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ORIGINAL ARTICLE

# Boost effect of sustainable practices and relational innovation on value co-creation and brand equity: outcomes of hotel size moderation

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**Abstract**
The aim of this paper is to study the impact of sustainable practices and relational innovation on guests' perception of value co-creation and brand equity. Moreover, the existence of differences in the proposed relationships is analyzed by employing hotel size as a moderator. A sample of 391 hotel guests was collected utilizing a structured questionnaire. The relationships between the variables were examined using structural equation modeling. The results revealed the boosting effect of sustainable practices and relational innovation on value co-creation. In addition, it can be observed how value co-creation and brand equity enhance guests' response to revisit intention.

**Keywords** Sustainable practices · Relational innovation · Value co-creation · Brand equity · Revisit intention · Hotel size

## Introduction

The constant instability provoked by a global pandemic, climate change and financial crises has indisputably and drastically modified companies' modus operandi (Su 2022). The service industry, particularly tourism and hospitality, has been postulated as being among those affected to a higher degree (Gössling et al. 2021). Companies' previously assumed goals for satisfying needs and gaining profit are significantly affected by the necessity to contribute to sustainable advances and the fulfillment of sustainable development goals defined in the Agenda 2030 (UN 2015). Moreover, companies' value offer is significantly affected by the active role of current consumers (Vega-Vázquez et al. 2013), who demand superior value at all levels of service delivery (González-Mansilla et al. 2019; Font et al. 2021). As expected, these significant shifts call on practitioners, policymakers and scholars to find new solutions to address current issues and help improve company resilience, especially in the area of company-customer relationships (Field et al. 2021; Gössling et al. 2021; Ostrom et al. 2021).

On the one hand, sustainability practices have been considered one of the key strategic instruments that contribute to the economic development of organizations and their being better able to adapt to the rapidly changing environment (Yu et al. 2021). Traditionally being approached from an environmental perspective (Zhu et al. 2021), this concept has acquired a broader and more global vision in recent years. Elkington (1997) defines sustainability under the triple bottom line (TBL) umbrella, supported by three main pillars: the social, environmental, and economic. Recent studies indicate that the company's sustainable practices can influence customers' perception of an organization, especially when actions linked to the three dimensions of TBL are included (Justavino-Castillo et al. 2023). Therefore, this paper attempts to assess consumer perception of companies' sustainable practices from the TBL perspective in the hospitality context, examining the effect these practices trigger in relevant marketing variables (Yousaf 2021; Bordian et al. 2023).

On the other hand, innovation is another relevant variable that organizations can rely on to achieve competitive advantages over competing companies (Marín-García et al. 2020). Technological development has provided new ways

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for stakeholders to relate to each other, where each participant has tangible and intangible resources that allow them to assume different roles in the value chain (Vargo and Lusch 2017). Given this new scenario, a novel line of research based on the relationship between companies and their customers has emerged, called "relational innovation" (Ganesan et al. 2009). However, the study of relational innovation in the tourism sector is scarce and mainly focuses on managers' perspectives (Gil-Saura et al. 2019). Furthermore, the emergence of disruptive innovations within the hospitality and tourism accommodation industry, such as sharing economy models (e.g. Airbnb), requires the identification of the main variables influencing guest behavior towards hotels (Yoo and Yoon 2022). Hence, this study aims to observe relational innovation and its effect on other marketing-related variables from the perspective of hotel guests.

Furthermore, recent literature has suggested a twofold research priority in service industries. On the one hand, Vargo and Lusch (2017) and Vargo et al. (2020) prioritize extending the knowledge on applying a service-dominant logic to social and ecological sustainability. On the other hand, Field et al. (2021) and Ostrom et al. (2021) focus scholars' attention on behavioral approaches that might encourage customers to engage in sustainability efforts in service industries. All the authors agree that adoption of the service-dominant logic (Vargo and Lusch 2004), where value is co-created with customers and for customers, is crucial in company–customer interaction (Prahalad and Ramaswamy 2004) and essential in designing sustainable service ecosystems (Field et al. 2021). In this line, the literature calls for further research to better understand the co-creation context and to identify its main drivers (Haverila et al. 2022).

Additionally, brand equity perceived by customers is considered by the company as an important intangible asset able to provide additional service value (González-Mansilla et al. 2019; Ruan and Zhang 2022). At the same time, guests' revisit intention represents clients' commitment to return to a place consistently in the future (Hasan and Rahman 2023) and their satisfaction with the value delivered by the company (Kim et al. 2009; Rasoolimanesh et al. 2023). However, debate is still open on the antecedents that lead to higher brand equity and positive revisit intention, especially in the sustainability context (Moise et al. 2019; Yu et al. 2021; Hasan and Rahman 2023; Bordian et al. 2023). Besides, research has traditionally focused on big hotels, being small establishments widely neglected (Rasoolimanesh et al. 2023).

According to all of this, moving towards sustainable and innovative actions and behaviors involves a set of decisions influenced by attitudinal, normative and perceived control beliefs as proposed by the theoretical model of planned behavior (TPB) developed by Ajzen (1991). This theoretical model is taken as a conceptual framework in this paper to enhance the understanding of the role of external elements acting on the consumer and the effect of these on the process that leads to changes in behavior towards sustainability and innovation from the point of view of psychological processes.

Consequently, in response to the mentioned research calls, firstly, this study explored how consumers perceive the impact of sustainable practices and relational innovation on value co-creation and brand equity. Secondly, the present research tests the impact of value co-creation on customer brand equity and revisit intention. Finally, to enhance the utility of the study from theoretical and practical perspectives, this paper analyzes possible differences in relationships between proposed variables based on hotel size (classified by number of rooms). The results will provide practitioners with information that might help to better adapt the company to the current unstable environment, enhance competitive advantages, and understand and improve customer relationships.

## Theoretical conceptualisation and hypotheses

### Theory of planned behavior

Since this work focuses on the analysis of hotel guest perceptions, the theoretical basis for this study is grounded on the Theory of Planned Behavior proposed by Ajzen (1991). This approach is a theoretical framework widely used to understand and predict human behavior, especially in contexts related to decision-making and the adoption of specific behaviors. The TPB is based on the idea that people make rational and deliberate decisions about their actions, and that these decisions are influenced by three types of beliefs: attitudinal, normative, and perceived control.

First, attitudinal beliefs refer to a person's subjective opinions about a particular behavior (Ajzen 1991). They include positive or negative evaluations about the consequences of performing that action. For example, if a person perceives that adopting sustainable practices in a hotel will lead to environmental, economic, or social benefits, he or she is more likely to have a positive attitude toward that behavior. Second, normative beliefs involve perceptions of social pressure to perform or not perform a specific behavior. These may arise from the influence of important people in one's life (such as family, friends, or colleagues) or from broader social norms (Ajzen 1991). If a person perceives that his or her family, friends or society in general support the adoption of sustainable practices in hotels, he or she is more likely to feel socially obligated to follow that behavior. Third, perceived control focuses attention on a person's perception of the presence of factors that facilitate or hinder the performance of a behavior (Ajzen 1991). These may include resources, skills, opportunities, and external barriers. A customer's belief that he or she has the knowledge and resources to implement sustainable practices in a hotel can be linked to the customer's perception of greater control over his or her ability to do so.

Placing this theoretical model in the context of this study, i.e., hotels, and the main variables on which this work relies, relational innovation, sustainability, value co-creation, and brand equity, the application of the TPB would involve examining how guests' attitudes toward sustainability, social influences, and perceived control affect their hotel choice behavior and brand perception. That is, if a hotel implements sustainable practices (such as recycling, energy saving, use of environmentally friendly materials), consumers may develop a more positive attitude toward that hotel because of its commitment to sustainability (Ruiz-Molina et al. 2023). In addition, if they perceive that their friends or family value sustainability and if they believe they have the control to choose hotels that follow sustainable practices, they are more likely to choose that hotel and perceive its brand as more valuable. Thus, the TPB provides a useful framework for understanding how perceptions and social influences affect behavioral decisions and, ultimately, the perceived value of a hotel brand in relation to its commitment to sustainability.

## Sustainable practices

In recent years, companies and society have acquired a major interest in sustainability (Yu et al. 2021). This interest is manifested by the increasing concern about the challenges and problems that societies, environments and economies face (Elkhwesky et al. 2022) and by the temporal and spatial dimensions these threats have acquired. Sustainability has become a vital strategic objective for tourist destinations and the hotel industry around the world, whose purpose is to protect the environment and facilitate social inclusion (Zhu et al. 2021; Justavino-Castillo et al. 2023), as well as the differentiation of businesses from competing companies (Yu et al. 2021).

Currently, the three main pillars of sustainability which organizations must rely on are social, economic and environmental development. This triple helix, coined by Elkington (1997) as the triple bottom line (TBL).). Traditionally, sustainable practices were addressed only by retaining the environmental notion of sustainability. However, the TBL takes a step forward by broadening the traditional view of sustainability and including in its theoretical reasoning both the social, economic and environmental dimensions. In addition, this new line of study shows that the impact of sustainable practices on other variables such as value co-creation or brand equity can improve the competitiveness of hotels by attracting market segments sensitive to sustainability, which could increase their market share and profitability in the long term (Font et al. 2021; Bordian et al. 2023). In addition, these new insights point out that sustainable practices can reduce operating costs through energy efficiency and waste management, which in turn can improve hotels' profit margins in a competitive market.

Although sustainable practices in the tourism sector are not linked to short-term economic benefits, companies can achieve higher social and environmental benefit that leads to economic performance in the long-term perspective (Shi and Tsai 2020). Environmental and social protection by hotels can be reflected by attracting a large number of guests interested in these practices, thus allowing companies to maintain competitiveness in the market (Shi and Tsai 2020).

## Relational innovation

Innovation refers to implementing novel ideas within an organization (Wang and Tsai 2014). However, in the last two decades, while numerous studies have tried to shed light on the nature of this concept, they encounter great difficulties when agreeing on the content and dimensionality of this construct (Marín-García et al. 2020). In 2002, the United Nations Industrial Development Organization (UNIDO) identified four main approaches to understanding innovation: product innovation, process innovation, organizational innovation, and value chain innovation.

In the tourism sector, innovation has traditionally been analyzed from a technological perspective; however, some studies indicate that innovation goes beyond technology, acquiring a broader and more global approach (Mattsson and Orfila-Sintes 2014). This more general approach is also nourished by new ideas supported by marketing and profitably innovative practices for organizations (Mattsson and Orfila-Sintes 2014). The implementation of these new practices in companies is vital if they want to differentiate themselves from their competitors, especially in the hotel sector, which is characterized by operating in highly competitive environments where its commercial offer is homogeneous for most hotel accommodation (Xiang et al. 2015). Innovation allows companies to differentiate themselves from their competitors, improve operational efficiency and increase customer satisfaction (Grissemann et al. 2013).

In the hospitality context, relational innovation plays a key role in enhancing brand equity and co-creating value (Yen et al. 2020). This form of innovation focuses on developing strong and meaningful relationships with customers, transcending conventional business transactions to establish emotional and trusting bonds. By fostering continuous interaction and active feedback with guests, hotels have the ability to adapt their services and experiences to meet changing market needs and expectations. This dynamic relationship not only strengthens brand perception, but also creates opportunities for value co-creation (Bordian et al. 2023). Collaboration between the hotel and its customers in creating personalized experiences not only leads to greater customer satisfaction, but also provides a distinctive competitive advantage. In this sense, relational innovation emerges as an essential catalyst to drive both the strengthening of brand equity and the generation of shared value in the hotel industry.

Therefore, this study explores how the strategic application of relational innovation can optimize business performance and enhance customer experience in the hotel context, thus offering a valuable contribution to the field of marketing analytics.

## Value co-creation

The evolution of the dominant logic in recent decades from the good-based to the service-dominant logic (SDL) (Vargo and Lusch 2004; 2017) has introduced a new concept of value co-creation (VCC) to the marketing literature. Hence, due to the service nature of the hospitality industry, value co-creation has experienced a research boom in this area (e.g., Santos-Vijande et al. 2018; González-Mansilla et al. 2019; Yen et al. 2020; Font et al. 2021; Bordian et al. 2023). Through value co-creation, SDL declares that value is created by all stakeholders (Vargo and Lusch 2004). Even more, "*firms make value propositions, but value can only be determined by the customer*" (Font et al. 2021, p. 2), as it is created in use and delimited to the context where the value is consumed (Font et al. 2021). Moreover, today's customers are indeed more informed, educated and selective, and demand greater value from companies (Vega-Vázquez et al. 2013; Ruiz-Molina et al. 2023). Thus, it is in the company's interest to acknowledge customers as value-creating partners (González-Mansilla et al. 2019; Font et al. 2021). In this sense, the value co-creation process is postulated as an instrument that helps companies deliver the end product or service adapted to their consumer's needs in collaboration with their clients (Haverila et al. 2022).

There are different methods for assessing consumer-based value co-creation. This study applies the DART model (Prahalad and Ramaswamy 2004; Albinsson et al. 2016; González-Mansilla et al. 2019) to evaluate the effectiveness of interaction between the company and clients. The DART model identifies the dimensions of dialogue, access, risk and transparency (DART) as crucial elements of value co-creation (Prahalad and Ramaswamy 2004). The first component, dialogue, embraces interaction, understanding, willingness to act for the common good and exchange of information and knowledge (Albinsson et al. 2016). The second component, accessibility, "*facilitates dialogue and requires firms to optimize when, where, and how consumers are provided with the opportunity to co-create value with the provider*" (Albinsson et al. 2016, p. 43). The third DART component, risk, is understood as a company's obligation to inform the consumers of the costs and benefits of their contributions and potential risks of services and products (Albinsson et al. 2016), which is especially relevant overall after the global pandemics. Finally, the last component, transparency, means the openness of the company's information and operation exchange (Albinsson et al. 2016). Therefore, the DART model supports the interactive, collaborative nature of the value co-creative process between the company and their clients.

However, new global issues have arisen, and lately, Vargo and Lusch (2017) and Vargo et al. (2020) have urged others to expand the body of knowledge of SDL in the new relevant area of social and ecological sustainability. Despite several recent attempts (e.g. Font et al. 2021; Liu et al. 2022; Bordian et al. 2023), little is known about the implications of SDL in this field. In their study, Font et al. (2021) applied a multi-method user-centered process to study sustainable value propositions perceived by stakeholders of hospitality companies. At the same time, Bordian et al. (2023) attempted to empirically test value co-creation impact on the consumer-related variables in a sustainability setting. However, there is still a need to extend the understanding of how value co-creation is boosted and what its application consequences are, especially in a sustainability-related context (Vargo et al. 2020; Field et al. 2021; Ostrom et al. 2021).

Sustainable practices improve consumers' perception of the brand, positively influencing their willingness to collaborate in value creation (Chih et al. 2019; Yousaf 2021). This is because today's consumers increasingly value sustainability as a key attribute in their purchasing decisions, which aligns with the behavioral attitude dimension of the Theory of Planned Behavior. Furthermore, by integrating sustainability into their operations, hotels can differentiate themselves from their competitors in monopolistic competitive markets, where many organizations pursue a specific market segment. This differentiation can not only increase market share but also profit margins, as consumers are willing to pay more for services they consider sustainable.

Empirical evidence shows that implementing innovative and sustainable actions in hospitality influences clients' willingness to collaborate with the company (Chih et al. 2019; Yousaf 2021). It is also explained by the increasing requirement to reduce companies' pollution, insistently demanded by society (Moise et al. 2019). Furthermore, Chih et al. (2019) pointed out that value creation from an environmental notion involves exchanging environmental ideas between customers and the company. In this sense, this participation can be established in the production and consumption stage, thus improving these processes through value co-creation (Yousaf 2021). At the same time, Yang and Lin (2020) and Bordian et al. (2023) state that to achieve greater success in implementing sustainable practices, companies must motivate interested parties to develop ideas that add value and improve these practices. Finally, recent studies have revealed that corporate social responsibility represented by sustainable initiatives influences green purchase behavior (Liu et al. 2022) and customer trust and loyalty (Iglesias et al. 2020) by encouraging consumers' participation in value co-creation.

All in all, the first hypothesis of this study proposes a positive relationship between sustainable practices and VCC, supported by the idea that, by adopting sustainable practices, hotels not only respond to consumer expectations but also foster an environment of collaboration and transparency, components that are essential for value co-creation (Liu et al. 2022). This theoretical argument is supported by the understanding that sustainable practices act as a catalyst for greater consumer engagement.

Therefore, based on all the above, the first hypothesis of this research is:

**H1** Sustainable practices positively impact value co-creation.

Empirical evidence suggests that relational innovation has a significant impact on value co-creation within the hotel industry (Yen et al. 2020), a claim that is supported not only by previous observations in the literature but also by sound theoretical logic derived from the characteristics of a monopolistic competitive market. Relational innovation is defined as the adoption of new practices that enhance and personalize the relationship between hotels and their customers, facilitating more meaningful and personalized interactions (Ganesan et al. 2009). This definition underscores the importance of continually adapting and evolving customer engagement strategies to maintain a competitive advantage (Gil-Saura et al. 2019). From the perspective of a monopolistic competitive marketplace, where numerous hotels compete to capture the attention and loyalty of customers by offering unique differentiators, relational innovation becomes a critical mechanism for improving market share and profit margins (Yen et al. 2020). By implementing relational innovation practices, hotels can not only differentiate themselves from their competitors, but also create richer, more personalized experiences for customers, which directly contributes to value co-creation. This focus on personalization and continuous improvement in customer relationships is critical in a competitive environment, as consumers tend to gravitate towards brands that offer unique and memorable experiences.

In addition, some scholars detected that co-creation directly or indirectly impacts service innovation (e.g., Santos-Vijande et al. 2018), including sustainability and innovation (Chang 2019; Yousaf 2021). However, other authors fixed their objectives on studying the effect of the company innovativeness on value co-creation (e.g., Clauss et al. 2018; Yen et al. 2020). In particular, Yen et al. (2020) argue that company innovativeness perceived by customers positively affects value co-creation, thus stimulating their motivation to engage in value co-creation activities. Moreover, previous research argues that consumers do not feel up to participate in value co-creation if they feel forced or coerced by the company, so that manager should be innovative in their fashion to request consumer contribution to value co-creation, e.g. offering some benefits in return (Haverila et al. 2022).

Notwithstanding, in tourism-related literature, the effect between relational innovation, focused on enhancing company-consumer relationships, and value co-creation have remained practically unstudied. Therefore, taking into account the DART background of value co-creation, it is suggested that relational innovation can facilitate the value co-creation process between hospitality companies and their clients, thus leading to the second hypothesis:

**H2** Relational innovation positively impacts value co-creation.

## Brand equity

Brand equity is aligned with the growing trend in organizations of placing the consumer as the cornerstone of their business. In this sense, brand equity is associated with the set of decisions made by companies whose purpose is to influence consumer perception and behavior (González-Mansilla, et al. 2019). Under this premise, this concept has become a valuable intangible asset for organizations and is capable of providing added value to the service (Ruan and Zhang 2022).

Sustainable practices support hotel companies to differentiate themselves from one another by playing a key role in brand perception, aligning the image of hotels with the values of consumers who appreciate sustainability (Yu et al. 2021). This approach not only enhances brand loyalty and appeals to a specific market segment, but can also increase the hotel's market share and profit margins. In addition, relational innovation, through the implementation of new practices, improves interactions with customers and provides personalized experiences that reinforce the perception that customers develop of hotels. In turn, value co-creation, which involves meaningful and collaborative interactions between hotels and their customers, plays a vital role in increasing brand equity (Bordian et al. 2023), improving customer satisfaction and customer experience and, therefore, reinforcing the perception and brand equity that customers develop. In a monopolistic competitive market, a hotel's ability to effectively engage customers in value co-creation can significantly differentiate it from its competitors, thereby increasing customer brand equity towards hotels and enabling them to set premium prices. This strategy not only contributes to overall brand equity, but also strengthens its market position, demonstrating how the integration of sustainable practices and relational innovation in value co-creation can serve as strategic tools to enhance brand equity in the hotel sector.

The literature analysis shows that the study of the links between relational innovation and brand equity has rarely been explored, especially from the guest's perspective (Crnogaj et al. 2014). However, this relationship has been successfully tested in other fields of study in the service sector, such as retail (Marín-García et al. 2021). On the other hand, hotel managers find it necessary to implement sustainable practices that respond to the growing needs of guests regarding environmentally sustainable products and services, observing the positive and significant impact of such practices in the development of brand equity (Moise et al. 2019; Yu et al. 2021).

Lastly, strong consumer–brand relationships have been related to the notion of value co-creation (Ndhlovu and Maree 2023). From the hotels' perspective, the studies by González-Mansilla et al. (2019) and Bordian et al. (2023) provide interesting results when examining the impact of value co-creation on brand equity. The results of their studies lead to the conclusion that the client's perception of the co-creation of value positively influences the brand value that they unleash towards hotel chains. However, the link between value co-creation and brand equity requires a more profound analysis since there is little empirical evidence that examines this relationship within the service marketing literature (González-Mansilla et al. 2019; Bordian et al. 2023). Therefore, taking into account all of the above, it is stated the following group of hypotheses:

**H3** Sustainable practices positively impact consumer-based brand equity.

**H4** Relational innovation positively impacts consumer-based brand equity.

**H5** Value co-creation positively impacts consumer-based brand equity.

## Revisit intention

The term "revisit intention" is an alternative to repeat purchase that refers to a deep commitment to return to a place constantly in the future (Hasan and Rahman 2023). Thus, Chen et al. (2019) define this variable as the behavioral expectations of an individual with an optimal probability of acting. This definition can be explained through the theory of planned behavior proposed by Ajzen (1991). This theory maintains that there is a set of volitional and non-volitional factors that make it possible to predict the intentions associated with consumer behavior.

Value co-creation generates a sense of personalization for the customer that may imply the intention to return to the hotel, based on the premise that unique and personalized experiences strengthen the emotional bond with the brand (Pham et al. 2016). Simultaneously, brand equity, a reflection of the perceived value and differentiation of the brand in the minds of consumers, contributes directly to revisit intent by associating the brand with attributes of superior quality and emotional value (Pham et al. 2016). Both aspects underscore the importance of strategies that not only meet customer expectations, but also create a deep emotional connection, thus encouraging loyalty and preference over competitors in a saturated marketplace.

Some studies show its direct and significant relationship between value co-creation and revisit intention (e.g., Javed and Awan 2022), where the figure of service provider companies is fundamental as they are facilitators of the platforms through which customers can make their contributions. Thus, Luo et al. (2019) point out that the role played by the service provider is especially important in the joint creation of the entire experience for the tourist. The authors call attention to the fact that if the company implements good communication platforms and has sufficient capacity to motivate its clients to participate actively, the consumer will have the intention to revisit the accommodation because they feel valued (Manley et al. 2023).

Additionally, it is worth highlighting the relationship between brand equity and revisit intention (Kim et al. 2008; Zhou 2011; Pham et al. 2016). Thus, Zhou (2011) shows that brand awareness and the image that customers develop of it will increase guests' intention to return. Moreover, this author states that brand loyalty is the most important variable in triggering the hotel revisiting effect. Meanwhile, Kim et al. (2008) also confirm that brand equity has a significant impact on the intention of the clients to revisit the hotel and is one of the essential factors contributing to the company's long-term development. In the context of green hotels, Tan et al. (2020) argue that consumers' perceived value has a significant positive influence on brand equity and contributes to green hotel patronage intentions. Finally, Pham et al. (2016) conclude that, from the customer's perspective, brand equity influences the intention to revisit a quick-service restaurant. Considering all of the above, the present study adopts the following hypotheses:

**H6** Value co-creation positively impacts guests' revisit intention.

**H7** Consumer-based brand equity positively impacts guests' revisit intention.

### Hotel size

In many recent studies, hotel size proved to be an essential factor in determining companies' profitability (e.g., Kim et al. 2013; Yin et al. 2022), level of competitive advantages (e.g., Kim et al. 2018), and even adoption of green practices (e.g., Rahman et al. 2012). Therefore, larger companies are assumed to do better in the above-named aspects. Nevertheless, the concept of hotel size is usually studied from a managerial perspective linking hospitality firms' size to their success and advantages in the industry.

The literature assumes that guests' preferences may differ depending on the different types of hotel segments (e.g., boutique, midscale, luxury, etc.) and calls for further research in this area (Yoo and Yoon 2022). From previous studies analyzing the managerial perspective, it is easy to understand why a company's size plays a prominent role in its performance outcomes. For example, it is known that big hotels have a greater capacity to deliver a broader range of services (Kim et al. 2018) and, at the same time, pollute more (Rahman et al. 2012) compared to smaller ones. The latter, in turn, are more agile in response to the changes, including global ones (e.g., health-security requirements) (Yin et al. 2022). However, hotel size has rarely been considered in marketing-related topics, and its impact on consumer-related variables has been neglected.

Moreover, from a managerial point of view, Kim et al. (2013) and Yin et al. (2022) have confirmed the moderating nature of hotel size. Based on the above reasoning, it is considered hotel size, based on the number of rooms, as a rarely explored moderator in marketing-related studies. The paper then explores whether hotel size moderates the relationships between variables proposed in the theoretical model (see Fig. 1) by stating the following hypotheses:

**H8a–H8g** Hotel size significantly moderates relationships between sustainable practices, relational innovation, value co-creation, brand equity and revisit intention.

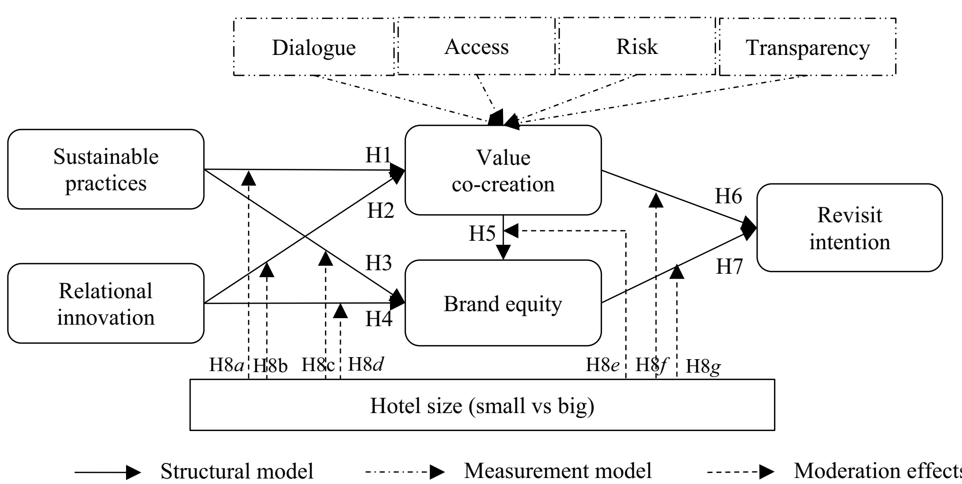
Based on the above, the path relationships between variables are hypothesized in Fig. 1.

## Methodology

Target participants were recruited through a panel in Spain in October 2020. For screening questions, potential participants were asked if they had completed a hotel visit in June–September and stayed more than one night at the establishment; those who answered "yes" were allowed to continue the survey. Quotas sampling by age and country region were applied, allowing us to collect 391 valid questionnaires. The sample met the required sample-size criterion, given that the largest number of items of a specific latent variable (sustainable practices) was multiplied by ten (Hair et al. 2011). Among the respondents, 50.6% were men, and 49.4% were women; most were aged between 31 and 45 years (31.7%), with high degree of education (39.1%), mostly traveling for leisure (93.9%), and spending an average of three or more nights at the hotel (57.8%).

This study adopted the scales selected from the reviewed literature and adapted them for the hotel environment. In this sense, the items focus on the hotel guest perceptions

**Fig. 1** Theoretical model and hypotheses



of the variables under study. All items were measured on a seven-point Likert-type scale (1—*Completely disagree*, 7—*Completely agree*). Ozturkoglu et al. (2019) and Xu and Gursoy's (2015) proposals were adapted to measure sustainable practices. The study also adopted the perceived relational innovation scale of Homburg et al. (2002), Gulati and Sytch (2007), Ganesan et al. (2009), and Oke and Idiagbon-Oke (2010). Regarding the perception of value co-creation, it was measured as a higher-order reflective-formative construct composed of dialogue, access, risk and transparency dimensions suggested by Albinsson et al. (2016) and González-Mansilla et al. (2019). Brand equity was measured by adapting the scale used by Yoo et al. (2000). Finally, the revisit intention scale was adapted from Kim et al. (2008) and Kim et al. (2009).

## Analysis of results

The present study used partial least squares structural equation modeling (PLS-SEM) with SmartPLS 4.0 to test the proposed framework. This technique was chosen for several reasons, among others, the ability to analyze higher-order SEM models as the second-order value co-creation construct, perform complex analysis as multigroup analysis, and possess less rigorous requirements for sample distribution assumptions such as data normality (Hair et al. 2019).

### Measurement model

A two-step approach was applied to analyze the higher-order reflective-formative value co-creation construct (Sarstedt et al. 2019). After the first estimation, the result for first-order constructs revealed that dimensions "Risk" and "Transparency" did not meet the required value of the heterotrait-monotrait ratio of correlations (HTMT) (Henseler et al. 2015). Therefore, it was decided to unify these dimensions into one, "Risk-Transparency", in order to enhance measurement model discriminant validity. The measurement model was next retested using re-specified variables.

This study analyzed measurement model reliability and convergent validity. As depicted in Table 1, all factor loadings values were statistically significant and higher than the commonly accepted cut-off of 0.6, indicating sufficient internal consistency, except one item, VCC7, which scored significantly less and was eliminated (Hair et al. 2022). Moreover, Cronbach's alpha coefficient and composite reliability indicator reported results higher than the established threshold of 0.7, confirming the reliability of the measurement model. Furthermore, all the average variance extracted (AVE) values also exceeded the minimum criterion of 0.5, providing satisfactory evidence of convergent validity (Hair et al. 2022).

As shown in Table 2, corroboration of discriminant validity for all reflective factors was tested by estimating the heterotrait–monotrait (HTMT) ratio of correlations ($<0.90$) (Henseler et al. 2015) and Fornell-Larcker criterion. The latter showed that the square root of all the constructs is greater than the highest correlation with any other reflective construct in the model (Fornell and Larcker 1981).

Following Diamantopoulos and Winklhofer's (2001) criteria, it is analyzed the weights of the dimensions dialogue, access and risk-transparency, which formatively compose value co-creation constructs. As seen in Table 3, the results confirm the absence of collinearity, as the variance inflation factors for the dimensions of the second-order constructs are less than the critical level of 5.

### Structural model

After confirming the measurement model's validity, the structural mode employing PLS regression is assessed, interpreting results based on path coefficients and statistical significance. The latter was verified by 5000 runs of bootstrapping algorithm (Hair et al. 2022). Table 4 displays the results of the direct and indirect effects of PLS path analysis.

As the results show in Table 4, all hypotheses are supported (except one), confirming the direct positive and significant effect between variables. On the contrary, only H3 does not support a significant impact of sustainable practices on brand equity. Nonetheless, the indirect effects show that the sustainable practices variable affects brand equity through value co-creation, where the latter acts as an indirect full mediator. Moreover, value co-creation also partially and complimentary mediates relationships between relational innovation and brand equity. Finally, brand equity partially mediates the impact of value co-creation on revisit intention intensifying this effect.

The model's explanatory power and predictive relevance were assessed through coefficients of determination $R^2$ (Falk and Miller 1992) and cross-validated redundancy indices $Q^2$ (Chin 1998) for endogenous variables. Table 4 indicates that the $\mathrm{R}^2$ values were higher than 0.4, and all the $Q^2$ were positive, confirming the model's good predictive and explanatory power.

### Moderation analysis

Henseler's multigroup analysis (hereinafter MGA) was carried out utilizing SmartPLS4 software to find whether or not differences in the relationships between the constructs depending on the hotel size are significant. Dividing hotels by size, considering the number of rooms, is still quite

**Table 1** Validations of the measurement model—reliability and convergent validity

| Items | Constructs and factors | *M* | SD | Factor loadings | *t* value |
|---|---|---|---|---|---|
| *Sustainable practices—Cronbach's α = 0.951; CR = 0.953; AVE = 0.562* | | | | | |
| SP1 | This hotel buys environmentally sustainable products | 5.578 | 1.337 | 0.783** | 28.269 |
| SP2 | This hotel manages its services in an environmentally sustainable way | 5.783 | 1.210 | 0.804** | 29.185 |
| SP3 | This hotel controls the use of products, so they are not wasted | 5.857 | 1.214 | 0.787** | 24.662 |
| SP4 | This hotel prolongs the life of the products | 5.683 | 1.288 | 0.757** | 22.615 |
| SP5 | This hotel has a recycling program in place | 5.862 | 1.276 | 0.787** | 29.005 |
| SP6 | This hotel controls the pollution generated by the hotel | 5.870 | 1.216 | 0.814** | 35.557 |
| SP7 | This hotel uses environmental management systems | 5.780 | 1.223 | 0.840** | 46.434 |
| SP8 | This hotel cares about the well-being of its employees | 6.233 | 1.058 | 0.687** | 19.371 |
| SP9 | This hotel cares about the well-being of its clients/guests | 6.417 | 0.934 | 0.599** | 12.880 |
| SP10 | This hotel cares about the well-being of the local community | 6.026 | 1.101 | 0.752** | 23.701 |
| SP11 | This hotel cares about the well-being of its suppliers | 5.839 | 1.167 | 0.807** | 34.050 |
| SP12 | This hotel cares about the well-being of the institutions and authorities to which it is related | 5.560 | 1.342 | 0.777** | 23.755 |
| SP13 | This hotel attaches importance to the growth rate of revenue | 4.941 | 1.370 | 0.656** | 19.931 |
| SP14 | This hotel cares about costs | 5.276 | 1.280 | 0.702** | 26.455 |
| SP15 | This hotel cares about the market share growth rate | 5.072 | 1.363 | 0.670** | 21.637 |
| SP16 | This hotel obtains food products through sustainable production networks/civic networks | 5.593 | 1.327 | 0.753** | 26.648 |
| SP17 | This hotel promotes open innovation/encourages guests to contribute their ideas to improve the sustainable management of the hotel | 5.545 | 1.256 | 0.722** | 23.657 |
| *Relational innovation—Cronbach's α = 0.979; CR = 0.979; AVE = 0.811* | | | | | |
| RI1 | This hotel adopts more innovations in the relationship with customers than others | 4.338 | 1.555 | 0.913** | 86.471 |
| RI2 | This hotel adopts innovations in the relationship with customers before others | 4.312 | 1.509 | 0.914** | 86.146 |
| RI3 | This hotel continuously adopts innovations in the relationship with customers | 4.391 | 1.528 | 0.929** | 118.454 |
| RI4 | The hotel has similar objectives to those of the clients: it innovates to bring its objectives closer to those of the clients | 4.435 | 1.562 | 0.925** | 98.114 |
| RI5 | The hotel innovates to reduce or eliminate customer problems | 4.691 | 1.517 | 0.905** | 72.699 |
| RI6 | The hotel innovates so that its relationships with clients are close and personal | 4.721 | 1.516 | 0.895** | 63.645 |
| RI7 | Thanks to the hotel's innovations, its relationship with customers is good | 4.803 | 1.575 | 0.897** | 54.537 |
| RI8 | The hotel/chain provides me with new and different ways of relating | 4.575 | 1.620 | 0.910** | 88.093 |
| RI9 | The hotel allows me to keep up to date with new advances (novelties) and applications | 4.409 | 1.634 | 0.896** | 63.304 |
| RI10 | This hotel is technologically superior to other hotels | 4.133 | 1.714 | 0.853** | 42.803 |
| RI11 | The hotel has adapted its services to meet the needs of customers | 4.739 | 1.535 | 0.871** | 54.111 |
| RI12 | The hotel has made significant investments to improve the relationship with customers | 4.573 | 1.555 | 0.899** | 69.963 |
| *Value Co-creation—Dialog—Cronbach's α = 0.917; CR = 0.918; AVE = 0.801* | | | | | |
| VCC1 | The hotel communicates and listens to guests to improve its service | 5.535 | 1.320 | 0.897** | 76.128 |
| VCC2 | The hotel uses multiple communication channels (employees, website, social networks, etc.) in order to share and exchange ideas with guests about the service | 5.412 | 1.350 | 0.858** | 49.520 |
| VCC3 | The hotel facilitates the communication of ideas and suggestions about the service | 5.248 | 1.408 | 0.909** | 74.135 |
| VCC4 | The hotel develops an active dialogue to improve the service offering | 5.192 | 1.450 | 0.915** | 80.747 |
| *Value Co-creation—Access—Cronbach's α = 0.914; CR = 0.915; AVE = 0.921* | | | | | |
| VCC5 | The hotel allows guests to customize the range of services they wish to receive | 5.074 | 1.541 | 0.958** | 172.324 |
| VCC6 | Guests have numerous service options to suit their needs | 5.182 | 1.493 | 0.961** | 209.978 |
| *Value Co-creation—Risk-Transparency—Cronbach's α = 0.929; CR = 0.931; AVE = 0.701* | | | | | |
| VCC8 | The hotel offers comprehensible information that allows me to evaluate the advantages and disadvantages of the services | 5.550 | 1.298 | 0.837** | 43.849 |
| VCC9 | The hotel offers many avenues to make complaints about any issues that may arise during the stay | 5.373 | 1.368 | 0.853** | 55.646 |
| VCC10 | Clients receive comprehensive information about the pros and cons of the services | 5.169 | 1.480 | 0.817** | 42.557 |
| VCC11 | The hotel repeatedly urges guests to become familiar with the possible risks involved in using the services (fire prevention, COVID recommendations, slipping in the pool, wet floors, not bringing glass into wet areas…) | 5.312 | 1.405 | 0.778** | 30.135 |

**Table 1** (continued)

| Items | Constructs and factors | *M* | SD | Factor loadings | *t* value |
|---|---|---|---|---|---|
| VCC12 | The hotel provides transparent information to evaluate and improve the experience with the service it offers | 5.442 | 1.309 | 0.892** | 66.170 |
| VCC13 | Guests have access to all the information that may be useful to improve their experience with the service | 5.529 | 1.265 | 0.885** | 75.645 |
| VCC14 | The hotel offers public and transparent information on the prices related to the different services | 5.693 | 1.269 | 0.793** | 31.161 |
| *Brand equity—Cronbach's α = 0.921; CR = 0.925; AVE = 0.810* | | | | | |
| BE1 | If this hotel and another hotel are similar, it is logical to go to this hotel instead of the other (of another brand or chain) | 5.754 | 1.317 | 0.820** | 27.896 |
| BE2 | All other things being equal in terms of price, location, and service, I would rather stay at this hotel than at another | 5.693 | 1.362 | 0.910** | 61.304 |
| BE3 | Even if there was another hotel with the same characteristics, I would prefer to stay in this one | 5.419 | 1.440 | 0.935** | 130.354 |
| BE4 | Even if there were no differences from the hotels of other chains, I consider that the smartest option is to stay at this hotel | 5.435 | 1.469 | 0.931** | 115.092 |
| *Revisit intention—Cronbach's α = 0.855; CR = 0.866; AVE = 0.775* | | | | | |
| RvInt1 | I intend to stay at this hotel/chain again | 5.386 | 1.556 | 0.887** | 75.779 |
| RvInt2 | I usually use this hotel/chain as my first choice, compared to other hotels | 4.442 | 2.089 | 0.858** | 48.822 |
| RvInt3 | I wouldn't change hotels/chains next time | 5.005 | 1.772 | 0.895** | 61.394 |

*VCC* value co-creation, *M* mean, *SD* standard deviation, *CR* composite reliability

**$p < 0.01$

**Table 2** Discriminant validity

| Factor | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 |
|---|---|---|---|---|---|---|---|---|
| F1. Sustainable practices | **0.749** | 0.449 | 0.540 | 0.498 | 0.401 | 0.539 | 0.428 | 0.355 |
| F2. Relational innovation | 0.457 | **0.901** | 0.720 | 0.660 | 0.660 | 0.677 | 0.581 | 0.604 |
| F3. Value co-creation | 0.551 | 0.743 | **0.812** | – | – | – | 0.668 | 0.578 |
| F4. VCC-Dialog | 0.517 | 0.696 | – | **0.895** | 0.725 | 0.807 | 0.618 | 0.524 |
| F5. VCC-Access | 0.409 | 0.697 | – | 0.791 | **0.960** | 0.752 | 0.575 | 0.500 |
| F6.VCC-Risk-Transparency | 0.561 | 0.708 | – | 0.872 | 0.814 | **0.837** | 0.636 | 0.555 |
| F7. Brand equity | 0.448 | 0.611 | 0.710 | 0.671 | 0.628 | 0.686 | **0.900** | 0.766 |
| F8. Revisit intention | 0.371 | 0.665 | 0.633 | 0.588 | 0.565 | 0.617 | 0.854 | **0.880** |

Diagonal bold data represent the square root of AVE. Above the diagonal: correlations between the factors. Below the diagonal: values of the squared correlations (HTMT ratio)

*VCC* value co-creation

**Table 3** Parameter estimates of the formative second-order construct

| 1st-level factor | 2nd-level factor | Weight | VIF |
|---|---|---|---|
| Value co-creation | Dialogue | 0.336** | 3.156 |
| | Access | 0.254** | 2.533 |
| | Risk-Transparency | 0.493** | 3.445 |

*VIF* variance inflation factor

**$p < 0.01$

subjective, and there is no standardized practice in industry or academia (Rahman et al. 2012). For this study purpose, hotels with less than or equal to 50 rooms are considered small hotels, and hotels with more than 50 rooms are big. Small hotels offered 46% ($N = 180$) of the total sample respondents, whereas 54% ($N = 211$) were big hotels.

Before running the MGA, the measurement invariance of the model's constructs in the two groups was established (see Table 5).

As seen in Table 5, the three-step procedure developed by Henseler et al. (2016) is used. In the first step, the configural invariance was established, assuring that identical items, algorithms, and data treatment were used for all the constructs in both groups. In the second step, the compositional invariance was confirmed since the correlations obtained are not significantly lower than one, and their values exceeded

**Table 4** Structural equations model results: direct and indirect effects

| Hypothesis | Relationship | *β* | *t* value | Contrast |
|---|---|---|---|---|
| *Direct effect* | | | | |
| H1 | Sustainable practices→VCC | 0.259** | 5.916 | Supported |
| H2 | Relational innovation→VCC | 0.605** | 15.134 | Supported |
| H3 | Sustainable practices→Brand equity | 0.080n/s | 1.361 | Not supported |
| H4 | Relational innovation→Brand equity | 0.195** | 3.385 | Supported |
| H5 | VCC→Brand equity | 0.483** | 7.747 | Supported |
| H6 | VCC→Revisit intention | 0.117* | 2.491 | Supported |
| H7 | Brand equity→Revisit intention | 0.688** | 16.311 | Supported |
| *Indirect effect* | Relationship | *β* | *t* value | *Mediation* |
| Sustainable practices × VCC→Brand equity | | 0.125** | 4.368 | Indirect only<br>Full mediation |
| Relational innovation × VCC→Brand equity | | 0.292** | 6.969 | Complimentary<br>Partial mediation |
| VCC × Brand equity→Revisit intention | | 0.333** | 7.266 | Complimentary<br>Partial mediation |

VCC: $R^2 = 0.576$, $Q^2 = 0.564$; Brand equity: $R^2 = 0.470$, $Q^2 = 0.358$; Revisit intention: $R^2 = 0.595$, $Q^2 = 0.347$

*VCC* value co-creation, $\beta$ standardized beta, *n/s* not significant

**$p < 0.01$; *$p < 0.05$

the 5% quantile. Finally, in the third step, the equality of the means and the variances of the constructs were assessed across small and big hotel subsamples. The data showed the equality of variances between the two subsamples, confirming that there are no significant differences between the construct scores of the observations between the two groups. However, three significant differences were found in the mean value (for relational innovation, VCC, and brand equity). That means the data used in this study show partial measurement invariance (Henseler et al. 2016), allowing us to proceed with MGA.

To compare the standardized coefficients between the two groups, PLS-MGA was conducted based on 5000 bootstrapping runs (Hair et al. 2022). As revealed in Table 6, the results show that significant path differences were found for H8*f* and H8*g*, e.g., the impact of value co-creation and brand equity on revisit intention. The significance of these results is sustained based on the 5% error level and the *p*-value less than 0.05 or greater than 0.95 (Hair et al. 2018).

As depicted in Table 6, the path coefficients obtained for H8*f* suggest that the impact was significant only for guests of small/medium-sized hotels. In contrast, in H8*g*, the impact was stronger among guests of big hotels than among their small counterparts. Regarding hypotheses 8a and 8b, they are not supported at a *p*-value less than 0.05. However, the results obtained actually show that these hypotheses have significant support with 91% and 92.1% confidence, respectively. Therefore, these data suggest that the influence of sustainable practices and relational innovation on value co-creation is stronger than previously interpreted. This implies recognizing the importance of hotel size as a significant moderator in the relationship between sustainable practices/relational innovation and value co-creation, as well as its subsequent impact on brand equity and revisit intent. Supporting evidence for these hypotheses underscores the relevance of considering hotel size when implementing and evaluating marketing strategies focused on sustainability and relational innovation (Rahman et al. 2012; Yin et al. 2022).

Finally, regarding the rest of the hypotheses (H8*c*–H8*e*), the two groups have no significant differences. Thus, H8 is supported partially.

## Conclusions and discussion

### Theoretical conclusions

This study responds to the latest marketing literature calls for new contributions (Vargo and Lusch 2017; Vargo et al. 2020; Field et al. 2021; Ostrom et al. 2021) related to the service industry and hospitality in particular. The theory of planned behavior (Azjen, 1991) points to the beliefs that influence the perceptions and behavior of consumers and, by extension, their decision-making. In this sense, without a firm commitment by hotels to adopt a clear strategy based on relational innovation and sustainable practices, customers will not find the right context to collaborate in the development of these practices and, therefore, their perception of hotels may remain unchanged. By implementing this strategy, hotels go a step further in considering the consumer and

**Table 5** Results of invariance measurement testing

| Factors | Step 1 | Step 2 | | | | Step 3 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conf. Inv | *C* | 5% Quantile of Cu | *p*-value | Comp Inv | Mean diff | Confidence interval 95% | Equal mean | Variance diff | Confidence interval 95% | *p*-value | Equal variance |
| Sustainable practices | Yes | 0.998 | 0.996 | 0.793 | Yes | 0.000 | [−0.202; 0.209] | Yes | 0.008 | [−0.314; 0.340] | 0.226 | Yes |
| Relational innovation | Yes | 1.000 | 1.000 | 0.141 | Yes | −0.002 | [−0.203; 0.197] | No | 0.004 | [−0.265; 0.269] | 0.275 | Yes |
| Value co-creation | Yes | 0.985 | 0.957 | 0.762 | Yes | −0.003 | [−0.199; 0.204] | No | 0.008 | [−0.252; 0.287] | 0.555 | Yes |
| Brand equity | Yes | 1.000 | 1.000 | 0.356 | Yes | 0.003 | [−0.194; 0.198] | No | −0.006 | [−0.352; 0.344] | 0.674 | Yes |
| Revisit intention | Yes | 1.000 | 0.999 | 0.530 | Yes | −0.002 | [−0.202; 0.198] | Yes | 0.000 | [−0.258; 0.242] | 0.716 | Yes |

*Conf. inv.* Configural invariance, *C* Correlation, *Comp. inv.* Compositional invariance

society in general as the center of their strategic decisions, especially those focused on social responsibility.

Firstly, following the main objective of this research, the findings contribute to the literature by studying the effect of sustainable practices and relational innovation on the other variables from a consumer perspective. Sustainable practices and relational innovation emerge as key players, reflecting their critical importance in the hotel industry. By drawing on Ajzen's (1991) Theory of Planned Behavior, this analysis highlights how these practices not only contribute directly to value co-creation, following the multidimensional DART framework, but also have a significant impact on brand equity and customer revisit intent. This finding underscores the effectiveness of integrating sustainable approaches and relational innovation strategies into hotel operations, reinforcing the idea that these practices are essential to building lasting and meaningful relationships with customers, aligned with the principles of sustainability and collaboration.

This research also reveals the moderating role of hotel size in the relationship between sustainable practices, relational innovation and value co-creation. Contrary to the widespread belief that larger hotels have inherent advantages in terms of resources and capabilities, our results suggest that the impact of hotel size is contextual and varies according to the nature of the practice implemented. In particular, we find that in certain contexts, smaller hotels may be more agile and able to adapt quickly to change, leveraging sustainable practices and relational innovation to enhance value co-creation more effectively than their larger counterparts. This finding challenges the traditional notion that hotel size is a univocal determinant of success, opening the field to further exploration of how different contextual and operational factors influence the effectiveness of these strategies.

Moreover, the findings of this study significantly expand the theoretical understanding of the interplay between sustainable practices, relational innovation and value co-creation in the hotel context, adding insights to the recommendations of previous studies (e.g., Clauss et al. 2018; Moise et al. 2019; Yen et al. 2020; Liu et al. 2022; Javed and Awan 2022; Bordian et al. 2023) and offer valuable practical insights for hotel managers. They underscore the importance of adopting a holistic and adaptive approach to hotel management, where sustainability and relational innovation are not only seen as strategies to enhance brand equity and foster customer loyalty, but as fundamental pillars for competitiveness and long-term success in the hospitality industry.

Finally, from a methodological standpoint, the present research provides evidence of the suitability of PLS-SEM for marketing analytics, in view of its ability to analyze complex interrelationships of a variety of attitudinal and behavioral

**Table 6** Henseler's MGA of hotel size

| Hypothesis | | Relationships | Path coefficient | | | PLS-MGA $p$-value |
|---|---|---|---|---|---|---|
| | | | $\beta > 50$ rooms | $\beta \leq 50$ rooms | $\beta$ diff | |
| H8a | Not supported | Sustainable practices → VCC | 0.189** | 0.340** | −0.151 | 0.090* |
| H8b | Not supported | Relational innovation → VCC | 0.670** | 0.528** | 0.142 | 0.079* |
| H8c | Not supported | Sustainable practices → Brand equity | 0.016n/s | 0.162n/s | −0.146 | 0.227 n/s |
| H8d | Not supported | Relational innovation → Brand equity | 0.203* | 0.189* | 0.014 | 0.902 n/s |
| H8*e* | Not supported | VCC → Brand equity | 0.515** | 0.438** | 0.076 | 0.525 n/s |
| H8*f* | Supported | VCC → Revisit intention | 0.004n/s | 0.228** | −0.224 | 0.022** |
| H8*g* | Supported | Brand equity → Revisit intention | 0.797** | 0.573** | 0.224 | 0.009*** |

Big (>50 rooms): VCC: $R^2 = 0.608$, $Q^2 = 0.592$; Brand equity: $R^2 = 0.477$, $Q^2 = 0.351$; Revisit intention: $R^2 = 0.640$, $Q^2 = 0.338$. Small (≤50 rooms): VCC: $R^2 = 0.544$, $Q^2 = 0.511$; Brand equity: $R^2 = 0.470$, $Q^2 = 0.358$; Revisit intention: $R^2 = 0.552$, $Q^2 = 0.356$

*VCC* value co-creation, $\beta$ standardized beta, *n/s* not significant

$^*p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

theories, as argued by Sarstedt and Liu (2024). More interesting is that PLS-SEM allows to analyze mediation, thus reducing the uncertainty in the relationships identified and adding value to the model's quality through the assessment of the total and direct effects, in the line of Sarstedt and Moisescu (2024).

## Practical implications

The findings from the present study highlight the crucial role of sustainable service innovation in the hospitality industry. The results reveal customers' positive perceptions of implemented sustainable practices and service innovation. Thus, on the one hand, practitioners are called on to implement at least some of the practices related to sustainable innovation (e.g., reduction of plastic and food-waste, collaboration with the local community, and engagement in social projects such as a four-day working week for employees), if not the majority. What is important is that clients appreciate it if these actions are communicated to them through dialogue. On the other hand, innovating in the company-customer relationships is crucial. Companies should follow and implement the latest communication techniques and utilize good-quality technology to build relationships with their clients. For example, in terms of the hospitality business, on the low management level, polite, timely communication and positive problem-solving techniques might improve relations with hotel guests. Implementing the latest customer relationship management (CRM) technology on the higher management level helps structure existing and potential client relations and creates a better conversational customer experience.

Both sustainable practices and relational innovation help companies enhance their clients' value creation. Clients nowadays demand that businesses be sustainable and innovative; they also want to be informed about the latest changes, opportunities and risks the interaction with the company might bring to them. As the results suggest, value co-creation activities might help companies satisfy these needs of their clients. Considering the findings of the present study, value co-creation leads customers to a higher perception of company brand equity, leading to the intention to repeat the visit. Therefore, hotel managers should build a value co-creation strategy that helps engage with the consumer to deliver better service, especially when the company is claimed to be sustainable and innovative. For example, managers might start a dialogue or launch an initiative on online social platforms, where consumers might participate in knowledge sharing, suggesting the best means of service delivery and helping implement sustainable actions. Hoteliers might want to implement artificial intelligence, such as adding a chatbot to their web page or platform for even faster consumer–company interaction and engagement. Moreover, in view of the popularity of business platforms such as Airbnb, as highlighted by Yoo and Yoon (2022), hotels should guarantee the quality of guest experiences through their main services as well as through additional options already offered by these competing lodging platforms (e.g. common kitchen and laundry areas) or upon request, to accommodate to the preferences of different profiles of consumers. Consequently, these actions may contribute to enhance the client's perception of the company, increasing its competitive advantage.

Finally, the results obtained on the moderating role of hotel size provide practitioners with insights into the action that should be considered depending on whether the hotel is big or small. Compared to the big hotels, the owners of small ones should pay attention to improving the current level of brand equity, which is identified to have a weaker impact on clients' intention to revisit compared to the big hotels. They might want, for example, to revise the state of brand image or service quality. Moreover, value co-creation should be reconsidered in big hotels, as it shows no impact on revisit intention compared to the positive results in small hotels. In this case, big hotels should look into whether dialogue with their clients is weak, whether their customers have insufficient access to the company information or even whether clients are informed about possible risks and company policy consequences.

## Limitations and future lines of research

Finally, while the results of this research extend the understanding of the relationship among the examined variables, some study limitations need to be acknowledged. First, this research represents only a single sector—star hotels—and one country—Spain—as a framework. Therefore, future studies can replicate relationships among different contexts and countries to offer higher generalizability of findings. Second, it is recommended that future studies re-examine the value co-creation DART scale in a sustainable context since the study showed discriminant validity issues. Third, although this research provides some preliminary insights into the relationships between sustainable practices, relational innovation, value co-creation and brand equity, it neglects other key brand-related variables such as brand image, brand awareness, brand quality and brand loyalty, which should be considered in future studies.

Additionally, in this research, sustainable practices and relational innovation are observed as separate independent variables; nevertheless, a new emerging concept has been introduced to the literature called "sustainability-oriented service innovation" (hereinafter SOSI) (Calabrese et al. 2018). SOSI links innovation and sustainability in a unique concept aligned with the vision that the whole is more than the sum of its parts. Considering the above, further research might study both constructs as a single element, SOSI. Furthermore, this study classifies hotels by star ranking and size; future studies might want to define hotels by type, chain or other characteristics.

Regarding the results obtained, the descriptive analysis indicates that hotel clients rated most of the study constructs around their mean values. We recognize that factors such as the participants' level of familiarity with the topic, the environment in which they are located and their willingness to participate may influence the responses provided. For future studies, it is recommended that additional qualitative analyses should also be used to better understand participants' perceptions and level of knowledge about the topics discussed. Moreover, since the incidence of frequent travel of frequent travel is more common among business travelers than those who travel for leisure (Leiper et al. 2008), we recommend to include a balanced number of travelers for leisure and for business to compare their perceptions on the hotel efforts in terms of SOSI. Moreover, the application of big data and analytics may complement these methods, allowing to define the competitive benchmarking.

On the other hand, although the results obtained confirm that the predictive and explanatory power of the model is moderate and, therefore, acceptable, it is important to note that the dependent variables of this study can also be affected by other variables not incorporated in this model. Therefore, future studies should identify additional elements that may drive value co-creation, brand equity or the intention to revisit a destination. In this sense, it is proposed to examine the energizing effect of "green" practices or technological innovation on these constructs. The suggested variables have important support in contexts similar to those of this study. Moreover, following Petrescu and Krishen (2023), marketing analytics techniques such as machine learning and sentiment analysis may be used in further research to identify unmet needs and preferences; in this way, relevant managerial implications may be drawn to support managers to customize marketing messages and products for hotel guests.

Finally, the results of the present study reveal the moderating effect of hotel size on value co-creation–revisit intention and brand equity–revisit intention relationships. It might be interesting to further extend the knowledge of the specifics of co-creation and brand equity strategies for small and big hotels and consumer responses to them to better understand the current results.

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**Data availability** No data are available.

## Declarations

**Conflict of interest** On behalf of all authors, the corresponding author states that there is no conflict of interest.

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