International Journal of Hospitality and Tourism Systems
Volume 18 Issue 1 2025
ISSN: 0974-6250 (Print)

https://doi.org/10.21863/ijhts/2025.18.1.005

Hospitality & Tourism Systems

Developing a Best-Practice Model of Circular Economy in the Hotel Industry

Karam Zaki*

Abstract *The aim of this paper is to develop a best-practice model for circular economy (CE) skills adopted by the hotel sector, using a comparative approach between the status and the future provision. To achieve comprehensive insights, extensive online survey data was meticulously collected from 59 green hotels situated across the vast landscape of Saudi Arabia, yielded 200 complete forms ensuring a robust and diverse sample size. Using Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis, findings revealed that key CE dimensions, such as redesigning, purchasing, production, reusing, consumption and recovering, significantly enhance hotel performance. This research contributes to the existing literature by expanding the application of CE principles from manufacturing sectors to hospitality, demonstrating their adaptability and importance in service industries. The study's novelty lies in its comprehensive approach to evaluating multiple CE dimensions and their direct impact on hotel performance, offering practical insights for hotel managers aiming to improve sustainability outcomes.*

Keywords: *Best-Practice Model, Circular Economy, Green Hotels, Redesigning, Sustainability, Performance*

INTRODUCTION

The hospitality industry, a vital component of global service economies, has been acknowledged for its significant environmental footprint, particularly concerning waste generation and resource consumption (Nisar et al., 2021). In Saudi Arabia, where the tourism sector is expanding in line with the Vision 2030 initiative, the hotel industry is pivotal to economic diversification. Amid this burgeoning sector, green hotels have emerged as leaders in promoting sustainable and eco-friendly practices (Salama et al., 2022). These establishments exemplify the principles of a circular economy (CE), which emphasizes resource conservation, waste reduction, and overall sustainability, aligning with global efforts to address urgent environmental issues (Shehri et al., 2023). The concept of circular economy (CE) was explained as a system that aims to build economic, natural, and social capital by promoting the refreshing, reusing, and reducing of resources, as well as making a positive impact on communities (Nayal et al., 2023).

Green hotels in Saudi Arabia are redefining the concept of sustainability within the hospitality sector. They implement innovative strategies designed to reduce waste, conserve resources, and lower their carbon emissions (Abdou et al., 2022). The growth of this sector marks a transition towards more responsible tourism and recognizes the essential role hotels play in environmental conservation. By integrating CE principles, which focus on the recirculation of materials and waste, these hotels are making significant strides toward enhancing both environmental and economic sustainability (Zaki, 2024).

Nevertheless, the prevailing linear economy model, which is prevalent in global industries, including hospitality, is inadequate for addressing issues like resource depletion and waste management. The current global consumption of natural resources is unsustainable, with industries nearing the limits of resource extraction and usage. The United Nations Environment Programme (UNEP) indicates that resource consumption has tripled in the past 50 years with 2.01 billion metric tons of municipal solid waste are produced annually, with one-third inadequately managed (Neufeld et al., 2018). Such concerning statistics highlight the pressing need for innovative solutions such as the CE, which provides a regenerative framework that focuses on reusing, reducing,

* Business Administration Department, College of Science and Humanities, Shaqra University, Saudi Arabia; Hotel Studies Department, Faculty of Tourism and Hotels, Fayoum University, Egypt. Email: kzaki@su.edu.sa; kgm00@fayoum.edu.eg

recycling, and recovering resources to minimize waste and enhance efficiency (Bowen et al., 2023).

The CE concept presents a transformative alternative to the conventional take-make-dispose model. It advocates for resource regeneration, aiming to extend product lifecycles, lessen environmental impacts, and boost operational efficiency (Jones & Wynn, 2023). In the hotel sector, CE practices are essential for not only mitigating environmental consequences but also enhancing economic and social outcomes. For instance, through eco-design, sustainable procurement, and engaging employees in environmental initiatives, hotels can realize cost savings, improve their competitive edge, and build customer loyalty. Additionally, external pressures from eco-conscious consumers and policymakers promoting sustainable tourism are prompting hotels to reevaluate their operational strategies and embrace CE principles (Zaki, 2024).

Despite these advantages, numerous barriers hinder the widespread adoption of CE practices in the hotel sector, particularly in Saudi Arabia. A fundamental issue is the general lack of awareness and understanding of CE concepts within hospitality and food service sectors (Ben Youssef & Zeqiri, 2022). Furthermore, many hotels do not effectively involve consumers in resource efficiency efforts, which slow the transition to circular practices (Bowen et al., 2023). Additionally, Saudi Arabia witnessed a lack of incentives, limited national leadership on circular economy initiatives and inadequate capacity for local innovation further complicate the shift towards circularity (Shehri et al., 2023). These challenges reflect a broader issue within the hospitality industry as it strives to balance economic success with environmental accountability.

To overcome these challenges, a thorough assessment of skills gaps related to the adoption of CE practices is essential. This research seeks to address a significant gap in the existing literature by exploring the current status of CE implementation in green hotels in Saudi Arabia and evaluating the prospects for these practices moving forward. A skills gap assessment approach will identify discrepancies between the current and ideal states of CE practices in hotels, offering insights into areas that require capacity building, innovation, and policy support.

The CE framework includes the implementation of circular principles, which involve rejecting unnecessary items, minimizing consumption, reusing materials, restoring goods, refurbishing products, and recycling resources, all aimed at reducing waste and optimizing resource use (Ahmed et al., 2023; Martins, 2021). Initially, this approach was primarily associated with manufacturing for several decades before expanding to include services (Chowdhury et al., 2022; Jones & Wynn, 2023; Riggs et al., 2023). Previous research has examined the barriers that hinder the CE adoption within food service chains. These studies have also assessed awareness levels related to this concept and proposed a detailed taxonomy of strategies to facilitate its effective integration. Additionally, these investigations have focused on refining existing business models to better align with green principles (Ferasso et al., 2020), and establishing a strong link between CE and sustainability, particularly in developed nations (Gedam et al., 2021). However, it is noteworthy that countries in the Middle East and North Africa (MENA) have yet to fully adopt this concept, especially in the hotel sector (Zaki, 2024). Consequently, this study aims to address this gap by providing a comprehensive overview of the CE concept as it pertains to the leading green hotel sector in Saudi Arabia. This study uses PLS-SEM analysis to examine the impact of current CE practices on hotel performance, providing insights into how these practices contribute to sustainability outcomes in the hotel sector. By examining the barriers and opportunities for CE adoption, this study contributes to both theoretical and practical understandings of CE applications in the hospitality sector. Its originality lies in its comparative analysis, contrasting current practices with future needs, thus providing a unique perspective on how hotels can better align with sustainability objectives. Furthermore, this research offers valuable implications for policymakers, hotel managers, and sustainability advocates by identifying actionable strategies to overcome obstacles and promote a more resilient and sustainable hotel industry in Saudi Arabia.

LITERATURE SURVEY

Circular Economy (CE) Concept

The concept of CE emerged initially within the manufacturing sector, with pioneering examples from companies such as Renault in the automobile industry. Over time, the principles of circularity expanded beyond production to encompass service-oriented sectors, such as hospitality, with prominent advocates like Philips endorsing CE practices (MacArthur Foundation, 2013). At its core, CE is an economic model designed to close the loop on material and energy flows, thereby minimizing waste and enhancing resource efficiency. Key CE strategies include the reuse, recycling, and regeneration of resources, extending product life cycles through maintenance, repair, and sharing (Geissdoerfer et al., 2017). By moving away from the traditional linear "take-make-dispose" model, CE aims to align economic growth with environmental and social sustainability (Le et al., 2023; Riggs et al., 2023).

While CE has primarily been discussed within manufacturing contexts, its principles are increasingly being explored in the hospitality industry. As an essential

component of the broader tourism sector, hospitality has, however, received comparatively less attention in CE research (Jones & Wynn, 2023). Most CE discussions to date have focused on manufacturing, leaving a gap in understanding how these principles can be effectively implemented in service sectors like hotels (Bittner, 2022). Yet, given the hotel industry's reliance on natural resources, such as water and energy, and its significant greenhouse gas emissions, the adoption of CE practices in hotels offers substantial potential for improving sustainability (Martins, 2021).

In the hotel industry, CE principles seek to optimize natural resource use, reduce waste, and mitigate emissions, all while providing economic, social, and environmental benefits. These efforts include reusing materials, reducing waste generation, recycling, and redesigning products and services for extended use. CE adoption in hotels thus represents a powerful response to environmental challenges, contributing to broader sustainability goals (Chabowski et al., 2023). However, despite this potential, the hotel sector faces several barriers to CE implementation. Among the most significant are limited awareness of CE concepts among hotel operators and staff (Aryal, 2020), cultural resistance to change, and gaps in knowledge and skills. Moreover, market and regulatory factors—such as the availability of circular products, services, and favorable waste management policies—further complicate the industry's transition toward circularity (Bittner, 2022; Patwa et al., 2021).

Addressing these barriers requires coordinated efforts among stakeholders, including hotel operators, policymakers, and other industry players, to foster collaboration and develop CE initiatives (Sorin & Sivarajah, 2021). In the global context, European hotel chains have begun to adopt circularity measures, such as zero-waste initiatives and eco-friendly procurement practices, although progress remains inconsistent (Jones & Comfort, 2020). For example, interviews conducted by Martins (2021) with seven European hotel chains revealed that many industry players are familiar with CE concepts but have only implemented limited best-practice models. This highlights the need for a more systematic adoption of CE principles within the hospitality sector.

The hotel industry's ability to implement CE strategies is also intertwined with broader technological advancements. Innovations linked to Industry 4.0, such as smart resource management systems and digital platforms for waste reduction, have the potential to significantly enhance circularity in hospitality. By leveraging these technologies, hotels can reduce their environmental impact, minimize resource consumption, and support climate change mitigation efforts (Ben Youssef & Zeqiri, 2022).

However, despite the growing recognition of CE's importance, the concept remains underutilized in the hospitality sector, particularly in non-Western contexts. In Asia, for instance, discussions around circular tourism—particularly in Nepal—highlight the potential for a shift from linear to circular economies in the tourism industry. However, financial and knowledge constraints have hindered the widespread adoption of CE practices (Pamfilie et al., 2018). This points to a broader challenge: while CE holds great promise, its effective implementation across different regions and sectors requires overcoming a range of structural, cultural, and economic barriers (Naikoo et al., 2022).

The gap in CE adoption within the hospitality industry, especially in regions like the Middle East, presents both a challenge and an opportunity. As the hotel sector in Saudi Arabia embraces sustainability efforts, there is a pressing need for further research to explore the specific barriers and opportunities for CE within the country's green hotels. This study addresses this gap by assessing the circularity skills needed for the hotel industry's transition toward sustainable practices. In doing so, it aims to provide a comprehensive understanding of CE's current status and future perspectives within the Saudi Arabian hotel sector.

Theoretical Underpinning: Framework and Hypotheses

Stakeholder theory (ST) offers a compelling lens to examine the relationship between CE practices and organizational performance across different dimensions—environmental, social, and economic. Developed by Edward Freeman in the 1980s, ST posits that businesses are not merely responsible to shareholders but also to a broader group of stakeholders, including customers, employees, suppliers, government agencies, and the community at large. In the context of the hotel industry, this theory implies that hotels must consider the impact of their operations on multiple stakeholders and those CE strategies can serve as a mechanism to align organizational goals with broader societal and environmental expectations (Freeman et al., 2021). In this framework, CE strategies such as redesigning, purchasing, production, reusing, consumption, and recovering are seen as actions driven by the need to meet stakeholder expectations for sustainability. For instance, the implementation of sustainable purchasing practices (CE2) may reflect a hotel's response to pressure from consumers and suppliers for more eco-friendly products. Similarly, adopting practices related to product redesign (CE1) and reusing (CE4) could signal a commitment to reducing environmental impacts in line with societal demands for reduced resource consumption and waste. These CE initiatives can improve environmental performance, enhance social performance, and contribute to economic performance, thus aligning the interests of various stakeholder groups. Complementing stakeholder

theory, *triple bottom line (TBL)* theory is another relevant framework that provides a comprehensive approach to understanding the multiple dimensions of performance linked to CE strategies. First introduced by John Elkington in the 1990s, TBL suggests that organizations should measure their success not only by financial performance but also by their contributions to environmental sustainability and social well-being (Elkington, 1994). The TBL framework's three pillars—people, planet, and profit—align well with the objectives of CE, making it an ideal theoretical lens for evaluating the environmental, social, and economic performance of hotels engaging in circular economy practices.

In the provided framework (Fig. 1), the different CE strategies (CE1 to CE6) are modeled as drivers of environmental (planet), social (people), and economic (profit) outcomes. For example, CE strategies like reusing (CE4) and recovering (CE6) are expected to yield significant environmental benefits by reducing resource depletion and waste. Similarly, social benefits (arise when CE strategies contribute to local employment, community well-being, or employee satisfaction through sustainable production and consumption practices (CE3 and CE5). Finally, the economic performance benefits from CE practices that enhance operational efficiency and reduce costs through the optimization of resource use and waste reduction (CE2: Purchasing, CE3: Production).

Together, ST and TBL provide a holistic framework for understanding how CE practices can be integrated into hotel operations to generate environmental, social, and economic benefits. By viewing CE not just as an operational necessity but as a strategic response to stakeholder expectations, hotels can better align their practices with broader sustainability goals. This theoretical integration highlights that the successful implementation of CE strategies requires considering the interests of diverse stakeholders and balancing the three pillars of the TBL. For instance, redesigning (CE1) hotel products or services with sustainability in mind may lead to positive environmental outcomes while also satisfying customer demand for green innovations (TBL: planet and people). Similarly, sustainable purchasing (CE2) can drive economic performance through cost savings and improved supplier relationships (TBL: profit). Social and environmental dimensions are also interconnected, as seen in the recovery and reuse (CE6, CE4) of hotel materials, which can enhance both social performance through community partnerships and environmental performance by reducing waste (Maldonado-Guzmán & Garza-Reyes, 2023; Marrucci et al., 2022).

The Link between Redesigning and Hotel Performance

Redesigning (CE1) is a core component of CE practices in the hotel industry, focusing on rethinking and reconfiguring the use of resources and processes to maximize sustainability. In the hotel sector, redesigning entails the development of innovative services, products, and operational practices that minimize resource consumption, reduce waste, and enhance overall efficiency. This strategic approach can significantly impact a hotel's environmental, economic, and social performance (Rocca et al., 2021). Redesigning involves a shift towards eco-efficient practices, such as the adoption of energy-efficient building designs, water-saving technologies, and the use of sustainable materials in construction and renovation. By rethinking the way hotels are built and operated, redesigning can contribute to significant reductions in greenhouse gas emissions, water and energy consumption, and overall environmental degradation. For instance, implementing sustainable architectural designs or eco-friendly room features like energy-efficient lighting, furniture made from recycled materials, or improved insulation systems, directly correlates with lower carbon footprints and reduced waste production (Fernando et al., 2023). Therefore, a focus on redesigning aligns with the environmental goals of the TBL framework, which prioritizes minimizing negative environmental impacts (Marrucci et al., 2022). Thus, H1 is formulated:

H1: The implementation of CE1 strategies in hotels positively influences environmental performance.

From an economic standpoint, redesigning can improve hotel performance through cost savings, operational efficiency, and enhanced market competitiveness. Redesigning processes can lower energy and resource costs, reduce waste disposal expenses, and extend the life cycles of products and materials used within hotel operations. Additionally, redesigning hotel services and products to meet the growing demand for sustainable tourism enhances the brand's reputation, which can attract eco-conscious guests willing to pay a premium for green accommodations. This ultimately translates to improved financial outcomes, directly contributing to the economic pillar of the TBL (Bag et al., 2023).

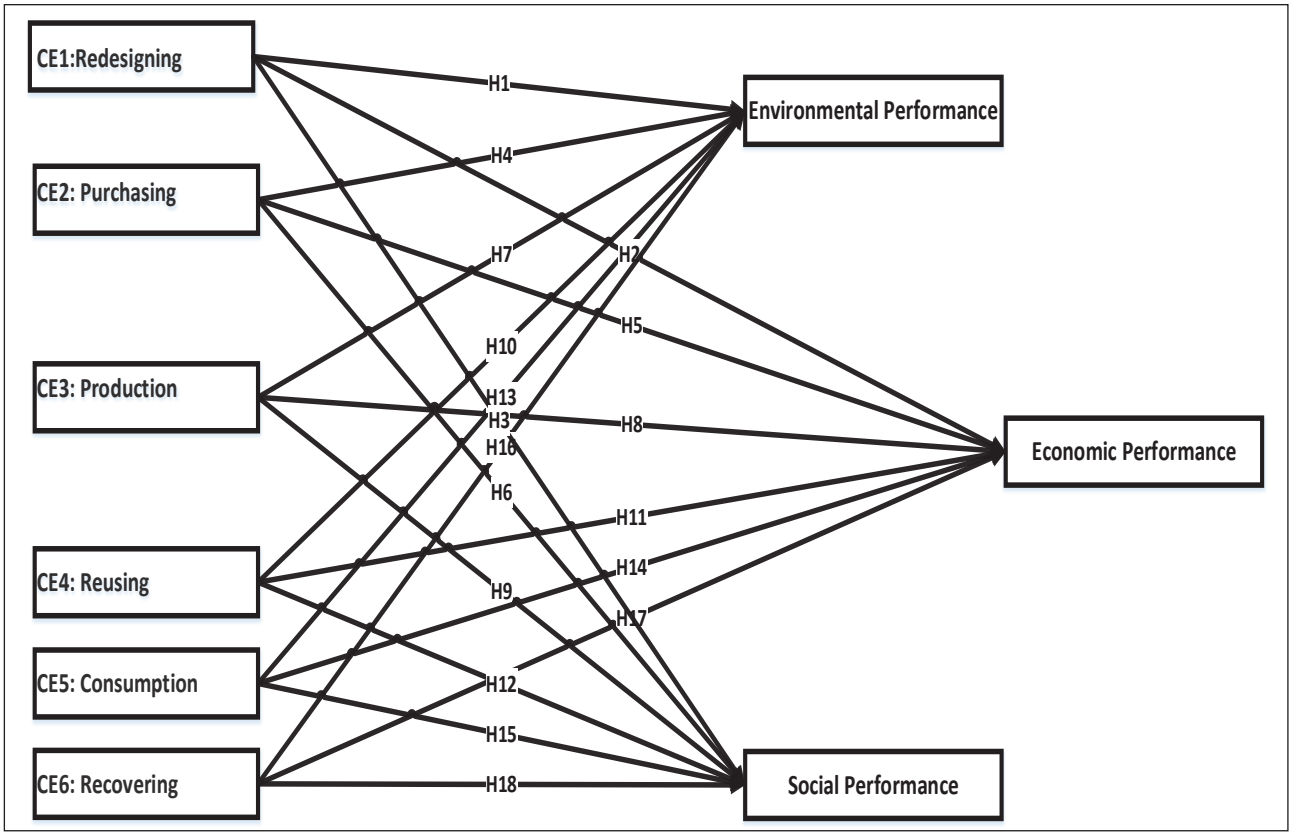

Fig. 1: The CE Model in Hotels

H2: CE1 strategies positively influence the economic performance of hotels.

Redesigning in hotels is also associated with improvements in social performance, particularly in terms of employee engagement, customer satisfaction, and community relations. Social sustainability, an integral part of the TBL, can be enhanced through the redesign of working environments, training programs, and services that promote well-being and inclusivity. Furthermore, the redesign of customer-facing services to prioritize sustainability can lead to greater guest satisfaction, as modern consumers are increasingly motivated by eco-friendly travel options. Social performance improvements also result from redesigning initiatives that enhance the hotel's contribution to local communities, such as sourcing materials from local, sustainable suppliers or incorporating cultural elements into hotel designs (Siddik et al., 2023).

H3: CE1 strategies positively influence the social performance of hotels.

The Link between Purchasing and Hotel Performance

Purchasing (CE2) revolves around the procurement of sustainable and resource-efficient products and services that minimize environmental impact. In the context of hotels, purchasing refers to the strategic acquisition of goods and materials that adhere to CE principles, such as using recycled or biodegradable materials, sourcing locally, and prioritizing suppliers with green certifications. This circular approach to purchasing has significant implications for the environmental, economic, and social performance of hotels (Khan et al., 2021). CE2 can greatly enhance the environmental performance of hotels. By sourcing eco-friendly products, hotels can reduce their carbon footprint and waste production. For instance, choosing suppliers that offer renewable or recycled materials for hotel construction and amenities, or purchasing energy-efficient appliances, contributes to lower energy use and waste. Furthermore, purchasing locally sourced goods can reduce transportation-related emissions, further decreasing the hotel's overall environmental impact. These practices align with CE principles that focus on resource efficiency and closing the loop of material flows, contributing to a hotel's environmental sustainability (Zaki, 2024).

Economically, CE2 can help hotels achieve cost savings and improve financial sustainability. While the upfront costs of sustainable products may sometimes be higher, long-term benefits can offset these initial investments. For instance, durable, high-quality goods reduce the frequency of replacements, thereby lowering long-term

expenditure. Purchasing energy-efficient equipment can reduce operational costs, especially in areas like electricity and water consumption. Additionally, aligning purchasing strategies with circular economy principles can improve a hotel's brand image, attracting a growing segment of eco-conscious travelers, which can lead to higher revenue and competitive advantage (Bittner, 2022). CE2 also plays a crucial role in enhancing the social performance of hotels. By prioritizing suppliers who uphold fair labor practices and contribute to local economies, hotels can strengthen community relations and promote social sustainability. Ethical purchasing decisions, such as sourcing from local or minority-owned businesses, create social value by supporting local economies and generating employment. Moreover, customers increasingly favor businesses that demonstrate a commitment to ethical and responsible sourcing, which can enhance a hotel's reputation and customer loyalty. Engaging in transparent purchasing practices also contributes to a hotel's social license to operate, fostering goodwill among both guests and stakeholders (Afum et al., 2023). Therefore, the developed hypotheses are:

H4: CE2 positively influence the environmental performance of hotels.

H5: CE2 positively affect the economic performance of hotels.

H6: CE2 positively influence the social performance of hotels.

The Nexus between Production and Hotel Performance

Production (CE3), refers to the processes involved in creating goods or services in a way that maximizes resource efficiency and minimizes environmental impact. For the hotel industry, production covers various activities such as food and beverage preparation, energy generation (e.g., solar power), waste management, and other operational processes that can be optimized for sustainability. Shifting toward circular production practices in hotels can enhance environmental, economic, and social performance by reducing resource use, minimizing waste, and contributing to overall operational efficiency (Costa et al., 2022). In hotels, CE3 can significantly improve environmental performance. For instance, hotels can adopt green energy solutions such as solar panels or other renewable energy systems to power their operations. Similarly, production processes like food preparation can be made more sustainable by minimizing food waste, composting organic materials, and sourcing ingredients from sustainable suppliers. By transitioning to eco-friendly cleaning products and using energy-efficient machinery, hotels reduce their carbon footprint and contribute to broader sustainability goals. CE3 is therefore closely linked to the goal of reducing the consumption of natural resources and the environmental impact of hotel operations (Marrucci et al., 2022). Economically, CE3 in hotels can lead to substantial cost savings and increased financial performance. By streamlining production processes to reduce energy consumption and minimize waste, hotels can cut down on operating costs. For example, reducing food waste lowers the cost of supplies, and using energy-efficient technologies decreases utility bills. In addition, the adoption of CE3 practices can enhance brand reputation, attracting eco-conscious guests and positioning the hotel as a leader in sustainability. This, in turn, can boost revenue by appealing to customers who prioritize sustainability in their purchasing decisions (Riggs et al., 2023).

The adoption of CE3 can also enhance the social performance of hotels. Hotels that invest in sustainable production often create a more responsible and ethical working environment for their employees. For instance, waste reduction practices and renewable energy use can improve workplace safety by minimizing exposure to harmful chemicals and reducing the physical strain of managing excessive waste. Additionally, implementing CE3 models helps foster relationships with local suppliers and communities by sourcing local goods and reducing environmental degradation. This strengthens the hotel's social responsibility profile, leading to improved stakeholder relations and a positive brand image in the eyes of both employees and guests (Muhammad Imran et al., 2023). Thus, the next hypotheses are developed:

H7: CE3 positively influence the environmental performance of hotels.

H8: CE3 positively affect the economic performance of hotels.

H9: CE3 positively influence the social performance of hotels.

Reusing and Hotel Performance

Reusing (CE4) emphasizes the repeated use of materials, products, or components in their original form rather than discarding them. This principle is particularly relevant to the hotel industry, where daily operations generate significant waste and require a continuous supply of products, such as furniture, linens, toiletries, and other consumables. CE4 in hotels can involve a wide array of actions, from refurbishing old furniture to offering guests reusable amenities, ultimately contributing to environmental sustainability, economic efficiency, and social responsibility (Fernando et al., 2023).

Reusing practices are one of the most effective ways hotels can reduce their environmental impact. By extending the life cycle of products and materials, hotels reduce the need for new resources, thereby decreasing their carbon footprint.

Reusing items such as linens, towels, or even furniture prevents waste from being sent to landfills and reduces the demand for raw materials required to produce new goods. Many hotels are now implementing linen and towel reuse programs, allowing guests to decide how frequently items are laundered, significantly saving water and energy. This focus on reuse directly aligns with the circular economy goal of minimizing resource consumption and environmental degradation (Khan et al., 2021).

Reusing materials and products can lead to substantial cost savings for businesses. By opting to repair or refurbish existing furniture, for example, hotels avoid the high costs associated with purchasing new items. Similarly, offering guests reusable items like water bottles, utensils, and containers reduces the need to continuously buy disposable versions, thus lowering procurement costs. Moreover, reusing practices can increase operational efficiency, as less waste means fewer disposal costs, and resources are used more sustainably. In addition to cost savings, implementing reuse strategies can enhance a business's marketability by appealing to eco-conscious guests, thereby potentially driving higher revenues (Saha et al., 2021).

The social performance benefits of reusing in hotels are multifaceted. Reusing practices reflect a hotel's commitment to sustainability, which resonates with guests and employees alike, fostering a culture of environmental responsibility. Guests are more likely to support businesses that demonstrate strong environmental values, and employees often feel a sense of pride in working for an organization that prioritizes sustainability. Furthermore, reusing programs such as partnering with local communities to donate gently used goods can strengthen a hotel's social engagement and corporate responsibility, enhancing its reputation as a socially responsible entity. This connection with the community contributes to building a positive brand image and customer loyalty (Zaki, 2024). Thus, the following hypotheses are established:

H10: CE4 positively influence the environmental performance of hotels.

H11: CE4 positively affect the economic performance of hotels.

H12: CE4 positively influence the social performance of hotels.

Consumption and Hotel Performance

Consumption (CE5) refers to reducing the number of materials consumed by rethinking the use of products and services, minimizing resource waste, and encouraging responsible consumption patterns. In the hotel industry, consumption primarily pertains to the use of energy, water, food, and other consumables during guest stays and hotel operations. Hotels, by nature, are resource-intensive, making consumption management critical for sustainability and operational efficiency. CE5 practices aim to optimize resource use by promoting mindful consumption patterns, reducing overconsumption, and reconfiguring service delivery (Marrucci et al., 2019).

Optimizing consumption through circular practices has a direct impact on the environmental performance of hotels. Hotels that adopt sustainable consumption strategies often focus on reducing energy, water, and food waste. Measures like energy-efficient lighting, water-saving fixtures, and food portion control systems all serve to minimize the environmental burden associated with hotel operations. By reducing resource use and limiting waste generation, hotels can significantly cut their carbon footprints and contribute to environmental conservation. For example, many hotels have implemented systems that monitor energy and water usage in real-time, allowing them to adjust consumption based on guest occupancy or seasonal demands. Similarly, managing food consumption by minimizing food waste (e.g., through better portion sizes, waste reduction, and composting) aligns with the CE principles (Ahmad et al., 2023; Salama et al., 2022).

Financially, reducing resource consumption translates to lower operational costs. Implementing consumption management practices can drive cost savings through reduced utility bills, waste disposal fees, and the need for fewer materials and resources. Hotels that consume less energy, water, and food are more efficient and can allocate saved funds to other areas of their business. For instance, by lowering electricity consumption, hotels reduce their dependency on energy suppliers and mitigate the risks associated with rising energy prices (Chabowski et al., 2023).

As well, promoting CE5 through sustainable offerings (such as eco-friendly amenities or reduced food waste programs) can appeal to environmentally conscious guests, creating a competitive edge in the market. Hotels can capitalize on these consumption efforts by marketing themselves as eco-friendly, which can, in turn, drive higher occupancy rates and increase guest satisfaction (Siddik et al., 2023). CE5 also benefit the social performance of hotels by aligning with broader sustainability goals and improving stakeholder relationships. Conscious consumption in hotels demonstrates a commitment to sustainable practices, which resonates with guests, employees, and the local community. Guests are increasingly looking for accommodations that align with their values of sustainability and environmental stewardship. As a result, responsible consumption practices can enhance a hotel's reputation and build trust with its clientele, leading to higher levels of guest satisfaction. In addition, involving employees in CE5 strategies (such as energy-

saving initiatives or waste reduction programs) can foster a sense of responsibility and pride within the workforce. This engagement can lead to higher employee morale and increased staff retention, contributing to a stronger organizational culture centered around sustainability (Yu et al., 2022). Thus, the following hypotheses are developed:

H13: CE5 positively influence the environmental performance of hotels.

H14: CE5 positively affect the economic performance of hotels.

H15: CE5 positively influence the social performance of hotels.

Recovering and Hotel Performance

Recovering (CE6) denotes the extraction of value from previously utilized waste materials and by-products, as opposed to their disposal in landfills. In the hospitality sector, this encompasses the reclamation of resources such as energy, water, and food waste, which can be repurposed or recycled. CE6 initiatives aim to minimize waste generation and reintegrate recoverable materials into operational processes, facilitating recycling and composting efforts (Jones & Comfort, 2020).

The implementation of CE6 strategies significantly enhances hotels' environmental performance by decreasing waste and resource dependency while lowering carbon footprints. Moreover, these recovery practices yield economic benefits by reducing resource procurement costs and waste disposal fees, thus improving profitability. By prioritizing sustainability, hotels can attract environmentally conscious guests, thereby enhancing competitiveness and fostering community relationships through collaborative recovery programs (Dey et al., 2022). Accordingly, the following hypotheses are settled:

H16: CE6 positively influence the environmental performance of hotels.

H17: CE6 positively affect the economic performance of hotels.

H18: CE6 positively influence the social performance of hotels.

METHODOLOGY

This study employed a quantitative survey methodology to assess the proposed research framework, utilizing a 5-point Likert scale to measure managers' perceptions across six independent variables of CE practices: CE1:CE6, comprising a total of 34 items, while the dependent factors of hotel performance consisted of 9 items. Furthermore, demographic variables such as gender, age, educational background, and professional experience were examined. CE was conceptualized as a multidimensional construct, incorporating six fundamental components or loops, as supported by the findings of many sources. The measurement of CE1 was derived from a 7-item scale established by (Dey et al., 2022; Zaki, 2024), while CE2 was evaluated using a 6-item scale devised by (Aryal, 2020). CE3 was assessed through a 6-item scale from (Bittner, 2022), and CE4 was evaluated based on a 6-item scale from (Dey et al., 2022). CE5 was measured using a 4-item scale developed by (Salesa et al., 2023), and CE6 was assessed using a 5-item scale from (Khan et al., 2021). Hotel performance was determined via a 9-question scale inspired by the methodologies of Zaki (2024) and Dey et al. (2022), where hotel executives rated their performance in relation to competitors on a scale ranging from 1 ('Very poor') to 5 ('Very good'). The research focused on 59 environmentally sustainable hotels in Saudi Arabia, selected from the ETIC Hotels database (ETIC Hotels, 2024), which included 22 five-star and 37 four-star establishments, predominantly located in the eastern region. A total of 295 questionnaires were disseminated, with each hotel receiving 5 copies. The research yielded 200 valid responses, resulting in a response rate of 68%. Data analysis was conducted utilizing PLS-SEM, adhering to the methodology outlined by (Hair et al., 2021), which is a well-regarded technique in the domains of tourism and hospitality research for the assessment of measurement models, structural models, and the testing of hypotheses. The summary statistics are provided in Table 1. A significant proportion of the respondents (62%) were male, with the predominant age demographic being individuals under 35 years, accounting for 50% of the overall sample.

Table 1: Participant's Profile

	No. of Respondents=200	Frequency	%
Gender	Female	75	38
	Male	125	62
Age	Less than 30	50	25
	31-35	50	25
	36 and more	100	50

	No. of Respondents=200	Frequency	%
Education	Intermediate	20	10
	2 years college	70	35
	University	80	40
	Master/PhD	30	15
Experience	≤5 years	100	50
	5-10	40	20
	11-15	50	25
	≥16 years	10	5
Managerial position	Manager	100	50
	Supervisor	100	50
Department	Reception	30	15
	Food production	35	17.5
	Restaurant	75	37.5
	Room service	40	20
	Accounting	10	5
	Maintenance	10	5

RESULTS

This research utilized PLS-SEM facilitated by Smart PLS 4 software to evaluate the proposed hypotheses. The PLS-SEM methodology enables researchers to manage multi construct models that incorporate various concepts, elements, and structural pathways, without being limited by specific assumptions regarding data distribution. This predictive variant of SEM emphasizes the estimation process during the assessment of the model (Sarstedt et al., 2022).

Measurement Model

The assessment of the reliability and validity of a measurement can be performed through the examination of internal consistency, convergent validity, and discriminant validity, which are widely acknowledged standards for this evaluation (Hair et al., 2021). To evaluate convergent validity, it is imperative that the factor loading values exceed 0.7, and the average variance extracted (AVE) must be greater than 0.5. For the assessment of discriminant validity, the square root of the AVE should exceed the correlation coefficients among the variables. With respect to reliability, a composite reliability value that exceeds 0.7 is deemed satisfactory. The findings presented in Table 2 illustrate the assessments of reliability and validity. Reliability testing encompassed both the outer loading values and the composite reliability (CR) values, while the AVE metric was employed for the evaluation of validity. The results demonstrate that all variables achieved outer loading and composite reliability values exceeding 0.7, thereby affirming the reliability of all indicators linked to these variables. Furthermore, the evaluation of the AVE values indicates that each variable surpasses the 0.5 criterion, thus substantiating the validity of both the variables and their corresponding indicators.

Table 2: Measurement Model

	Indicators	Estimate	α	CR	AVE	VIF
CE1	C1	0.80	0.89	0.92	0.53	2.221
	C2	0.85				
	C3	0.91				
	C4	0.76				
	C5	0.85				
	C6	0.81				
	C7	0.81				
CE2	C8	0.73	0.90	0.91	0.54	2.894
	C9	0.81				
	C10	0.99				

	Indicators	Estimate	α	CR	AVE	VIF
	C11	0.72				
	C12	0.90				
	C13	0.90				
CE3	C14	0.78	0.90	0.92	0.54	2.359
	C15	0.86				
	C16	0.93				
	C17	0.70				
	C18	0.91				
	C19	0.85				
CE4	C20	0.84	0.90	0.92	0.60	2.335
	C21	0.82				
	C22	0.83				
	C23	0.82				
	C24	0.99				
	C25	0.97				
CE5	C26	0.60	0.85	0.87	0.52	2.189
	C27	0.70				
	C28	0.84				
	C29	0.85				
CE6	C30	0.70	0.95	0.97	0.70	2.059
	C31	0.70				
	C32	0.70				
	C33	0.70				
	C34	0.79				
EP1	EP11	0.94	0.92	0.94	0.75	1.123
	EP12	0.94				
	EP13	0.96				
EP2	EP14	0.88	0.91	0.93	0.67	1.256
	EP15	0.85				
	EP16	0.92				
EP3	EP17	0.89	0.9	0.91	0.66	1.342
	EP18	0.86				
	EP19	0.88				

The measurement model (Table 2), encapsulates various factors and their factor loadings, while demonstrating robust reliability and validity through composite reliability (CR) and average variance extracted (AVE) metrics surpassing acceptable levels, alongside negligible common method bias indicated by variance inflation factors (VIF), thereby substantiating the model's integrity (Hair et al., 2019; Sarstedt et al., 2022).

Structural Model

Path analysis using *PLS-SEM* was performed (Fig. 2) to assess model hypotheses validity, with confirmatory factor analysis rigorously evaluated through path constraints, t-values, and p-values, revealing a sample of 200 participants exhibited satisfactory model fit indices, including a chi-square to degrees of freedom ratio ($\chi 2$ / df = 1.401), RMSEA of 0.064, and various comparative indices, collectively confirming the model's adequacy with an SRMR value of 0.078 (Henseler et al., 2015).

Hypotheses Testing

The results from the path analysis, as illustrated in Table 3 and Fig. 2, provide significant insights into the relationships between CE factors and hotel performance. The analysis confirms that CE1 has a notable positive influence on EP1 ($\beta = 0.280$, $p < 0.01$, $t = 4.93$, $f^2 = 0.132$), supporting (H1).

Similarly, CE1 exerts a significant effect on EP2 (β = 0.271, p < 0.01, t = 4.86, f² = 0.122), supporting (H2). In terms of EP3, CE1 also plays a significant role (β = 0.201, p < 0.01, t = 5.63, f² = 0.112), thus confirming (H3). This relationship is further reinforced by the R² value for EP1 (0.501) and its predictive relevance (Q² = 0.51).

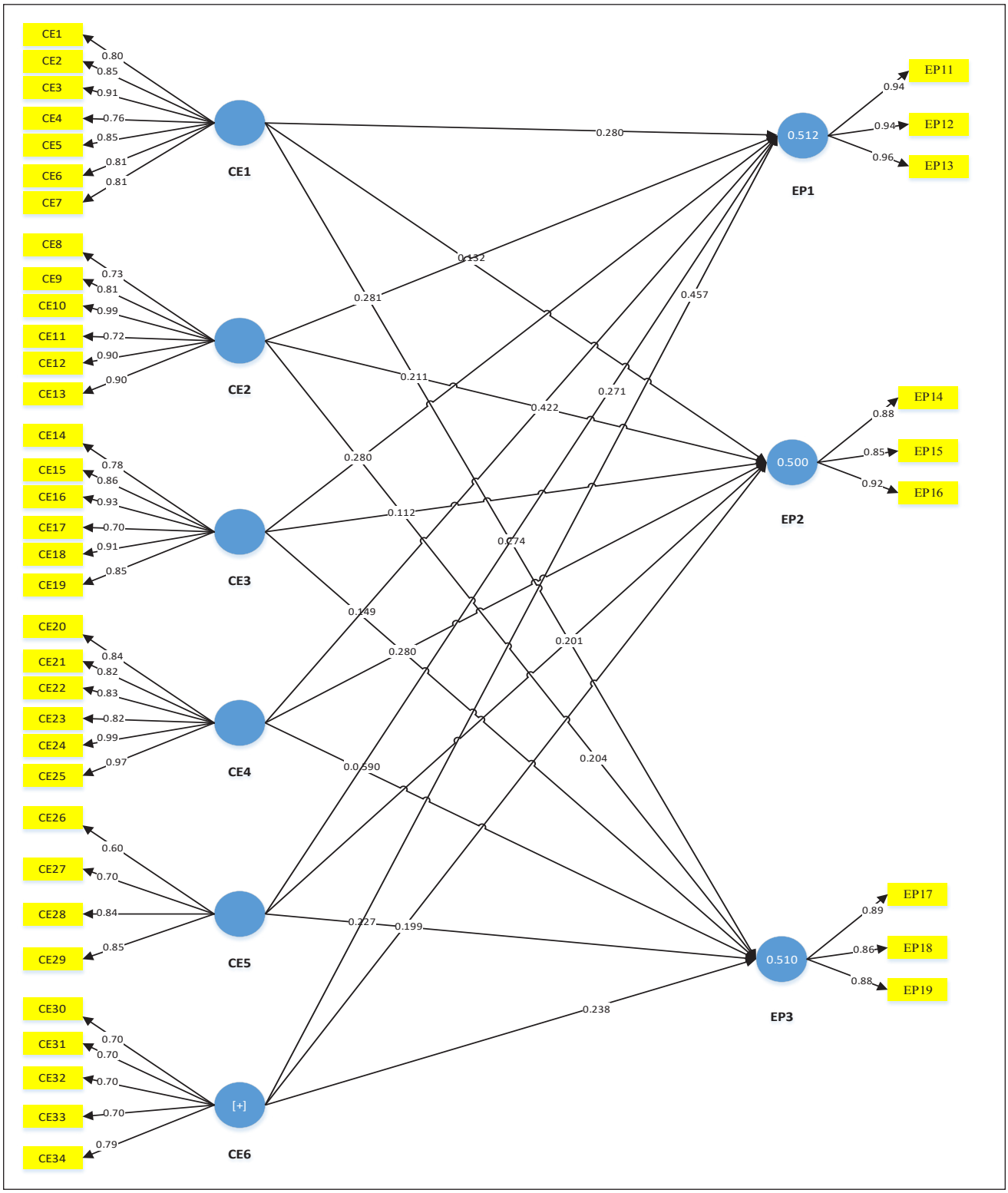

Fig. 2: Structural Model

Table 3: Hypotheses Analysis

H	Path Direction	β	P-Value	*t*-Value	F^2	R^2	Q^2	Decision
H1	CE1 -> EP1	0.280	0.001	4.93	0.132			Support
H2	CE1 -> EP2	0.271	0.000	4.86	0.122			Support
H3	CE1 -> EP3	0.201	0.001	5.63	0.112	EP1=0.501	0.51	**Support**
H4	CE2-> EP1	0.281	0.001	4.30	0.018			Support
H5	CE2 -> EP2	0.211	0.003	10.4	0.009			Support
H6	CE2-> EP3	0.204	0.001	9.11	0.010	EP2=0.518	0.50	**Support**
H7	CE3-> EP1	0.280	0.001	4.90	0.111			Support
H8	CE3-> EP2	0.112	0.000	4.80	0.124			Support
H9	CE3-> EP3	0.149	0.001	5.61	0.110			Support
H10	CE4-> EP1	0.422	0.001	4.30	0.019			Support
H11	CE4-> EP2	0.280	0.003	10.0	0.009			Support
H12	CE4-> EP3	0.590	0.001	9.19	0.010			Support
H13	CE5-> EP1	0.574	0.001	4.03	0.132			Support
H14	CE5-> EP2	0.201	0.000	4.06	0.122			Support
H15	CE5-> EP3	0.199	0.001	5.03	0.112			Support
H16	CE6-> EP1	0.227	0.001	4.10	0.018			Support
H17	CE6-> EP2	0.199	0.003	11.4	0.009			Support
H18	CE6-> EP3	0.238	0.001	9.18	0.010	EP3=0.517	0.51	**Support**

CE2 demonstrates a strong positive impact on EP1 ($\beta = 0.281$, $p < 0.01$, $t = 4.30$, $f^2 = 0.018$), supporting (H4). Additionally, CE2 significantly influences EP2 ($\beta = 0.211$, $p < 0.01$, $t = 10.4$, $f^2 = 0.009$), confirming (H5). For EP3, CE2 remains a significant predictor ($\beta = 0.204$, $p < 0.01$, $t = 9.11$, $f^2 = 0.010$), supporting (H6). The R^2 value for EP2 is 0.518, with a Q^2 value of 0.50, indicating strong predictive power.

The influence of CE3 on EP1 is also significant ($\beta = 0.280$, $p < 0.01$, $t = 4.90$, $f^2 = 0.111$), providing support for (H7). Similarly, CE3 significantly affects EP2 ($\beta = 0.112$, $p < 0.01$, $t = 4.80$, $f^2 = 0.124$), confirming (H8). Furthermore, CE3 has a substantial effect on EP3 ($\beta = 0.149$, $p < 0.01$, $t = 5.61$, $f^2 = 0.110$), thus supporting (H9).

For (H10), the relationship between CE4 and EP1 is strong ($\beta = 0.422$, $p < 0.01$, $t = 4.30$, $f^2 = 0.019$). Additionally, CE4 significantly impacts EP2 ($\beta = 0.280$, $p < 0.01$, $t = 10.0$, $f^2 = 0.009$), confirming (H11). CE4 also plays a critical role in influencing EP3 ($\beta = 0.590$, $p < 0.01$, $t = 9.19$, $f^2 = 0.010$), supporting (H12).

CE5 significantly influences EP1 ($\beta = 0.574$, $p < 0.01$, $t = 4.03$, $f^2 = 0.132$), confirming (H13). Furthermore, CE5 has a significant effect on EP2 ($\beta = 0.201$, $p < 0.01$, $t = 4.06$, $f^2 = 0.122$), supporting (H14). Similarly, CE5 positively impacts EP3 ($\beta = 0.199$, $p < 0.01$, $t = 5.03$, $f^2 = 0.112$), confirming (H15).

Lastly, CE6 shows a significant positive influence on EP1 ($\beta = 0.227$, $p < 0.01$, $t = 4.10$, $f^2 = 0.018$), supporting (H16). CE6 also significantly affects EP2 ($\beta = 0.199$, $p < 0.01$, $t = 11.4$, $f^2 = 0.009$), confirming (H17), and exerts a positive influence on EP3 ($\beta = 0.238$, $p < 0.01$, $t = 9.18$, $f^2 = 0.010$), supporting (H18). The R^2 value for EP3 is 0.517, with a Q^2 value of 0.51, further validating the model's predictive relevance. In summary, all hypotheses are supported, indicating that the CE factors (CE1 to CE6) positively and significantly influence hotel performance (EP1, EP2, and EP3). The high R^2 values for EP1 (0.501), EP2 (0.518), and EP3 (0.517) reflect the model's strong explanatory power.

DISCUSSIONS, CONCLUSION AND IMPLICATIONS

The findings from the current study highlight the substantial influence of CE practices on hotel outcomes (EP1 to EP3) in the Saudi Arabia green hotel sector. The results demonstrate that all six CE factors (CE1 to CE6) have significant positive effects on various dimensions of EP. These insights provide critical validation for the argument that the adoption of CE practices can significantly enhance environmental outcomes within the hospitality industry.

First, the consistent positive relationships between CE1 and the three performance dimensions suggest that

initiatives aimed at reducing resource consumption and promoting sustainability play a pivotal role in improving environmental, economic, and social performance. This finding aligns with previous research that emphasizes the importance of resource efficiency in reducing waste and environmental impact within hotel operations (Zaki, 2024). By focusing on resource optimization, hotels can achieve substantial gains in energy efficiency, water conservation, and waste reduction, thereby contributing to better overall environmental outcomes (Aryal, 2020).

The influence of CE2 on EP1, EP2, and EP3 further reinforces the importance of sustainable supply chain management. The results suggest that integrating CE principles into hotel operations practices, such as the use of eco-friendly products and responsible sourcing, has a significant impact on environmental performance. This finding is consistent with the growing recognition of the role that sustainable purchasing loop play in sustainability efforts, as they can either support or undermine broader environmental goals. By adopting purchasing approaches to sourcing and procurement, hotels can improve their environmental performance across a range of indicators, including waste management, carbon emissions, and resource use (Marrucci et al., 2019, 2022).

CE3's significant impact on EP1, EP2, and EP3 highlights the role of production techniques in driving sustainable outcomes. The findings suggest that hotels which invest in innovative solutions, such as smart energy systems and waste recycling technologies, are more likely to achieve higher levels of environmental performance. This is supported by the broader literature, which underscores the potential of technological innovations to transform industries and reduce environmental impact. By leveraging technology, hotels can streamline operations, reduce resource consumption, and minimize waste, thereby contributing to improved sustainability (Dey et al., 2022; Zaki, 2024).

The strong relationship between CE4 and EP1, EP2, and EP3 points to the importance of employee engagement and training related to reusing issue in achieving environmental goals. The results suggest that when hotel staff are educated and motivated to adopt recycling practices, there is a significant positive impact on environmental performance. This finding aligns with previous studies which have shown that employees play a crucial role in the successful implementation of sustainability initiatives. Hotels that invest in employee recycling plans, fostering a culture of environmental responsibility, are better positioned to meet their sustainability targets (Ajwani-Ramchandani et al., 2021; Fernando et al., 2023; Saha et al., 2021).

CE5 and its significant influence on EP outcomes emphasize the importance of resources partnerships in fostering sustainability. The results suggest that hotels that work closely with external stakeholders, such as local communities, environmental organizations, and government agencies, can achieve better environmental performance. This finding is consistent with the broader sustainability literature, which highlights the value of rationalizing resource consumption in addressing complex environmental challenges. By engaging with active partners, hotels can access new resources, knowledge, and innovations that can enhance their environmental efforts (Ahmed et al., 2023; Chabowski et al., 2023).

Finally, the significant impact of CE6 on EP1, EP2, and EP3 underscores the importance of monitoring and evaluating environmental performance through recovering initiatives. The findings suggest that hotels which regularly assess their environmental impact and adjust their recovery practices accordingly are more likely to achieve superior environmental outcomes (Jones & Comfort, 2020). This is supported by research that advocates for continuous improvement and feedback loops in sustainability efforts. By implementing robust reusage systems, hotels can track their progress, identify areas for improvement, and make data-driven decisions to enhance their environmental performance (Chowdhury et al., 2022). Overall, the results highlight the critical role that CE loops and performance monitoring play in achieving better environmental, economic and social outcomes. These insights have important implications for hotel managers, policymakers, and sustainability advocates seeking to promote greener practices within the hospitality industry. By adopting a comprehensive approach to CE, hotels can not only improve their performance but also gain a competitive edge in an increasingly sustainability-conscious market (Zaki, 2024).

This study enhances the understanding of CE in the hotel sector, focusing on hotel performance. It establishes significant correlations between six CE dimensions and various EP outcomes, affirming the importance of CE practices for sustainability in hospitality. This research expands existing theories on CE and sustainable development by demonstrating their applicability in service industries. Additionally, the study presents a novel framework assessing CE practices across six dimensions, facilitating a comprehensive investigation of CE in hospitality. This expands theoretical insights on operationalizing CE principles in service sectors and provides empirical support for the enhancement of sustainability through these principles. The research highlights the necessity of incorporating both internal and external factors into sustainability frameworks in the hospitality sector. Internal elements, such as production and reusage, are deemed equally important as consumerism and recovery, enriching theoretical models with complexity and interconnectivity.

Furthermore, the findings accentuate the significance of human capital in promoting CE, emphasizing employee commitment to green initiatives. This observation addresses previous gaps in CE literature by integrating social and managerial aspects into the discourse, fostering a more comprehensive theoretical understanding of CE.

The practical implications are significant for hotel industry managers and stakeholders. The findings indicate that adopting CE practices can substantially enhance environmental performance, presenting a competitive advantage in hospitality. This study provides actionable insights into CE practices that most effectively influence EP, urging managers to focus on resource optimization initiatives and partnerships with environmentally aligned suppliers. Such strategies are economically beneficial and align with consumer preferences for sustainable accommodations. By embracing innovative production technologies, hotels can further mitigate their environmental impact while enhancing operational efficiency. Finally, establishing robust systems to monitor environmental performance and employing data-driven decision-making are essential for refining sustainability practices.

LIMITATIONS

While this study offers significant insights, its limitations must be recognized. The focus on the Saudi Arabian hotel sector may not accurately reflect other regions or markets. Future research should pursue cross-country comparisons to evaluate the broader applicability of these findings. The reliance on manager survey data introduces potential bias. Self-reporting may lead to inaccuracies in measuring actual environmental performance. Future investigations should integrate objective data sources, such as third-party audits or real-time metrics, to validate the results. Moreover, this research presents a detailed analysis of CE practices across six dimensions, yet it does not thoroughly investigate the interdependencies among these dimensions.

REFERENCES

Abdou, A. H., Hassan, T. H., Salem, A. E., Elsaied, M. A., & Elsaed, A. A. (2022). Determinants and consequences of green investment in the saudi arabian hotel industry. *Sustainability*, *14*(24), 16905.

Afum, E., Issau, K., Agyabeng-Mensah, Y., Baah, C., Dacosta, E., Essandoh, E., & Agyenim Boateng, E. (2023). The missing links of sustainable supply chain management and green radical product innovation between sustainable entrepreneurship orientation and sustainability performance. *Journal of Engineering, Design and Technology*, *21*(1), 167-187.

Ahmad, F., Bask, A., Laari, S., & Robinson, C. V. (2023). Business management perspectives on the circular economy: Present state and future directions. *Technological Forecasting and Social Change*, *187*, 122182.

Ahmed, M., Aliane, N., Khababa, N., Abdou, M. Y. K., & Agina, M. F. (2023). Eco-innovation drivers and their impact on tourism and the hospitality business in Egypt. *Administrative Sciences*, *13*(7), 167.

Ajwani-Ramchandani, R., Figueira, S., Torres De Oliveira, R., & Jha, S. (2021). Enhancing the circular and modified linear economy: The importance of blockchain for developing economies. *Resources, Conservation and Recycling*, *168*, 105468.

Aryal, C. (2020). Exploring circularity: A review to assess the opportunities and challenges to close loop in Nepali tourism industry. *Journal of Tourism & Adventure*, *3*(1), 142-158.

Bag, S., Rahman, M. S., Srivastava, G., Kilbourn, P., & Mishra, N. (2023). Buyer-supplier partnerships and circular economy performance in food supply chains: Serial mediation by commitment contract and innovation performance. *Business Strategy and the Environment*, 1-18.

Ben Youssef, A., & Zeqiri, A. (2022). Hospitality industry 4.0 and climate change. *Circular Economy and Sustainability*, *2*(3), 1043-1063.

Bittner, N. (2022). *Circular economy and the hospitality industry: An examination of the circular economy and its barriers in the hospitality sector in the Netherlands and Indonesia* (M.Sc. Sustainable Entrepreneurship, University of Groningen).

Bowen, R., Dowell, D., & Morris, W. (2023). Hospitality SMEs and the circular economy: Strategies and practice post-COVID. *British Food Journal*, *126*(1).

Chabowski, B. R., Gabrielsson, P., Hult, G. T. M., & Morgeson, F. V. (2023). Sustainable international business model innovations for a globalizing circular economy: A review and synthesis, integrative framework, and opportunities for future research. *Journal of International Business Studies*.

Chowdhury, S., Dey, P. K., Rodríguez-Espíndola, O., Parkes, G., Tuyet, N. T. A., Long, D. D., & Ha, T. P. (2022). Impact of organisational factors on the circular economy practices and sustainable performance of small and medium-sized enterprises in Vietnam. *Journal of Business Research*, *147*, 362-378.

Costa, B., Rodrigues, S., Silva, C., & Pacheco, M. (2022). Circular economy in the Portuguese hotel industry - an empirical overview. *International Conference on Tourism Research*, *15*(1), 65-73.

Dey, P. K., Malesios, C., Chowdhury, S., Saha, K., Budhwar, P., & De, D. (2022). Adoption of circular economy practices in small and medium-sized enterprises: Evidence from Europe. *International Journal of Production Economics*, *248*(108496), 1-19.

Elkington, J. (1994). Towards the sustainable corporation: Win-win-win business strategies for sustainable development. *California Management Review*, *36*(2), 90-100.

ETIC Hotels. (2024). *Ethical and sustainable hotels in Saudi Arabia*. Retrieved from https://etichotels.com/saudi-arabia

Ferasso, M., Beliaeva, T., Kraus, S., Clauss, T., & Ribeiro-Soriano, D. (2020). Circular economy business models: The state of research and avenues ahead. *Business Strategy and the Environment*, *29*(8), 3006-3024.

Fernando, Y., Shaharudin, M. S., & Abideen, A. Z. (2023). Circular economy-based reverse logistics: Dynamic interplay between sustainable resource commitment and financial performance. *European Journal of Management and Business Economics*, *32*(1), 91-112.

Freeman, R. E., Dmytriyev, S. D., & Phillips, R. A. (2021). Stakeholder theory and the resource-based view of the firm. *Journal of Management*, *47*(7), 1757-1770.

Gedam, V. V., Raut, R. D., de Sousa Jabbour, A. B. L., Tanksale, A. N., & Narkhede, B. E. (2021). Circular economy practices in a developing economy: Barriers to be defeated. *Journal of Cleaner Production*, *311*(127670), 1-15.

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). An Introduction to Structural Equation Modeling. In J. F. Hair, G. T. M. Hult, C. M. Ringle, M. Sarstedt, N. P. Danks, & S. Ray, *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R* (pp. 1-29).

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115-135.

Jones, P., & Comfort, D. (2020). The COVID-19 crisis and sustainability in the hospitality industry. *International Journal of Contemporary Hospitality Management*, *32*(10), 3037-3050.

Jones, P., & Wynn, M. G. (2023). The circular economy and natural capital in the tourism and hospitality industry. *Circular Economy*, *1*(1), 1-12.

Khan, S. A. R., Ponce, P., Thomas, G., Yu, Z., Al-Ahmadi, M. S., & Tanveer, M. (2021). Digital technologies, circular economy practices and environmental policies in the era of COVID-19. *Sustainability*, *13*(22), 12790.

Maldonado-Guzmán, G., & Garza-Reyes, J. A. (2023). Beyond lean manufacturing and sustainable performance: Are the circular economy practices worth pursuing? *Management of Environmental Quality: An International Journal*, *34*(5), 1332-1351.

Marrucci, L., Daddi, T., & Iraldo, F. (2019). The integration of circular economy with sustainable consumption and production tools: Systematic review and future research agenda. *Journal of Cleaner Production*, *240*, 118268.

Marrucci, L., Daddi, T., & Iraldo, F. (2022). Do dynamic capabilities matter? A study on environmental performance and the circular economy in European certified organisations. *Business Strategy and the Environment*, *31*(6), 2641-2657.

Martins, C. S. (2021). *Circular economy in the hospitality industry: Awareness and implementation in Europe* (M.Sc., Catholic University of Portugal). Retrieved from http://hdl.handle.net/10400.14/36860

Muhammad Imran, T., Yusliza, M. Y., Ngah, A. H., & Muhammad Asif Khan, K. (2023). Mapping the link between CSR and sustainability performance through GHRM practices in hotel industry. *Journal of Cleaner Production*, *429*(139258), 1-13.

Nayal, K., Raut, R. D., Mangla, S. K., Kumar, M., Tuček, D., & Gavurova, B. (2023). Achieving market performance via industry 4.0 enabled dynamic marketing capability, sustainable human resource management, and circular product design. *Industrial Marketing Management*, *115*, 86-98.

Neufeld, H., Martinez, G. S., Olhoff, A., Knudsen, C. M. S., & Dorkenoo, K. E. (2018). *The Adaptation Gap Report 2018. United Nations Environment Programme (UNEP), Nairobi, Kenya* (p. 105). Retrieved from https://www.unenvironment.org/resources/adaptation-gap-report

Nisar, Q. A., Haider, S., Ali, F., Naz, S., & Ryu, K. (2021). Depletion of psychological, financial, and social resources in the hospitality sector during the pandemic. *International Journal of Hospitality Management*, *93*, 102794.

Riggs, R., Roldán, J. L., Real, J. C., & Felipe, C. M. (2023). Opening the black box of big data sustainable value creation: The mediating role of supply chain management capabilities and circular economy practices. *International Journal of Physical Distribution & Logistics Management*, *53*(7/8), 762-788.

Rocca, R., Sassanelli, C., Rosa, P., & Terzi, S. (2021). Circular economy performance assessment. In P. Rosa & S. Terzi (Eds.), *New Business Models for the Reuse of Secondary Resources from WEEEs: The FENIX Project* (pp. 17-33). Cham.

Saha, K., Dey, P. K., & Papagiannaki, E. (2021). Implementing circular economy in the textile and clothing industry. *Business Strategy and the Environment*, *30*(4), 1497-1530.

Salama, W., Nor El Deen, M., Albakhit, A., & Zaki, K. (2022). Understanding the connection between sustainable human resource management and the hotel business outcomes: Evidence from the green-certified hotels of Egypt. *Sustainability*, *14*(9), 5647.

Salesa, A., León, R., & Moneva, J. M. (2023). Airlines practices to incorporate circular economy principles into the waste management system. *Corporate Social Responsibility and Environmental Management*, *30*(1), 443-458.

Sarstedt, M., Hair, J. F., Pick, M., Liengaard, B. D., Radomir, L., & Ringle, C. M. (2022). Progress in partial least squares structural equation modeling use in marketing research in the last decade. *Psychology & Marketing*, *39*(5), 1035-1064.

Shehri, T. A., Braun, J. F., Howarth, N., Lanza, A., & Luomi, M. (2023). Saudi Arabia's climate change policy and the circular carbon economy approach. *Climate Policy*, *23*(2), 151-167.

Siddik, A. B., Yong, L., & Rahman, M. N. (2023). The role of Fintech in circular economy practices to improve sustainability performance: A two-staged SEM-ANN approach. *Environmental Science and Pollution Research*, *30*(49), 107465-107486.

Yu, Z., Khan, S. A. R., & Umar, M. (2022). Circular economy practices and industry 4.0 technologies: A strategic move of automobile industry. *Business Strategy and the Environment*, *31*(3), 796-809.

Zaki, K. (2024). Enabling hotel circularity via Industry 4.0 innovations for enhanced hotel performance: Insights from Saudi Arabia and Egypt. *Journal of Hospitality and Tourism Insights*. doi:https://doi.org/10.1108/JHTI-03-2024-0223