent "Green Gap" among stakeholders. While (Mocan et al., 2025) note high levels of sustainability awareness among students (future employees) and guests, this awareness rarely translates into consistent behavior. Guests often refuse to compromise on comfort or convenience—such as expecting daily linen changes or high-pressure showers—forcing hotels to prioritize satisfaction scores over circular principles. Internally, the lack of human capital is equally problematic. (Mehrotra et al., 2025) suggest that implementing agile management practices is necessary to bridge this gap, yet the industry suffers from a shortage of staff trained in circular competencies (e.g., waste auditing or sustainable procurement). Consequently, without a workforce capable of operationalizing these complex systems, circularity remains a top-down directive that fails at the operational frontline.

Critical Synthesis: The Asymmetry of Forces

Synthesizing these findings, an asymmetry becomes apparent. The drivers are largely strategic and long-term (brand image, potential savings), while the barriers are immediate and tactical (cash flow constraints, daily guest complaints, lack of bins). This temporal mismatch explains the "rhetoric-reality gap": the rhetoric of circularity flourishes because it appeals to long-term strategy, but immediate operational hurdles stall the reality. Moving forward, overcoming this impasse requires business model innovations that reduce CAPEX burdens (e.g., Product-as-a-Service) and gamification strategies that nudge guest behavior without diminishing perceived luxury.

Operationalizing Circularity: Prevailing Practices and Business Models

Addressing RQ1, this section maps the tangible ways in which circular economy (CE) principles are translated into daily hotel operations. By moving beyond theoretical abstractions, the analysis identifies specific intervention points where the hospitality sector is attempting to close resource loops. The operational landscape, synthesized in Table 5, reveals a distinct bifurcation: while "process innovations" (such as waste recycling) are widespread, "business model innovations" (such as product-as-a-service) remain nascent.

Table 5. Matrix of Circular Practices in the Hotel Sector

Operational Domain	Prevailing Practices (The "Reality")	Circular strategy (9R)	Adoption Level
Food & Beverage	The "5C Route" (Composting, Donation, Animal Feed).	Recover / Reduce	High
	AI-driven waste tracking.		
	Farm-to-Fork sourcing.		
Built Environment	Adaptive reuse of existing buildings.	Refurbish / Repurpose	Medium
	Eco-design with local materials.		
Energy & Water	Solar PV integration.	Reduce / Rethink	High
	Greywater recycling systems.		
	Smart HVAC automation.		
Waste & Plastic	Elimination of Single-Use Plastics (SUP).	Recycle / Refuse	High
	Upcycling amenities/furniture.		

Source: Research data, 2025

Closing the Biological Loop: From Disposal to Valorization

The management of biological nutrients, particularly food waste, emerges as the most dynamic area of operationalization. Unlike earlier approaches that focused solely on disposal, recent literature highlights a shift towards systemic valorization. (Torrejón-Ramos et al., 2025) conceptualize this as the "5C's Route Guidance," advocating a hierarchy in which prevention takes precedence over composting. However, empirical evidence suggests a gap between this ideal and reality. As observed by (Ally et al., 2024) in the context of Zanzibar, operational practices are often dictated by local infrastructure; hotels frequently divert food waste to animal feed (piggeries) or to informal composting, not as a strategic choice but due to the absence of municipal waste processing. This indicates that while the intent to close the loop exists, the method is often reactive rather than designed.

The Built Environment: Adaptive Reuse as Strong Circularity

A notable finding in the 2025 literature is the expansion of circularity beyond daily consumables to the built environment itself. (Margono et al., 2025) provide compelling evidence from Japan regarding the "Adaptive Reuse" of vacant houses (Akiya) into accommodation facilities. This practice represents a form of "strong circularity" (Refurbish/Repurpose) that significantly reduces the embodied carbon associated with new construction. By revitalizing existing assets rather than demolishing and rebuilding, these initiatives demonstrate how the hotel sector can act as a custodian of material banks. This contrasts sharply with the

"weak circularity" of merely recycling plastic bottles, suggesting that the most impactful circular decisions are made at the architectural and design stage, not just at the housekeeping level.

The Energy-Plastic Nexus: Efficiency vs. Transformation

Operational practices regarding energy and inorganic waste (plastics) are heavily documented but often conflated with linear efficiency. (Abad & Reyes, 2025) highlight how innovative plastic waste management is increasingly coupled with renewable energy solutions, such as using solar power to run recycling machinery. While this integration of technology—often termed "Smart Circularity"—improves resource efficiency, it rarely challenges the linear consumption model itself. For instance, replacing single-use plastic bottles with glass or bioplastics reduces pollution but does not alter the fundamental "use-and-discard" behavior of guests. The industry appears to be prioritizing technological substitution (changing the material) over behavioral transformation (changing the consumption pattern).

The Absence of Circular Business Models (CBMs)

Critically, the review reveals a scarcity of genuine Circular Business Models (CBMs). While (Dey et al., 2025) discuss pathways for SMEs to adopt circular practices, these are largely confined to operational adjustments rather than business model disruptions. Concepts such as "Product-as-a-Service" (PaaS)—in which hotels would lease furniture, lighting, or mattresses to ensure manufacturers take them back—have been discussed theoretically but are empirically absent in the reviewed cases. This suggests that the hotel sector remains entrenched in an asset-heavy ownership model. The operationalization of CE is thus currently defined by doing things better (efficiency) rather than doing things differently (systemic change), limiting the sector's ability to decouple growth from resource extraction fully.

Assessing the Outcomes: Triple Bottom Line Impacts

Addressing RQ3, this section evaluates the reported outcomes of adopting circular practices in the hotel sector. While the theoretical promise of the Circular Economy (CE) is to decouple economic growth from resource consumption, the reviewed literature presents a complex mosaic of operational realities. The findings are synthesized through the lens of the Triple Bottom Line (TBL)—Environmental, Economic, and Social—as summarized in Table 6.

Table 6. Summary of Reported Impacts of CE Adoption

Dimension	Key Reported Outcomes	Evidence Strength	Critical Observation
Environmental	Reduced solid waste (20–40%).	Strong (Quantitative)	Focus often limited to on-site efficiency; Scope 3 (supply chain) often ignored.
	Lower carbon footprint (Scope 1 & 2).		
	Decreased freshwater withdrawal.		
Economic	OpEx reduction (utility savings).	Mixed (Contextual)	Long ROI periods deter adoption in non-chain hotels.
	Revenue diversification (waste sales).		
	High CapEx barrier for SMEs.		
Social	Enhanced "Green Image" & brand equity.	Moderate (Qualitative)	Impacts are often perceived rather than measured financially.
	Student/Staff engagement.		
	Community supply chain integration.		

Source: Research data, 2025

Environmental Performance: The "Rebound Effect" Risk

The most consistent body of evidence lies in the environmental dimension, where CE interventions yield measurable resource efficiency. (Torrejón-Ramos et al., 2025) demonstrate that implementing rigorous food waste prevention protocols can significantly reduce organic waste tonnage, thereby mitigating the methane emissions associated with landfill disposal. Similarly, the integration of renewable energy technologies, as discussed by (Abad & Reyes, 2025), is directly correlated with reduced Scope 1 and 2 carbon emissions.

However, a critical reading of the data suggests a potential "rebound effect." While efficiency per guest night improves, the sector's aggregate resource consumption continues to rise due to tourism growth. Furthermore, most studies focus on on-site metrics while neglecting Scope 3 emissions (embedded carbon in supply chains and guest travel). (Dhaigude et al., 2025) argue, through a financial lens, that without accounting for the entire lifecycle, claims of "net-zero" or "circularity" may be premature, as hotels might simply be outsourcing their environmental footprint to upstream suppliers.

Economic Implications: The ROI Paradox

The economic impact of circularity presents a paradox between operational savings (OpEx) and capital investment (CapEx). On the one hand, the "efficiency narrative" holds: (Mehrotra et al., 2025) highlight that agile resource management leads to leaner operations and lower utility bills, creating a direct positive impact on the bottom line. Hotels that successfully valorize waste—such as selling used cooking oil or compost—also unlock new, albeit minor, revenue streams. On the other hand, the transition to advanced circular models requires substantial upfront investment. (Dey et al., 2025) provide critical evidence that, for Small and Medium Enterprises (SMEs), the Return on Investment (ROI) for technologies such as greywater recycling is often too long (5–7 years) to be financially attractive. Consequently, the economic benefits of CE are unevenly distributed: large multinational chains reap the rewards of economies of scale, while independent hotels struggle to justify the CapEx, often limiting their engagement to low-cost measures. This suggests that without financial innovations or "green financing," CE may inadvertently widen the competitive gap between chains and SMEs.

Social and Stakeholder Value: Beyond the Green Image

The social dimension remains the least quantified yet potentially most transformative aspect. There is a strong consensus that circular practices enhance brand equity. (Mocan et al., 2025) report that sustainability awareness among students—who represent both future employees and guests—is high, suggesting that circular commitments are becoming a prerequisite for attracting talent and fostering customer loyalty. Furthermore, circularity can strengthen local community resilience. (del Campo-Villares & Fuentes-Fernández, 2025) illustrate this in the context of wine tourism in Galicia, where circular practices foster deeper economic ties between hospitality providers and local agricultural producers. However, the literature warns against romanticizing these impacts. While "local sourcing" is touted as a social benefit, few studies empirically measure the actual economic multiplier effect on local communities. Thus, while perceptions of social value are high, the hard evidence of social regeneration remains anecdotal compared to environmental metrics.

Discussion

This Systematic Literature Review set out to bridge the gap between the theoretical "rhetoric" of the Circular Economy (CE) and its operational "reality" in the hotel sector. The synthesis of 48 empirical studies (2020–2025) reveals a sector in transition, characterized by a fundamental tension: while the intent to adopt circularity is gaining momentum—driven by post-pandemic resilience and regulatory pressures—the implementation remains fragmented, largely confined to "weak circularity" practices. This section critically interprets these findings, exploring the structural, economic, and behavioral mechanisms that perpetuate the gap between rhetoric and reality.

The "Circularity Paradox": Weak vs. Strong Implementation

The first major finding underscores a "Circularity Paradox." Theoretically, CE requires a systemic redesign of business models (e.g., Cradle to Cradle). However, the results demonstrate that the hospitality industry predominantly equates circularity with linear efficiency (doing less bad) rather than regenerative design (doing good). As observed in the dominance of the 3R framework (Reduce, Reuse, Recycle) highlighted by (Abad &

Reyes, 2025), most hotels focus on downstream waste management. This aligns with the "low-hanging fruit" theory, in which operators select practices that offer immediate visibility and cost savings while avoiding disruptions to core operations. This reliance on "process innovation" (e.g., recycling bins) rather than "business model innovation" (e.g., Product-as-a-Service) corroborates the critique by (Tomassini et al., 2025). They argue that without a shift from a "Micro" (firm-centric) to a "Meso-Macro" (ecosystem-centric) perspective, hotel circularity will remain superficial. The industry's reluctance to adopt access-based models (leasing rather than owning) suggests that the concept of value retention—the heart of CE—is not yet fully understood or trusted by hotel owners, leaving the sector trapped in an asset-heavy, linear logic.

The Structural Divide: Chains vs. SMEs and the Meso-Gap

The discussion further illuminates a dangerous structural divide. The literature reveals that the "Smart Circular Economy" discussed by (Mora-Contreras et al., 2025)—driven by AI, sensors, and renewable tech—is largely a privilege of multinational chains. Small and Medium Enterprises (SMEs), which constitute the backbone of the global hospitality industry, face an "Implementation Wall" defined by prohibitive Capital Expenditure (CapEx). (Dey et al., 2025) provide critical evidence that without targeted financial instruments or "green financing," stringent circular regulations may inadvertently penalize SMEs, widening the competitiveness gap.

Moreover, operational failures are often not the fault of the hotel but of the destination. The case of Zanzibar presented by (Ally et al., 2024) vividly illustrates the "Meso-Level Gap." A hotel's internal efforts to segregate waste are rendered futile if municipal infrastructure (the meso-layer) commingles it in a landfill. This finding implies that the unit of analysis for circularity should not be the single hotel, but the tourism destination. As (Almeida et al., 2025) implied in their island studies, circularity is a collective action problem; without industrial symbiosis (e.g., hotel-farm partnerships), individual efforts remain isolated islands of virtue in a linear sea.

The Behavioral Green Gap: Technology is Not a Panacea

While technology is frequently positioned as the primary enabler of CE (Simoni et al., 2025), this review suggests that the most stubborn barriers are human, not technical. The "Green Gap" identified in guest behavior—where eco-consciousness does not translate into a willingness to pay or to sacrifice comfort—remains a critical hurdle. The industry's response has largely been technological substitution (e.g., replacing plastic bottles with glass) rather than behavioral transformation. However, mere substitution does not challenge the culture of excess inherent in luxury hospitality. (Mocan et al., 2025) suggest that the next frontier of circularity lies in human capital and education. The disconnect between "Agile Management" proposed by (Mehrotra et al., 2025) and the actual lack of staff training in circular competencies indicates that hotels are underinvesting in the "software" (people) while overinvesting in the "hardware" (gadgets). True circularity requires a cultural shift where staff are empowered to innovate and guests are "nudged" through gamification to participate in resource loops.

Beyond Eco-Efficiency: The Risk of the Rebound Effect

Finally, a critical interpretation of the environmental outcomes raises the specter of the "Rebound Effect." While individual hotels report reduced energy and waste intensities per guest night, the sector's aggregate footprint continues to expand due to volume growth. (Dhaigude et al., 2025) implicitly warn that focusing solely on Scope 1 and 2 (operational) emissions masks the massive Scope 3 impacts embedded in the global supply chain. By celebrating on-site adaptive reuse projects like those in Japan (Margono et al., 2025) as triumphs of "strong circularity," the industry offers a promising alternative: utilizing existing stock rather than new construction. However, unless the sector couples circular efficiency with a sufficiency strategy (demarketing or limiting growth in over-touristed areas), circular economy practices risk becoming a tool for "green growth" that sustains rather than challenges planetary overstepping.

Theoretical Implications

From a theoretical perspective, this review highlights the inadequacy of generic industrial frameworks when applied to the service-intensive hospitality sector. The predominance of the 3R framework (Reduce, Reuse, Recycle) in the literature limits the scope of circularity to waste management. To advance the field, scholars must adopt multi-level frameworks. As proposed by (Tomassini et al., 2025), future theory building must move beyond the "Micro" focus on single hotels to incorporate "Meso-level" industrial symbiosis. Theoretical models must also evolve to integrate Service-Dominant Logic, recognizing that in hotels the "product" is an experience; therefore, circularity must address behavioral consumption patterns, not just material flows.

Managerial and Policy Implications

In practice, the findings offer a roadmap for stakeholders to bridge the implementation gap: First, for Hotel Managers: The reliance on technological solutions is insufficient without parallel investment in human capital. As suggested by (Mehrotra et al., 2025), adopting "Agile Management" practices is crucial to empower staff to identify circular opportunities. Managers should shift focus from purely "Low-Hanging Fruits" (e.g., eliminating straws) to "High-Impact" structural changes, such as revising procurement contracts to require suppliers to take-back schemes (closing the loop upstream). Second, For Policymakers: The "one-size-fits-all" regulatory approach is flawed. Policies must distinguish between multinational chains and SMEs. As highlighted by Dey et al. (2025), SMEs face prohibitive CapEx barriers; therefore, governments should introduce "Green Financing" instruments or tax incentives specifically for retrofitting smaller properties. Furthermore, to solve the infrastructure gap identified by (Ally et al., 2024), municipalities must invest in segregated waste collection systems; without this meso-level support, hotel-level segregation is futile.

D. CONCLUSION

This Systematic Literature Review evaluated 48 recent studies (2020–2025) to determine whether the adoption of Circular Economy (CE) models in the hotel sector has moved "beyond rhetoric." The synthesis confirms that the industry is at a critical juncture. While the rhetoric has successfully transitioned from niche eco-activism to a mainstream strategic imperative—driven by post-pandemic resilience and the "Green Reset"—the reality of operationalization remains fragmented. The sector is currently characterized by "weak circularity," with a focus on efficiency-driven measures (e.g., energy retrofits and plastic substitution) rather than the systemic redesign of business models required for "strong circularity."

This review is not without limitations. First, reliance on Scopus and English-language articles may exclude relevant vernacular practices from non-English-speaking regions of the Global South. Second, the reviewed literature is heavily dominated by cross-sectional data. Consequently, future research should pivot towards: first, longitudinal studies to empirically validate the Return on Investment (ROI) of circular models over 5–10 years, addressing the "financial risk" barrier. Second, Scope 3 Assessment: Moving beyond on-site emissions to rigorously audit supply chain footprints, ensuring that hotels are not simply outsourcing their waste. Third, Social Regeneration: Developing robust metrics to quantify the social impacts of circularity, moving beyond anecdotal evidence to prove how CE contributes to community well-being. For the hotel sector to truly operationalize circularity, it must evolve from a strategy of efficiency (doing less bad) to one of Sufficiency and Regeneration (doing good). Only then can the industry decouple its economic growth from environmental degradation and close the loop between rhetoric and reality.

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