




## RESEARCH ARTICLE OPEN ACCESS

# Unveiling Circular Economy Pathways Among Small and Medium Hotels Through a Hybrid Analytical Framework

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## ABSTRACT

Small and medium-sized hotels (SME hotels), which constitute the majority of the global hospitality sector, face mounting pressure to align with sustainability goals. However, their transition to circular economy (CE) practices remains under-theorised and poorly implemented, particularly in emerging economies where institutional fragility and resource constraints prevail. Existing literature predominantly emphasises large firms and linear modelling approaches, overlooking the configurational, capability-driven processes that enable SMEs to adopt CE under complexity. This study addresses this gap by developing a tri-theoretical framework—grounded in the Resource-Based View, Dynamic Capabilities Theory and Configurational Theory—to examine how internal resources and capabilities interact to shape CE adoption in SME hotels. Empirical insights were drawn from 300 executive respondents across Indian SME hotels. The study employs a hybrid analytical design integrating Partial Least Squares Structural Equation Modelling (PLS-SEM) to capture net effects, and Fuzzy-Set Qualitative Comparative Analysis (fsQCA) to explore causal asymmetries and equifinal pathways to CE implementation. Findings reveal Green Absorptive Capacity (GAC) as a consistent enabler and Green Dynamic Capabilities (GDC) as essential for adaptive CE strategies. While Green Human Capital (GHC) does not appear in dominant configurations, its role is found to be context-dependent rather than absent. The study contributes theoretically by advancing an integrated model that explains CE adoption beyond linear assumptions and practically by offering strategic guidance for SME hoteliers navigating environmental transformation. It advocates for investment in organisational learning, dynamic capability-building and targeted policy engagement to support sustainable transitions under constraint.

## 1 | Introduction

The hotel industry is a resource-intensive sector of the global economy and a significant waste contributor. Conservative estimates from Strippoli et al. (2024) maintain that tourism produces > 35 million tons of solid waste annually. Their study grouped waste into five clusters according to the generation pattern. The inventory consists of biodegradable kitchen and canteen waste, waste from guest services, refuse from

non-biodegradable sources and construction activity. The former also shows that hotels produce four times as much municipal waste vis-à-vis restaurants. Diaz-Farina et al. (2023), Fenech (2024) and Bux and Amicarelli (2025) examined several factors that lead to large-scale municipal waste agglomeration from hospitality operations. Interestingly, among factors like operating rooms with attached kitchenettes and types of food service offered (buffet style, semi-buffet and ala carte), an ‘all-inclusive’ meal plan is the most significant determinant of

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mixed waste generation. A study of waste generation in Malta found that a five-star hotel produced 692.5 kg of waste per week in residents' rooms alone, with plastic comprising over 50% of that waste, emphasising the impact of single-use items. Food waste, another major component, averaged 0.48 kg per person at buffet dinners, highlighting the issue of over-production and improper portioning in such establishments (Fenech 2024). Abdulredha et al. (2018) estimate the impact of a mega-religious festival on Iraqi hotels. It is reported that an average guest generates 0.89 kg of mixed waste per day. Research from Nigeria also emphasised the substantial organic and recyclable content in hotel waste, which can reach up to 44% organic and 94% recyclable materials, necessitating better waste segregation and management strategies (Elshaer et al. 2025; Ezeudu and Ugochukwu 2023). In the United States, 63 million tons of food waste are discarded annually (accounting for approximately US\$ 218 billion in costs). It is reported by Himelstein (2017) that 40% of this corpus of waste originates from consumer-serving businesses like hotels and restaurants. A non-government organisation, the 'Waste and Resources Action Programme', or WRAP, pointed out that the UK generated 9.5 million tonnes of food waste in 2018 alone. The hospitality and food service sector contributed 1.1 million tonnes, translating to approximately 12% of the per-annum output (Dray 2021). In the globally emerging south, empirical evidence from the Indian hotel industry signals that an average hospitality worker generates 1537 g of wastage per day, significantly higher than the other commercial sectors (Speier et al. 2019).

The circular economy (CE) presents transformative strategies for addressing environmental challenges while enhancing resource sustainability in the hospitality sector (Velasco-Muñoz et al. 2025). CE principles offer specific environmental remedies by reimagining waste management with strategies like composting and recycling, substantially reducing landfill contributions (Sujai and Juwana 2021). Material re-deployment and alternative energy sources can lower greenhouse gas emissions, directly contributing to climate change mitigation (Wynn and Jones 2019). Transitioning to CE can optimise operational efficiency and reduce essential hotel costs, with studies revealing significant potential for savings through strategic resource management (Rodríguez-Antón and del Alonso-Almeida 2019) and integrating financing strategies with the circular principles (Zambujal-Oliveira et al. 2025). CE also offers unique opportunities for guest engagement, with strategies such as incentivising towel reuse, promoting locally sourced food and introducing recycling practices fostering sustainability awareness (Dimara et al. 2017). Despite these inimitable propositions, transitioning to a CE-based framework faces substantial obstacles. According to Manniche et al. (2021) and Li, Cipolletta, et al. (2024), existing hospitality systems remain predominantly linear, characterised by 'take-make-dispose' models, with small and medium hotels encountering technological, organisational and economic constraints that impede circular transition (Bowen et al. 2024). This obscures SME hotels' distinctive vulnerabilities and transformative capacities, constituting over 80% of the global hospitality market (Kukanja et al. 2020). Unlike large hotels, SME hotels often lack the financial and technological resources to invest in circular solutions, yet they collectively generate substantial

environmental footprints (Korsunova et al. 2022). Studies show that SME hotels encounter greater difficulty adopting green innovations due to financial constraints, limited access to expertise and regulatory barriers (Derks et al. 2024). Additionally, they are often more susceptible to supply chain disruptions and have lower resilience in adapting to environmental policies than large chains (Patwa et al. 2021). As a rapidly developing tourism economy, India provides a microcosm of these tensions. Its hospitality sector is expanding rapidly yet grapples with severe infrastructural and waste management challenges (Speier et al. 2019). Simultaneously, Indian SME hotels operate under weak institutional scaffolding (Rajput and Kaur 2025), informal labour regimes (Sangeetha 2024) and a lack of environmental management programs (Kabra 2022), making them ideal but understudied candidates for circular innovation. Per Florido et al. (2019), despite increasing scholarly attention, little empirical work has mapped how hotel businesses in such contexts mobilise internal capabilities to navigate the transition to CE.

As highlighted in Table 1, the existing body of literature is marked by limited empirical evidence supporting theoretical frameworks, insufficient exploration of organisational and managerial perspectives and underdeveloped conceptualisations of circularity in small and medium hospitality enterprises. Although studies grounded in the Resource-Based View (RBV) identify green assets like knowledge and certifications as competitive advantages (Zhang and Tian 2014; Pamfilie et al. 2018; Singh et al. 2023), this perspective remains static. It under-theorises how such resources are activated, adapted, or transformed in dynamic environments. Conversely, the Dynamic Capabilities View (DCV) highlights organisational adaptation and reconfiguration (Bhadra et al. 2024; Dangelico et al. 2017) but treats capabilities as decontextualised from the resources that feed them. This fragmentation in theorisation produces a blind spot, especially for SMEs, by neglecting the interplay between foundational resources (e.g., Green Human Capital[GHC]) and dynamic processes (e.g., Absorptive Capacity or Reconfiguration Capabilities). Furthermore, conceptual inertia exists in the methodological designs in the current corpus of literature. The continued reliance on linear models such as regression analysis to study CE in tourism (Bica et al. 2020; Kaszás et al. 2022) rests on additive, symmetric causality and variable independence assumptions. This approach masks causal complexity, interdependence and contextual nuances that are hallmarks of real-world circular transformation in SMEs. As a result, research risks advancing overly deterministic or reductionist models (Soyer and Hogarth 2012) that inadequately capture the diverse realities of CE implementation. The above scenario underscores the need for innovative methodological approaches (Kraus et al. 2018; Vis 2012). According to Peçanha and Ferreira (2025), there is a growing need to research circular strategies with more structured approaches and coherent theoretical frameworks.

In response to these gaps, the current study contributes in three ways. First, it synthesises RBV and DCV to develop a more integrated view of green transformation to bridge static and dynamic elements. Second, it incorporates Configurational Theory through Fuzzy-Set Qualitative Comparative Analysis (fsQCA) to reveal causal asymmetries and equifinality, thereby escaping

**TABLE 1** | Key findings (authors' own).

| Study                             | Variables used   | Methodology and theory used   | Key findings   | Key gaps  |
|-----------------------------------|--|---|--|---|
| Pamfilie et al. (2018)            | RevPAR, Quality and environmental management system credentials, Occupational health and safety management system. | Questionnaires were used to gather data from tourism operators. The influence of ISO standards on hotel performance was studied. No theory was used.                                | The paper identifies resource conservation, environmental protection and implementing integrated quality-environment-security systems as key drivers for circular economy adoption in Romania's hospitality and tourism industry.                | The hotel industry is not ready for circular economy principles. The integrated management system's influence on performance is unclear.          |
| Zhang and Tian (2014)             | Project impact assessment (PIA) parameters.  | Narrative analysis of the current status and problems in ecotourism development. Propose solutions for sustainable tourism development and resource protection. No theory was used. | Key drivers include sustainable resource management, environmental protection awareness, adequate legal frameworks and integrating ecological tourism principles into the hospitality and tourism industry development planning.                 | Lack of adequate legal protection in tourism development. Disorder in the management mechanisms of ecological tourism areas.                      |
| Khodajji and Christopoulou (2020) | Hotel profit indicators.   | Evaluation of sustainability reports from hotel groups. Secondary research from journal databases and third-party sites. No theory was used.  | Critical drivers of circular economy adoption in hospitality include alignment with the UN sustainable development goals, stakeholder engagement, innovative sustainability programs and contributions to local economies.                       | Limited research is primarily based on secondary sources. Sustainability in Greece remains underexplored and valuable.                            |
| Vatansever et al. (2021)          | Linguistic differences, knowledge ambiguity and lack of information.   | Interval Type-2 fuzzy analytical hierarchy process (FAHP) method. Semi-structured interviews with experts from the tourism industry. No theory was used.                            | The paper identifies environmental responsibility, efficiency, renewable resources and minimising consumption as key drivers for circular economy adoption in the tourism industry.  | Studies need to focus more on service-centric tourism industry sectors like hotels and accommodation.   |
| Vargas-Sánchez (2020)             | Systematic literature review   | Systematic search in the ISI Web of science and scopus databases Bibliometric and bibliographic analysis. No theory was used.   | Key drivers of circular economy adoption in the hospitality and tourism industry include sustainability initiatives, regulatory pressures, consumer demand for eco-friendly practices and cost-saving opportunities through resource efficiency. | The circular economy in tourism is still understudied. Future research agenda to address identified gaps must focus on theoretical underpinnings. |

(Continues)

| Study                                | Variables used   | Methodology and theory used  | Key findings  | Key gaps   |
|--------------------------------------|--|--|---|--|
| Acampora et al. (2018)               | Institutional support and stakeholder perspective.           | It presents a case study on developing an ecologically equipped productive area (EEPA) in a tourist cluster.   | The study identifies environmental sustainability, resource efficiency and collaborative business models as key drivers for adopting circular economy principles in the hospitality and tourism industry.                             | The tourism sector lacks exploration of circular economy concepts. More efforts are needed to understand the potential of circular tourism.                        |
| Kaszás et al. (2022)                 | The 5R concept: reuse, recycle, redesign, rethink and reduce | Literature review<br>Content analysis. No theory was used.   | Key drivers of circular economy adoption in hospitality include sustainability indicators, carbon footprint reduction, resource efficiency and the need for compliance with evolving regulatory frameworks and consumer expectations. | The circular tourism concept has been poorly analysed until now. Complexity in measuring circularity remains a challenge.  |
| Arzoumanidis et al. (2021)           | Systematic literature review                                 | Grouped solutions into reduce, recycle, reuse, redesign and rethink.<br>Reviewed literature to explore circular economy in the tourism industry. No theory was used. | Key drivers include reducing pollution, minimising resource consumption, implementing product-to-service models, enhancing local supply chains and fostering behavioural changes among tourists and staff.                            | Lack of shared understanding about circular economy in tourism. There are no specific guidelines for the interpretation of the circular tourism sector.            |
| Bica et al. (2020)                   | Consumer perception and willingness.                         | Online questionnaire<br>Approaching foreign and domestic tourists. No theory was used.   | Consumer concern for the environment, water consumption and willingness to accept green practices are key drivers for circular economy adoption in the hospitality industry.  | Age and gender influence on circular economy practices has not been explored. Focus on consumer perceptions, not industry implementation.                          |
| Nassanbekova and Yeshenkulova (2022) | Social effect, institutional reforms and non-profit.         | Bibliometric analysis of scientific literature<br>Use of VOS viewer software for counting and visualisation of co-occurrence. No theory was used.                    | Key drivers include digital technologies, resource efficiency, waste valorisation, social impact considerations and institutional reforms, all contributing to the development of circular tourism practices.                         | More empirical investigations are needed to collaborate with theories, models and frameworks. The majority of studies are theoretical, lacking empirical evidence. |

(Continues)

TABLE 1 | (Continued)

| Study                  | Variables used   | Methodology and theory used   | Key findings   | Key gaps   |
|------------------------|--|---|--|--|
| Sinha and Fukey (2020) | Case study research.   | Analysis of sustainable practices in the hotel industry<br>Exploration of circular economy practices in hotel chains. No theory was used.                                 | Key drivers include the need for resource efficiency, waste reduction, sustainable practices and the growing demand for environmentally responsible operations within the hospitality and tourism industry.                          | Focuses only on physical parameters of sustainability.<br>Limited to specific selected hotel chains.   |
| Singh et al. (2023)    | The 6R concept—reuse, reduce, repair, refurbish, and recycle.  | Qualitative and exploratory approach<br>Review of available literature. No theory was used.   | Key drivers include the need for sustainable practices, reduced environmental impacts, resilience against crises and alignment with Sustainable Development Goals, fostering a transition to circular economy principles in tourism. | Fragmented and scattered literature on circular economy in tourism.<br>Need for sector-specific studies and technical abilities.                   |
| Bowen et al. (2024)    | Adoption of digital technologies, changes in management practices, improvements in existing products, delivery and service, investment in innovation | Change analysis of BICS data.<br>A review of the latest global management developments and their practical implications is discussed. Resource-based view theory is used. | Adopting a circular economic model could be prohibitively expensive for SMEs.<br>Hospitality SMEs in the UK are more resilient with a circular economic model.   | The body of research regarding CE practices in hospitality is scarce, more organisational studies are needed to inform managerial decision-making. |
| Naikoo et al. (2022)   | General content analysis.  | Content analysis of 45 nominated publications. No theory was used.  | Key drivers of circular economy adoption in the hospitality industry include increasing consumer demand for green products, regulatory pressures and integrating sustainable development goals into business practices.              | Limited application of circular economy in the hotel industry.<br>Existing literature primarily focuses on manufacturing and production units.     |

the limitations of traditional linear modelling. Third, by focusing on small and medium hotels in India, the study foregrounds the strategic behaviours of marginalised yet critical agents in global sustainability transitions.

Based on this problematization, the following research question is posed:

How do resource-based factors and dynamic capabilities interact to influence the adoption and success of CE practices in small and medium-sized hotels in emerging economies?

Two research objectives support this:

1. To identify the key resource-based factors and dynamic capabilities influencing CE adoption in small and medium-sized hotels.
2. To explore the configurational pathways leading to successful CE implementation using fsQCA.

This study develops a tri-theoretical framework—RBV, DCT and Configurational Theory—to assess, explain and predict Circular Economy Practices (CEP) pathways. The theoretical grounding and hypotheses are developed in Section 2, thereby integrating resource possession, capability transformation and configurational logic. Section 3 outlines a hybrid methodology (PLS-SEM and fsQCA), addressing prior overreliance on linear models. Section 4 informs that Green Absorptive Capacity (GAC) is a consistent enabler and Green Dynamic Capabilities (GDC) are critical for adaptive circular strategies, while the role of GHC emerges as context-specific rather than universally dominant. Practically, Section 5 offers hotel owners actionable insights: embedding circular frameworks like ReSOLVE, nurturing green leadership and institutionalising pro-environmental training. Section 6 concludes by highlighting the study's novelty in bridging static and dynamic views, revealing multiple equifinal CEP pathways and offering a theory-informed, context-sensitive strategy roadmap for sustainability transitions among SME hotels.

## 2 | Literature Review

### 2.1 | Theoretical Framework

Table 1 shows a deficit of overarching theories in investigating the CE against the background of the tourism industry, especially in the hotel sector. Studies around adopting and implementing sustainable organisational processes akin to CE practices have used specific behavioural models and theoretical frameworks. The RBV (Wernerfelt 1984) is the primary of such theories, which propounds that a firm's competitive edge stems from its internal resources and organisational capabilities. Similarly, Goal Setting Theory (Locke and Latham 2012) advocates that setting specific green goals can impact staff behaviours and align personal objectives with corporate sustainability goals. Likewise, the Organisational Green Behaviour (Boiral 2009) framework merits the linking of staff behaviour with sustainability initiatives within corporations. The Social Identity Theory by Turner et al. (1979) furthers the agenda by explaining that employees start identifying themselves with

organisational green initiatives, which consequently affect their sustainable behaviours. David et al. (2019) highlight that the organisation's adoption or spread of sustainable systems is mainly contingent at the institutional level. Therefore, drawing from Max Weber's thoughts on legitimacy and authority, Institutional Theory has also been deployed to gauge the adoption of greening mechanisms by many studies. Other theories in the body of literature concerning adopting green processes include the Theory of Planned Behaviour (Ajzen 1991), where it is postulated that employees may approach the issue of organisational sustainability as a planned behaviour rather than an interest, and lastly, the Expectancy Valence Theory (Kominis and Emmanuel 2007). In a deeper scrutiny of the literature, it has been noted that in studies about organisational sustainability, no one theory has the epistemological bandwidth to capture the complex nature of relationships among the factors of interest (Garoui and Ibrahim 2025; Hahn et al. 2015). Therefore, a scholastic pursuit of assessing and predicting CE implementation against organisational dynamics is needed. Since implementing CE practices involves organisational capacities and resources (Bowen et al. 2024), the study contemplates the following theoretical stances to evaluate and forecast CE deployment among SME hotels.

Barney (1991), through their seminal work concerning firm resources and sustained competitive advantage, informs that to introduce or deploy sustainable practices at the organisational level, there is a need to leverage 'unique, valuable, rare and inimitable resources'. Authors Lado and Wilson (1994) and Hatch and Dyer (2004) have identified factors like human capital and organisational capabilities that manifest as such resources. Subsequent research by Hart (1995) augments this view to include environmental consciousness in organisational decision-making, thus propounding the Natural-Resource-Based View, which is relevant for promoting circularity-based initiatives in the hotel sector (Zaki 2024). However, Lockett et al. (2009) and Pöschl and Mai (2025) encircled the seemingly static nature of the RBV that may encumber capturing dynamic challenges that firms face. This may pose a challenge in predicting CEP in the current study, as the hotel industry is prone to socioeconomic, legislative and technological shocks.

To overcome the deficiency mentioned above, the authors introduce the wisdom of Teece et al. (1997), who, through the Dynamic Capabilities Theory, opine that organisations need to continuously adapt, integrate and reconfigure their internal and external competencies to address rapidly changing environments. In the context of CE implementation in hotels, DCT suggests that success depends not just on possessing resources but on the ability to dynamically deploy and reconfigure these resources in response to market and environmental changes (Ruiz-Fernández et al. 2024). Li, Cui, et al. (2024) further argue that dynamic capabilities are decisive in high-velocity markets, which aptly describes the rapidly evolving sustainability landscape in emerging economies. Despite the rich insights provided by RBV and DCT, there remains a significant gap in understanding how these theoretical frameworks apply to the specific context of small and medium-sized hotels in emerging countries attempting to implement CE practices. The unique challenges these hotels face, including resource constraints, institutional voids and rapidly changing market conditions, call for a more

nuanced understanding of how resources and capabilities interact in this context.

Lastly, the current study reflects upon Fiss et al. (2013), who iterate that ‘organisations are best studied as clusters of interconnected structures and practices, rather than as modular or loosely coupled entities whose components can be understood in isolation’. In management research, this is known as the configuration theory of organisations. This theory propounds the view of equifinality, or acknowledging that there can be multiple paths to achieve the same organisational outcome. Fiss was primarily inspired by Miller (1987), who advocated that different combinations of factors can lead to the same result rather than focusing on isolated variables. This notional posture provides for the existence of complex causality, where the effect of one factor may depend on the presence or absence of others. Since authors like De Angelis (2024) have maintained that the CE is a complex adaptive system that entails a diversity of processes, actors and communities towards and from an organisation, the current study proposes to use an asymmetrical procedure to decompose these configurations that may lead to the adoption of CE practices among the target hotel enterprises.

## 2.2 | Hypotheses Development

### 2.2.1 | GHC and Green Work Engagement (GWE)

GHC is considered one of the most critical assets that employees must cultivate in an era of the climate crisis. GHC is ‘the summation of employees’ knowledge, skills, capabilities, experience, attitude, wisdom, creativity and commitments, etc., about environmental management and concern’ (Chen and Chang 2013). Companies that invest in developing employees’ green knowledge and skills see a marked increase in employee GWE, contributing significantly to the sustainability of the environment (Karatepe et al. 2022). GWE, as defined by Aboramadan (2022), is ‘the energy an employee puts in his green work-related tasks, the willingness to exert efforts at the green level and the absorption level in green work’.

While substantial recent research has examined the role of GWE in hotel employees (Abdou et al. 2020; Karatepe et al. 2022; Suliman et al. 2023), limited studies have directly explored the influence of GHC on GWE, particularly its underlying mechanisms. Ma et al.’s (2021) investigation into employees from the Chinese manufacturing and service sectors revealed that those with a high level of GHC are more likely to evaluate their jobs positively, which aligns with findings that positive job evaluations can enhance work engagement (Lesener et al. 2020). Also, Shoaib et al. (2021) suggested that GHC boosts organisational commitment, an essential antecedent of employee engagement. The findings indicate that GHC can create an environment where employees feel more committed, knowledgeable and motivated. Based on existing research that links GHC to positive work outcomes, the study proposes the following hypothesis:

**Hypothesis 1.** *Green human capital (GHC) positively influences GWE.*

### 2.2.2 | GWE and Green Absorptive Capacity

Cohen and Levinthal (1990) introduced the concept of absorptive capacity as a critical determinant of innovative activity within organisations. This highlights its importance in recognising, assimilating and applying external knowledge. In the context of environmental sustainability, GAC is defined as an organisation’s ability to identify, absorb and utilise external green knowledge effectively (Zhou et al. 2021). GAC fosters organisational learning (Riikkinen et al. 2017). This facilitates the integration of new environmental practices, which in turn promote the adoption of innovative green solutions. Research suggests that GAC is not an isolated trait but can be enhanced by developing green core competencies—the skills, capabilities and knowledge central to an organisation’s green strategy (Qu et al. 2022). These competencies provide the foundational framework that allows firms to absorb and implement external environmental knowledge, ultimately contributing to organisational sustainability. Studies have also demonstrated that GAC positively influences green innovation (Qu et al. 2022), enabling firms to achieve organisational sustainability (Shahzad et al. 2020). A key mechanism for enhancing GAC is the active engagement of employees in green work-related tasks. GWE, characterised by employees’ energy, dedication and absorption in green activities, is vital in strengthening the organisation’s overall green capacity. When deeply engaged in green work, employees are more likely to contribute to acquiring and assimilating external environmental knowledge, thereby boosting the firm’s GAC. Engaged employees are also more proactive in applying this knowledge to green innovations. Therefore, acquiring and assimilating external green knowledge, driven by GWE, is vital in fostering a firm’s green innovation capability (Zhou et al. 2021). Based on this understanding, the study proposes the hypothesis:

**Hypothesis 2.** *GWE positively influences GAC.*

### 2.2.3 | GAC and Green Dynamic Capability (GDC)

GDC are ‘the ability of a company to apply its existing resources and knowledge to renew and create its green organisational capabilities to respond to the dynamic market’ (Chen and Chang 2013). These capabilities enable firms to adapt continuously by refreshing their skills and effectively managing knowledge, routines and resources in a constantly evolving environment (Amaranti et al. 2019). In environmental crises, dynamic capabilities are particularly crucial as they allow companies to uphold performance and maintain competitiveness by evolving in response to market and environmental changes. As Teece et al. (1997) highlight, companies are no longer competing solely based on their current resources and organisational skills but on their capacity to continuously develop and refine these capabilities to navigate uncertain and volatile conditions. Recent studies emphasise the importance of fostering a co-creation culture that promotes the sharing of resources and capabilities while safeguarding the organisation’s intellectual property (Camilleri 2025).

A critical factor in developing these GDCs is GAC—the ability of firms to identify, assimilate and apply external green knowledge. The capacity to absorb and integrate external knowledge

enables companies to leverage their existing resources and use them to create and renew their green capabilities. This relationship is supported by research indicating that GAC significantly impacts the development of GDC (Chen et al. 2015). It allows organisations to innovate and enhance green practices in response to external knowledge inputs. Thus, businesses with strong GAC are better positioned to continuously adapt and evolve their green organisational capabilities to remain agile and competitive in an ever more green-conscious market. Based on this understanding, the following hypothesis is proposed:

**Hypothesis 3.** *GAC positively influences GDC.*

### 2.2.4 | GDC and CE Practice

The CE is an economic system that reduces resource use, reuses materials and recycles waste to minimise environmental impact (Zhijun and Nailing 2007). These principles have evolved, with recent studies in industries such as construction and demolition adopting an expanded 6R framework (reduce, reuse, recycle, recover, remanufacture and redesign) to promote circular practices (Asante et al. 2022). Implementing CE practices positively impacts firms' economic, social and environmental performance, enhancing sustainability outcomes (Osei et al. 2024). In the face of environmental crises and resource scarcity, businesses can better manage sustainable development if they possess the necessary skills to reallocate resources efficiently (Dangelico et al. 2017; Saleem and Bashir 2024). This is where Dynamic Capability (DC) comes into play. DC is a concept rooted in the RBV. It asserts that firms can continuously develop and reconfigure their resources and capabilities to improve performance in changing environments (Kiranantawat and Ahmad 2023). GDC focuses on the firm's ability to adapt and innovate its green processes and strategies in response to environmental challenges. GDC can influence business performance by enabling organisations to stay competitive while addressing sustainability goals (Singh et al. 2022). Despite this understanding, there is a notable gap in the literature exploring the direct relationship between GDC and CEP. As dynamic

capabilities play an essential role in enabling firms to reallocate resources and adapt to environmental pressures, the following hypothesis is proposed:

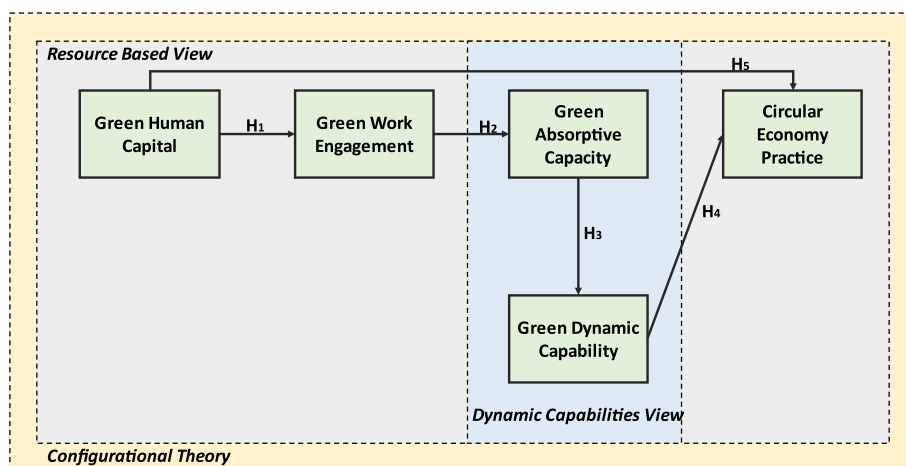
**Hypothesis 4.** *GDC CEP.*

### 2.2.5 | GHC and CE Practice

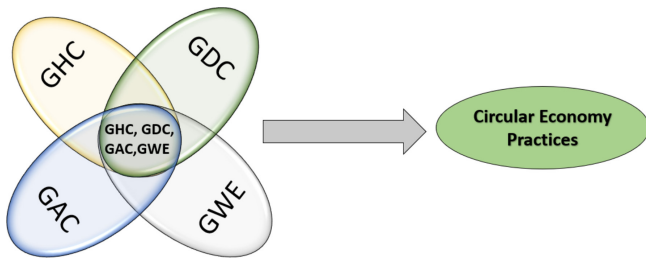
CEP has emerged as a critical organisational capability that can help businesses avoid environmental risks while achieving financial success (Zhu et al. 2010). Grounded in the RBV, Zheng et al. (2024) suggest that companies can intentionally and strategically reconfigure their organisational structures, human capital and planning systems to address environmental challenges. Human capital is an essential component of this organisational framework, which comprises skilled and knowledgeable employees with diverse experiences across various roles and functions (Shou et al. 2020). In environmental sustainability, GHC encompasses employees' talents, skills, knowledge and experiences that are leveraged to implement green practices effectively (Cheng et al. 2023). GHC enables organisations to detect opportunities, seize resources and adapt their strategies to implement CEP (Cheng et al. 2023). Appiah et al. (2023) found that green intellectual capital, a subset of GHC, plays an instrumental role in facilitating the implementation of CEP in Ghanaian manufacturing companies. GHC served as a medium through which corporate green culture impacts CEP.

Li et al. (2023) draw on the natural resource-based view to argue that adopting CE strategies drives organisational growth and requires an environmental orientation at its core. Alam, Masukujjaman, et al. (2024) emphasise that organisations must invest in social, structural and human capital to execute environmental management strategies successfully. Given the integral role of GHC in driving environmental initiatives and adapting organisational practices to meet sustainability goals, the study proposes the following hypothesis:

**Hypothesis 5.** *GHC positively influences CEP.*



**FIGURE 1** | Theoretical model of the study (authors' own).



**FIGURE 2** | Configurational model (authors' own).

The conceptual model is presented in Figure 1, and the configurational model in Figure 2 below.

### 3 | Research Methodology

#### 3.1 | Data Collection Instrument Design

Given the study's positivistic epistemology and the necessity of generating generalisable findings, a large-scale quantitative approach was employed. Data was collected via a self-administered, remote survey to minimise researcher influence and potential biases. This method aligns with best practices in quantitative research, offering efficiency, cost-effectiveness and respondent anonymity (Bryman 2016; Forza 2016). Furthermore, psychometric evaluation of latent behavioural dispositions requires validating the instrument developed for data collection, primarily due to its self-reporting nature. Therefore, the authors conducted a qualitative assessment of the instrument by commissioning the scientific and technical expertise of four academicians and five practitioners from sustainable tourism management, hospitality operations and circular economy. The panel recommended specific revisions regarding the semantics and overall organisation of the questionnaire. The final version is given in Annexe B.

The survey instrument comprised three sections. The first segment introduced mandatory ethical declarations and explained the study's purpose, aims and objectives. It also established consent. The second segment included filtering questions to screen participants based on the following criteria: (1) The hotel is certified by the MSME, Government of India and (2) the respondent's authority over organisational decisions related to environmental management. The third section consisted of 11 psychometric items representing the five focal constructs, measured using a five-point Likert scale (1 = *Strongly Disagree* to 5 = *Strongly Agree*), which balances ease of response with analytical granularity (Hair et al. 2016; Forza 2016). The queries were designed to be concise, non-suggestive and universally understandable, enabling participants from diverse backgrounds to engage effectively. The participants were approached using multiple dissemination channels, including email, secure web links and professional networks such as hotelier associations and regional MSME registries. The mixed-mode delivery ensured coverage across India's four major hospitality hubs, while respecting respondent preference and ensuring reach in geographically diverse contexts. The data collection campaign was conducted between March and November 2024.

#### 3.2 | Sample, Sampling Strategy and Sample Size Estimation

The unit of analysis is the executives of small and medium-sized hotels in India, whose details have been identified through the Indian Chamber of Commerce and Industry database, a public domain repository. These hotels operate under license from the Ministry of Micro, Small and Medium Enterprises (MSME), Government of India. The focus on managerial staff is grounded in their pivotal role in directing hotel operations and human resources, including the learning and development of employees. This approach aligns with previous research by Altinay et al. (2019), who emphasised the critical role of hotel managers in driving sustainability initiatives and organisational change. Stratified random sampling was used to ensure a proportional representation of hotel staff from the selected regions across India, enhancing the reliability and applicability of the findings. To estimate the sample size, the study used the Gamma-Exponential Method described by Kock and Hadaya (2016). This procedure overcomes the deficiencies found in heuristically anchored methods like the '10 times rule' by Sarstedt et al. (2017). This method finds merit in guidelines focusing on using PLS-SEM in managerial research (Memon et al. 2021). The sample size estimation procedure was coded on R Studio using base functions like `qnorm()` and was subsequently executed by inputting the desired power ( $1-\beta$ ) at 0.80, the medium effect size of 0.15 (Cohen 1988) and the number of paths pointing to the dependent variable against the theoretical sample size. It was observed that 174 was the required minimum sample size. The researchers added a buffer of 50% on the derived minimum sample size to mitigate potential bias from under-sampling (Anseel et al. 2010) and non-response/incomplete surveys (Liu and Wronski 2018). This conservative approach echoes Rogelberg and Stanton's (2007) recommendations in the contemporary literature for deliberate oversampling in organisational research to increase generalizability. The survey instrument was digitally shared with 400 executive staff members from four metropolitan regions of India. A total of 300 questionnaires were found to be eligible for testing. Table 2 displays the demographic profile of the respondents. Annex B provides the survey items and their sources.

#### 3.3 | Diagnosing Multivariate Normality and Treating Bias

The study satisfied the normality assumption by subjecting the cross-sectional data to diagnostic measures using its kurtosis and skewness values. Using thresholds recommended by Mardia (1980), it was found that kurtosis values were between  $-2$  and  $2$ , and skewness was  $<3$  for all readings. Therefore, it can be adjudged with caution that the data does not suffer from non-normality and, thus, the same could be used for further statistical treatment. Since the nature of the collected data originates from a single origin (India) with a single survey instrument, it was necessary to check for common method bias (CMB). The study used Kock's (2015) guidelines, also known as the 'Full Collinearity Assessment Method', which recommends using the Variance Inflation Factor (VIF) to determine multicollinearity among the variables in the framework. The VIF scores (See

**TABLE 2** | Demographic profile of respondents (authors' own).

|                     | Categories        | Frequency ( <i>n</i> ) | Percentage (%) |
|---------------------|-------------------|------------------------|----------------|
| Gender              | Male              | 171                    | 57%            |
|                     | Female            | 129                    | 43%            |
| Age group           | 20–29             | 41                     | 14%            |
|                     | 30–39             | 109                    | 37%            |
|                     | 40–49             | 87                     | 29%            |
|                     | 50+               | 62                     | 21%            |
| Education level     | High school       | 27                     | 9%             |
|                     | Bachelor's        | 153                    | 51%            |
|                     | Master's          | 89                     | 29%            |
|                     | PhD               | 31                     | 11%            |
| Position in hotel   | Manager           | 121                    | 41%            |
|                     | Assistant manager | 87                     | 29%            |
|                     | Supervisor        | 63                     | 21%            |
|                     | Staff             | 29                     | 9%             |
| Years of experience | 0–5 Years         | 59                     | 19%            |
|                     | 6–10 Years        | 93                     | 31%            |
|                     | 11–15 Years       | 87                     | 29%            |
|                     | 16 + Years        | 61                     | 21%            |

Appendix A) were inspected in tandem with Hair et al. (2019), and it was revealed that no multicollinearity exists among the variables of interest, as all the values are  $< 3.0$ .

## 4 | Data Analysis and Results

This study employs a multi-method approach, integrating PLS-SEM with fsQCA to explore the interplay between resource-based factors and dynamic capabilities in CE adoption among SME hotels. The rationale for this integration stems from the fundamental differences in how these methods handle complexity, causality and heterogeneity in data. PLS-SEM is a variance-based technique widely used for examining causal relationships in exploratory and theory-building research (Hair and Alamer 2022). It is instrumental in estimating direct and indirect effects in a net-effects model. However, PLS-SEM assumes linearity and symmetric relationships, which may not always capture the causal complexity inherent in sustainability transitions (Skarmeas et al. 2014). fsQCA, on the other hand, moves beyond net-effects modelling by embracing configurational complexity (Ragin et al. 2008). This method identifies multiple, equifinal pathways leading to CE adoption, accounting for interactions among factors that traditional regression-based methods might overlook (Pappas and Woodside 2021). Unlike PLS-SEM, which evaluates variables independently, fsQCA identifies combinations of conditions that jointly contribute to an outcome, aligning with the reality that different firms may achieve circularity through diverse, non-linear routes (Misangyi et al. 2017).

Recent studies have emphasised combining these approaches for a more holistic analysis. For instance, Liu and Meng (2024) and Olya and Gavilyan (2017) demonstrated that integrating fsQCA with PLS-SEM mitigates the limitations of each method, with PLS-SEM providing a broad structural overview and fsQCA uncovering hidden causal configurations. Afonso et al. (2018) further validated that fsQCA enhances predictive accuracy and external validity by identifying non-obvious success factors that traditional methods may ignore. This dual approach ensures a comprehensive, multi-perspective analysis, capturing generalised trends (via PLS-SEM) and case-specific configurations (via fsQCA).

### 4.1 | PLS-SEM Analysis

#### 4.1.1 | Assessment of the Measurement Model

The measurement model was evaluated using Average Variance Extracted (AVE), composite reliability ( $\rho_C$ ), Cronbach alpha ( $\alpha$ ) and item loadings ( $\lambda$ ). Construct reliability, determined through Cronbach's alpha coefficient, shows robust findings as coefficient alpha values among the constructs exceed the accepted threshold of 0.5, fulfilling the criteria of construct reliability (Bagozzi and Yi 1988). SMARTPLS 4.0 software was utilised to gauge the psychometric elements of the constructs and their accompanying items. The authors obtained  $\rho_C$  values beyond the accepted threshold of 0.7, thus satisfying the standard requirement (Hair et al. 2017). Furthermore, convergent validity, represented by the AVE, measures the amount of variance captured

by a construct concerning the amount of variance due to measurement error. The resultant model also satisfies the minimum threshold of 0.5 (Farrell 2010). Refer to Table 3 for the readings.

**TABLE 3** | Validity and reliability (SMARTPLS 4.0).

| Construct                 | Items | $\lambda$ | $\alpha$ | $\rho_C$ | AVE   |
|---------------------------|-------|-----------|----------|----------|-------|
| Circular economy practice | CEP1  | 0.715     | 0.819    | 0.869    | 0.525 |
|                           | CEP2  | 0.711     |          |          |       |
|                           | CEP3  | 0.775     |          |          |       |
|                           | CEP4  | 0.711     |          |          |       |
|                           | CEP5  | 0.701     |          |          |       |
|                           | CEP6  | 0.731     |          |          |       |
| Green absorptive capacity | GAC1  | 0.775     | 0.848    | 0.621    | 0.891 |
|                           | GAC2  | 0.823     |          |          |       |
|                           | GAC3  | 0.736     |          |          |       |
|                           | GAC4  | 0.844     |          |          |       |
|                           | GAC5  | 0.757     |          |          |       |
| Green dynamic capability  | GDC1  | 0.853     | 0.846    | 0.891    | 0.621 |
|                           | GDC2  | 0.830     |          |          |       |
|                           | GDC3  | 0.711     |          |          |       |
|                           | GDC4  | 0.701     |          |          |       |
| Green human capital       | GHC1  | 0.747     | 0.798    | 0.861    | 0.553 |
|                           | GHC2  | 0.754     |          |          |       |
|                           | GHC3  | 0.708     |          |          |       |
|                           | GHC4  | 0.770     |          |          |       |
|                           | GHC5  | 0.738     |          |          |       |
| Green work engagement     | GWE1  | 0.809     | 0.861    | 0.900    | 0.643 |
|                           | GWE2  | 0.859     |          |          |       |
|                           | GWE3  | 0.773     |          |          |       |
|                           | GWE4  | 0.800     |          |          |       |
|                           | GWE5  | 0.763     |          |          |       |

**TABLE 4** | HTMT Criterion (SMARTPLS 4.0).

|                           | Circular economy practice | Green absorptive capacity | Green dynamic capability | Green human capital | Green work engagement |
|---------------------------|---------------------------|---------------------------|--------------------------|---------------------|-----------------------|
| Circular economy practice |                           |                           |                          |                     | NA                    |
| Green absorptive capacity | 0.427                     |                           |                          |                     | NA                    |
| Green dynamic capability  | 0.553                     | 0.349                     |                          |                     | NA                    |
| Green human capital       | 0.448                     | 0.362                     | 0.268                    |                     | NA                    |
| Green work engagement     | 0.510                     | 0.497                     | 0.373                    | 0.461               | NA                    |

Discriminant validity was evaluated through the HTMT criterion. The HTMT criterion is used to evaluate the correlation between two constructs in a model and determine whether it is significantly different from one, which would indicate a lack of discriminant validity. Table 4 shows that values in the matrix are <0.9, indicating acceptable discriminant validity (Hair et al. 2021).

#### 4.1.2 | Assessment of the Structural Model

After the researchers established a robust measurement model involving the commonalities between the constructs and their respective items, the structural model that evaluates the correspondence between the constructs was then estimated using PLS-SEM. The bootstrapping algorithm with 1000 iterations revealed significant empirical evidence supporting several hypothesised relationships within the model. All pathways demonstrate statistical significance at  $p < 0.01$ , as indicated by the  $T$ -statistics exceeding the critical value of 2.58. As given in Table 5, the postulated relationships have the critical empirical evidence to be accepted. The relationship between GAC and GDC shows a moderate positive effect ( $\beta = 0.303$ ,  $T$ -Stat = 8.111,  $p < 0.01$ ), with the true effect likely falling between 0.231 and 0.378 (95% CI). GDC strongly influences CEP ( $\beta = 0.405$ ,  $T$ -Stat = 12.486,  $p < 0.01$ ), with a 95% confidence interval ranging from 0.344 to 0.469. GDC demonstrates positive effects on both CEP ( $\beta = 0.274$ ,  $T$ -Stat = 7.058,  $p < 0.01$ ) and GWE ( $\beta = 0.384$ ,  $T$ -Stat = 9.515,  $p < 0.01$ ). The confidence intervals for these relationships are 0.200–0.352 and 0.305–0.466, respectively. Lastly, GWE shows a strong positive association with GAC ( $\beta = 0.431$ ,  $T$ -Stat = 11.926,  $p < 0.01$ ), with a 95% confidence interval of 0.362–0.503.

The magnitude of the findings has been evaluated through the  $F^2$  metric. In PLS-SEM, the  $F$ -squared value is invaluable for determining the most significant factors in the structural model and assessing the strength of links between constructs (Benitez et al. 2020). Table 5 shows that GDC has the highest affiliation with CEP among all the constructs in the model, followed by GWE's impact on GAC. According to Cohen's  $D$  criterion (Cohen 1970), the attained value of 0.220 can be considered a medium to large effect size. Furthermore, the explanatory capacity of the model was assessed using the  $R^2$  metric. CEP

**TABLE 5** | Bootstrapping result (SMARTPLS 4.0).

| Hypothesised pathway | $\beta$ | Bootstrap $\chi^2$ | Bootstrap $\sigma$ | T-Stat   | 2.5% CI | 97.5 CI | $f^2$ |
|----------------------|---------|--------------------|--------------------|----------|---------|---------|-------|
| GAC → GDC            | 0.303   | 0.305              | 0.037              | 8.111**  | 0.231   | 0.378   | 0.101 |
| GDC → CEP            | 0.405   | 0.407              | 0.032              | 12.486** | 0.344   | 0.469   | 0.228 |
| GHC → CEP            | 0.274   | 0.275              | 0.039              | 7.058**  | 0.200   | 0.352   | 0.100 |
| GHC → GWE            | 0.384   | 0.386              | 0.040              | 9.515**  | 0.305   | 0.466   | 0.173 |
| GWE → GAC            | 0.431   | 0.433              | 0.036              | 11.926** | 0.362   | 0.503   | 0.220 |

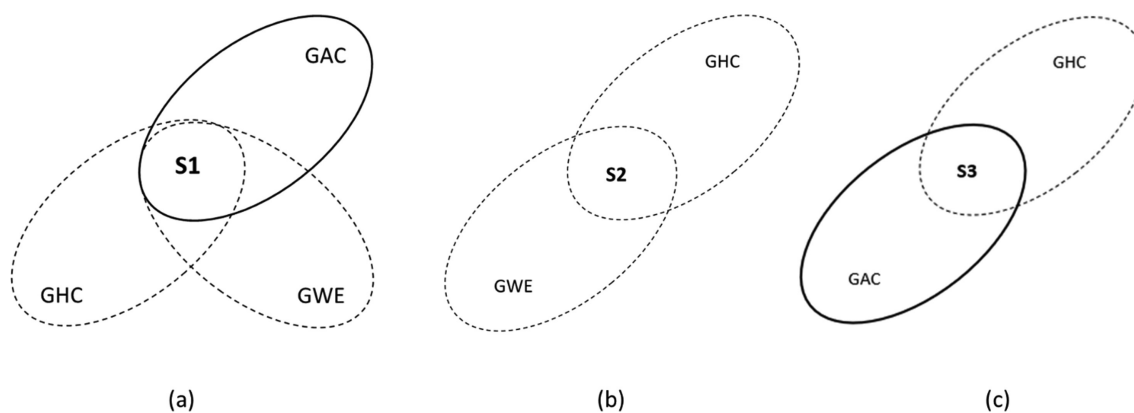
Note: \*\*significant at  $p < 0.05$ .

**TABLE 6** | Intermediate solutions (FsQCA 3.0).

| Solutions | GAC | GDC | GHC | GWE | Raw coverage | Consistency |
|-----------|-----|-----|-----|-----|--------------|-------------|
| 1         | ●   |     | ○   | ○   | 0.6923       | 0.8571      |
| 2         |     |     | ○   | ○   | 0.3269       | 0.9444      |
| 3         | ●   |     | ○   |     | 0.6346       | 0.8462      |

Note: Overall consistency: 0.7565. Overall raw coverage: 0.4526.

Legend: Black circles or ● imply the existence of causal conditions. White circles or ○ imply negation or absence of causal conditions. The empty fields imply 'do not care' conditions.

**FIGURE 3** | Ellipse diagram of solution pathways. Note: Ellipses with bold lines show the presence of conditions in the solution, while the ellipses with dotted lines express the negation or absence of a condition.

explains 30% (0.300 in absolute terms) of the structural model. Finally, the  $Q^2$  value for CEP was recorded at 0.122, which is significantly above zero, thus providing evidence for predictive relevance.

## 4.2 | fsQCA

While there exist methods that can capture latent asymmetrical causal pathways, like Necessary Condition Analysis (NCA), Classification and Regression Trees (CART), Artificial Neural Networks (ANN) and Generalised Additive Models (GAM), they suffer from robustness issues (Dul et al. 2023), over-fitting problems (Mienye and Jere 2024), computational intensity (Ravindra et al. 2019) and data imprisonment (Maier et al. 2023). The motivation to deploy (fsQCA) is derived from the insights of Alam, Zhang, et al. (2024) and Alam et al. (2023), who explicated that, unlike traditional linear models, fsQCA captures causal asymmetry and equifinality, allowing researchers to identify configurations of factors rather than isolated net effects.

Rasoolimanesh et al. (2023) and Benoit Rihoux and Ragin (2009) elucidated the critical steps in conducting the fsQCA exercise. First is data calibration, whereby Likert scale standard responses are converted into fuzzy sets. It involves setting thresholds for full membership (fuzzy score=0.95), cross-over points (fuzzy score=0.50) and full non-membership (fuzzy score=0.05), thus allowing a finer degree of the extent to which each case is a member of a set. Following Kallmuenzer et al. (2019), a truth table was developed after data calibration. The truth table defines all the possible combinations of causal conditions sufficient for a high adoption intention of CEP. The authors specified a consistent cut-off value at 0.95 and a number-of-cases threshold at 2. Finally, a standard analysis resulted in an 'intermediate solution' (Refer to Table 6). It includes partial logical remainders that may be used to map causal patterns leading to the adoption intention of CEP in SME hotels. Through Table 6 and Figure 3, the authors are appraised of three solutions to an expected outcome. The first solution pathway showed that the presence of GAC and the absence or negation of GHC and GWE lead to the outcome CEP. This solution has a raw coverage of 0.6923 and a consistency of 0.8571. In the

second solution, the presence of GAC and the absence of GHC, with GDC and GWE as 'do not care' conditions, resulted in CEP. This solution has a lower raw coverage of 0.3269 but a higher consistency of 0.9444. The third path indicated that the presence of GDC combined with the absence of GHC GAC and GWE as 'do not care' conditions leads to the outcome. This solution has a raw coverage of 0.6346 and a consistency of 0.8462.

Summarising the above observations, GAC is a critical factor in two of three solution paths. In contrast, the consistent absence of GHC across all paths suggests its potential hindrance to CEP. GDC appears dominant in specific configurations, whereas GWE's role is less pronounced. The solution paths reveal fluctuating levels of raw coverage and consistency, with Solution 1 explaining the most significant proportion of cases (raw coverage: 0.6923) and Solution 2 showing the highest reliability (consistency: 0.9444). These findings underscore the principle of equifinality, demonstrating that multiple, distinct causal combinations can lead to enhanced CEP. The overall consistency is  $>0.7$ , and the overall raw coverage is in the tolerable range of 0.26–0.64, validating that the fsQCA-led model is informative.

## 5 | Discussion

This study explored how small and medium-sized hotels adopt CEP by examining the interrelations among GHC, Green Workforce Engagement (GWE), GAC and GDC. Using a dual analytical strategy—PLS-SEM and fsQCA—the findings provide both symmetrical and configurational insights, advancing the theoretical discourse around resource mobilisation and capability transformation in sustainability transitions.

The PLS-SEM results affirm the critical influence of GHC on GWE, aligning with prior studies by Karatepe et al. (2022) and Shoaib et al. (2021), which emphasise that employees with high environmental competence exhibit greater intrinsic motivation to support sustainability. Chowdhury et al. (2025) also underline how structured green HR practices foster green engagement. However, this study's fsQCA results offer a more complex picture, revealing that GHC is not a consistent presence in the dominant configurations for high GWE or CEP. This suggests that the translation of human capital into action is contingent upon organisational mechanisms such as learning cultures and leadership styles, echoing Mukherjee et al. (2025), who argue that GHC alone does not guarantee behavioural engagement without contextual reinforcement.

GWE itself emerged as a significant antecedent to GAC, supporting claims by Zhou et al. (2021) and Shahzad et al. (2020) that engaged employees serve as critical conduits for identifying, interpreting and implementing sustainability-related knowledge. Nonetheless, fsQCA reveals that GWE's contribution is not universally necessary for high levels of absorptive capacity. This asymmetry corroborates findings from Ishaque et al. (2025), who assert that the impact of engagement is often mediated by factors such as task structure, interdepartmental communication and the strategic emphasis placed on sustainability at the executive level. The consistent importance of GAC across both analytical approaches suggests its centrality in the circular transition of SME hotels. This is aligned with the broader literature on absorptive capacity, including the works of Chen et al. (2015) and

Amaranti et al. (2019), who argue that the ability to integrate external knowledge into operational capabilities is a critical enabler of innovation. The current findings partially echo Li et al. (2025), who demonstrate that such capabilities are particularly effective in organisational structures that encourage decentralised decision-making and continuous learning, features commonly found in agile SMEs rather than rigid corporate chains.

GDC, as predicted, plays a pivotal role in advancing CEP, particularly in volatile and complex operational environments. The findings converge with those of Singh et al. (2022), Osei et al. (2024), Saleem and Bashir (2024) and Teece et al. (1997), underscoring the importance of sensing, seizing and reconfiguring organisational resources in response to environmental demands. However, the fsQCA analysis tempers this conclusion by demonstrating that while GDC is dominant in one pathway to circularity, it is not uniformly present across all successful configurations. This finding aligns with recent work by Bhadra et al. (2024), who argue that dynamic capabilities, although essential, must be embedded within an institutional framework that supports experimentation and transformation.

A particularly notable finding is the divergent role of GHC in the two modelling approaches. While PLS-SEM shows a statistically significant relationship between GHC and CEP (in conjunction with Appiah et al. 2023 and Cheng et al. 2023), fsQCA reveals its absence in all dominant causal recipes. This divergence points to an important theoretical insight: while GHC may enhance CEP in a linear, additive model, its effectiveness is not guaranteed unless coupled with enabling capabilities and organisational readiness. This reflects critiques by Obeidat et al. (2022) and Khan et al. (2024), who caution against assuming the inherent sufficiency of GHC in the absence of strategic alignment and institutional support.

Taken together, these results reinforce the need for a configurational perspective on sustainability adoption, especially in resource-constrained environments. The dual-method approach employed in this study underscores the importance of causal asymmetry and equifinality, concepts that are overlooked in traditional regression-based studies. The findings thus extend prior work by Vargas-Sánchez (2020) and Franco and Giannoccaro (2025), who advocate for methodological pluralism in understanding complex organisational behaviours. Practically, the results validate the resilience and strategic agency of SME hotels in transitioning towards circularity, despite structural constraints. This contradicts the pessimism expressed in earlier studies like Pamfilie et al. (2018) and supports the perspectives of Patwa et al. (2021) and Jones and Wynn (2019). The authors would partially reverberate with the revelations of Yin et al. (2023) and Alam, Zhang, et al. (2024), who identify organisation-level factors as a precursor to CE practices.

### 5.1 | Theoretical Implications

This study integrates the RBV, DCT and CT of organisations to explain the adoption of CEP among SME hotels. Unlike previous research, which primarily tests isolated factors, this study provides a comprehensive, multi-theoretical perspective to capture

the complexity of circular transitions. This research's first key novelty lies in integrating static and dynamic perspectives. Most studies applying the RBV have focused on resource possession without accounting for how firms evolve their capabilities over time. By incorporating DCT, this study bridges this gap, offering a dual-theory approach that explains the availability and transformation of resources in CEP adoption. This dynamic perspective is critical in the SME hospitality sector, where firms must continuously adapt their capabilities to implement circular strategies effectively. The second significant contribution is its application of CT to the CE discourse. Existing studies predominantly rely on linear regression models, which often oversimplify the causal complexity of circular adoption. By employing fsQCA, this study moves beyond deterministic cause-effect models to reveal multiple, equifinal pathways through which SME hotels achieve circularity. This approach challenges the traditional notion of a 'one-size-fits-all' strategy and highlights the importance of firm-specific configurations in achieving sustainable transformation. Lastly, this study is the first to systematically integrate these three theories within the SME hospitality context, offering a new epistemological lens to understand circular transitions. By demonstrating that different configurations of resources and capabilities can lead to circularity, the study enriches strategic management theory and provides actionable insights for practitioners in small and medium-sized hotel enterprises.

## 5.2 | Practical Implications

The study wishes to advise owners, managers and other stakeholders of small and medium hotels on two significant aspects that will aid their adoption of CEP. Firstly, the study finds that GDC has the highest effect on CEP, which implies that hotels must foster environmental awareness and executives must steward green values that will allow staff at the lower ranks to mimic green behaviours. It is vital to instil circular frameworks like 'ReSOLVE' (Holmberg and Kontinen (2023) that include regeneration of materials, sharing of assets, optimisation of green performances, looping of reusable products and components, virtualising or repurposing products/services and exchanging legacy technology for modern and greener ones. The ReSOLVE philosophy offers hospitality establishments an avenue to change rapidly according to the situation and switch to circular processes. Secondly, GAC has been observed to be another important factor in exhibiting CEP. Therefore, small-scale hotels are advised to be observant of their legislative environment in terms of regulations related to the environment; they should focus on consumer behaviour against the background of these regulatory changes and also the actions taken by their competitors regarding sustainability. Similarly, pro-environmental training and sensitisation programs should be normalised for the employees to support their capacity to capture environmental knowledge from external sources.

## 5.3 | Limitations

This study focuses on SME hotels in emerging economies, limiting generalizability to larger firms or developed markets. The fuzzy-set QCA may not capture all nuances of circular

transitions. Additionally, cross-sectional data prevents assessing long-term capability evolution. Furthermore, the unit of analysis consists of individuals from a particular stratum of the organisations being studied; hence, the observations may be skewed in certain cases. Concludingly, the theoretical pillars used in this study are of Anglo-American origin; therefore, localised realities might have been superseded.

## 5.4 | Future Research Agenda

Future studies could compare SME hotels with large chains to assess size-related CEP adoption differences. Longitudinal research could track capability shifts, while cross-country analyses could evaluate regulatory impacts. Additionally, exploring digital transformation's role in circular transitions may offer fresh insights. Future researchers can also conduct inductive explorations on the topic by way of qualitative examinations. Concludingly, there is a requirement to investigate variables rooted in psycho-social processes derived from non-occidental theories to capture Asian and/or African realities in the ambit of CE.

## 6 | Conclusions

The study had two broad aims. Firstly, it postulated the relationships between resource-based factors and dynamic capabilities to determine CEP among SME hotels. The linear PLS-powered SEM bootstrapping exercise led the authors to adjudicate that RBV-based factors like GHC and GWE, coupled with the DCT-drawn GAC and GDC factors, sufficiently estimated CEP among the units of analysis. Secondly, the study aimed to detect latent successful pathways to achieving CEP through a non-linear fsQCA procedure. The fsQCA results highlight GAC as a key driver of CEP, with GDC and GWE playing complementary roles. The absence of GHC in identified pathways does not indicate ineffectiveness but suggests its impact is context-dependent, relying on absorptive capacity and dynamic capabilities. This aligns with causal asymmetry, where an element's absence does not imply a negative effect.

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This certifies that all authors have seen and approved the final version of the submitted manuscript. They warrant that the article is the authors' original work, has not received prior publication and is not under consideration for publication elsewhere.

### Conflicts of Interests

The authors declare no conflicts of interest.

### Data Availability Statement

Data will be available upon reasonable request.

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## Appendix A

### VIF Scores (SMART PLS 4.0).

|                           | Circular economy practice | Green absorptive capacity | Green dynamic capability | Green human capital | Green work engagement |
|---------------------------|---------------------------|---------------------------|--------------------------|---------------------|-----------------------|
| Circular economy practice |                           |                           |                          |                     |                       |
| Green absorptive capacity |                           |                           | 1.000                    |                     |                       |
| Green dynamic capability  | 1.051                     |                           |                          |                     |                       |
| Green human capital       | 1.051                     |                           |                          |                     | 1.000                 |

## Appendix B

### Survey questionnaire (authors' own).

| Construct                  | Items   | Sources                               |
|----------------------------|---|---------------------------------------|
| Circular economy practices | <ol style="list-style-type: none"> <li>1. The hotel's senior management actively supports and participates in circular economy initiatives to minimize environmental impact.</li> <li>2. Employees at all levels receive regular training on circular economy practices, including waste reduction, recycling and resource efficiency.</li> <li>3. The hotel's performance evaluation system includes specific targets related to environmental sustainability and circular economy practices.</li> <li>4. The hotel incorporates circular economy principles in designing services and facilities to reduce material and energy consumption.</li> <li>5. The hotel prioritizes designing and offering products and services that are reusable, recyclable or made from sustainable materials.</li> <li>6. The hotel has established a system for collecting, recycling and repurposing used or defective products, materials and equipment.</li> </ol> | (Zhu et al. 2010)                     |
| Green human capital        | <ol style="list-style-type: none"> <li>1. My hotel sets specific environmental goals for employees to promote sustainability</li> <li>2. My hotel trains employees to develop green values and knowledge required for environmental management.</li> <li>3. My hotel considers employees' workplace green behaviors in performance appraisals.</li> <li>4. My hotel links employees' workplace green behaviors to rewards and compensation.</li> <li>5. My hotel considers employees' workplace green behaviors when promoting.</li> </ol>  | (Ni et al. 2023) (Dumont et al. 2017) |
| Green work engagement      | <ol style="list-style-type: none"> <li>1. The environmental-related tasks I perform in my role inspire me to contribute more to sustainability efforts in the hotel.</li> <li>2. I take pride in the environmental initiatives and work I undertake as part of my responsibilities in the hotel.</li> <li>3. I feel fully immersed and engaged in my environmental responsibilities at the hotel.</li> <li>4. I am enthusiastic about the environmental tasks I am assigned and look forward to working on them.</li> <li>5. Working on environmental tasks at the hotel fills me with energy and motivates me to perform at my best.</li> </ol>  | (Jnaneswar 2024)                      |

| Construct                 | Items  | Sources   |
|---------------------------|--|---|
| Green absorptive capacity | <ol style="list-style-type: none"> <li>1. Our hotel seeks to acquire and integrate external environmental knowledge to improve sustainability practices.</li> <li>2. Employees are encouraged and supported to engage in learning activities that enhance their understanding of green technologies and practices.</li> <li>3. The hotel is proficient in adapting and applying green innovations to minimize environmental impact.</li> <li>4. We collaborate with external environmental experts and organizations to improve our green capabilities.</li> <li>5. There is an effective internal system for sharing knowledge and best practices related to environmental sustainability among departments.</li> </ol> | <p>(Aboelmaged and Hashem 2019b; Alabort-Morant et al. 2018; Begum et al. 2023)</p> |
| Green dynamic capability  | <ol style="list-style-type: none"> <li>6. Our hotel rapidly adapts to new environmental technologies and innovations to enhance sustainability.</li> <li>7. The management regularly revises and updates environmental strategies to align with emerging green practices and regulations.</li> <li>8. We effectively reallocate resources to support green initiatives that improve environmental performance.</li> <li>9. Environmental sustainability is deeply integrated into our core business processes, driving continuous improvement.</li> <li>10. Our hotel collaborates with external partners to exchange knowledge and practices that strengthen our environmental capabilities.</li> </ol>                 | <p>(H. Li 2022; Qiu et al. 2020)</p>  |