# From Awareness to Action: Green Practices in the Iberian Peninsula's Hospitality Sector

## Maria Nascimento Cunha ⓘD

**Purpose**. This paper examines the adoption of green practices by food and lodging establishments in the Iberian Peninsula's hospitality sector, identifying the extent and character of sustainability integration and revealing structural and behavioural barriers to implementation. **Design / Method / Approach**. A mixed-methods design, emphasising a quantitative survey of employees and customers, was employed, supported by descriptive statistics, independent-sample t-tests, and one-way ANOVA to compare patterns across establishment types, years of operation, and workforce size, enabling robust analysis of environmental practices. **Findings**. Results show strong institutionalisation of waste management, water conservation and sustainable purchasing, alongside consistent but low-cost energy efficiency measures; significant differences emerged between hotels and restaurants, while none appeared by age or size of business; employees displayed high motivation and positive perceptions but limited formal training, and customers reported favourable attitudes yet inconsistent awareness and low willingness to pay a premium. **Theoretical Implications**. The study advances sustainable hospitality literature by demonstrating how micro- and small-enterprises prioritise pragmatic, behaviourally driven measures over capital-intensive innovations, contributing to debates on the attitude–behaviour gap and stakeholder engagement. **Practical Implications**. Findings provide a roadmap for targeted training programmes, communication strategies to enhance customer awareness, and policy interventions to support high-cost investments and sector-specific strategies. **Originality / Value**. This is among the first studies to combine employee and customer perspectives with inferential analysis across multiple sustainability domains in the Iberian Peninsula, producing an empirically grounded picture of green practice adoption at the micro- and small-enterprise level. **Research Limitations / Future Research**. The scope and sample limit generalisability; future work should employ longitudinal designs, develop readiness scales and test interventions to improve customer engagement and willingness to pay. **Article Type**. Applied Research.

**Keywords:**

sustainable hospitality, green practices, hotels and restaurants, sustainability, environmental management

**Мета.** Досліджено впровадження екологічних практик у закладах харчування та розміщення готельно-ресторанного сектору Піренейського півострова з метою визначення масштабів і характеру інтеграції сталого розвитку та виявлення структурних і поведінкових бар'єрів їх реалізації. **Дизайн / Метод / Підхід.** Використано змішаний дизайн із перевагою кількісного анкетування працівників і клієнтів; застосовано описову статистику, t-критерій для незалежних вибірок і однофакторний ANOVA для порівняння практик за типом закладу, роками роботи та чисельністю персоналу. **Результати.** Виявлено високий рівень інституціоналізації управління відходами, збереження води та сталих закупівель разом із послідовними, але маловитратними заходами енергоефективності; зафіксовано суттєві відмінності між готелями та ресторанами, тоді як за віком або розміром бізнесу відмінностей не виявлено; працівники демонструють високу мотивацію та позитивне сприйняття за обмеженої формальної підготовки, а клієнти повідомляють про позитивне ставлення, проте непослідовну обізнаність і низьку готовність сплачувати додатково. **Теоретичне значення.** Показано, що мікро- та малі підприємства віддають перевагу прагматичним поведінковим заходам над капіталомісткими інноваціями, що поглиблює дискусії про розрив між ставленням і поведінкою та залучення стейкхолдерів. **Практичне значення.** Отримані результати пропонують дорожню карту для цільових програм підготовки персоналу, удосконалення комунікаційних стратегій задля підвищення обізнаності клієнтів і політичних інтервенцій для підтримки капіталомістких інвестицій у сталість та секторальних стратегій для готелів і ресторанів. **Оригінальність / Цінність.** Це одне з перших досліджень, що поєднує перспективи працівників і клієнтів із використанням статистичного аналізу кількох сфер сталого розвитку на Піренейському півострові, створюючи емпірично обґрунтовану картину впровадження зелених практик на рівні мікро- та малих підприємств. **Обмеження / Майбутні дослідження.** Невеликий обсяг і вибірка обмежують узагальнення; майбутні дослідження мають застосовувати довготермінові дослідження, шкали готовності та інтервенції для підвищення залучення клієнтів і їхньої готовності платити більше. **Тип статті.** Прикладне дослідження.

**Ключові слова:**

стала гостинність, екологічні практики, готелі та ресторани, сталий розвиток, екологічний менеджмент

**Contributor Details:**

Maria Nascimento Cunha, PhD in Business Sciences, Instituto Superior Miguel Torga: Coimbra, PT; Centro de Investigação em Artes e Comunicação: Santarém, PT, maria14276@gmail.com

The global hospitality industry is undergoing a paradigmatic transformation as both businesses and consumers increasingly recognise the necessity of embedding sustainability into core operations to mitigate escalating environmental challenges (Khatter, 2025; Liu et al., 2025). Food and lodging establishments, in particular, are progressively implementing green practices aimed at reducing their ecological footprint while simultaneously improving efficiency and competitiveness (Fraisl et al., 2022). Such initiatives resonate with the broader framework of sustainable development, which seeks to reconcile economic growth with ecological responsibility (Bangura et al., 2024). Within this context, sustainable hospitality encompasses a wide spectrum of practices, ranging from resource conservation, waste reduction, and pollution control to the institutionalisation of eco-friendly policies that actively engage both customers and employees (Moise et al., 2021).

Scholarly literature highlights that the sector's rapid expansion has significantly contributed to environmental degradation, necessitating urgent shifts towards more sustainable business models (Ngoc Khuong et al., 2023). Green practices not only reduce operational costs and environmental damage but also serve as strategic mechanisms for reputation-building and long-term viability (Cunha & Krupskyi, 2023). Nevertheless, evidence suggests that the adoption of environmentally friendly technologies and systemic sustainability initiatives remains uneven across regions and market segments. This disparity is particularly salient in rural hospitality contexts, where structural limitations such as financial constraints, limited human capital, and infrastructural challenges may hinder the uptake of advanced sustainability practices (Abdou et al., 2020; Barakagira & Paapa, 2023; Kusa et al., 2023).

The Iberian Peninsula offers a particularly compelling context for examining these dynamics. Characterised by diverse ecosystems, rich cultural landscapes, and vibrant tourism industries, the region also faces environmental pressures linked to climate change, over-tourism, and resource scarcity (Abellán & García Martínez, 2021; Ahmad et al., 2023; S. C. Pascoal & J. E. Pascoal, 2023). While both Spain and Portugal have committed to ambitious sustainability agendas aligned with the European Green Deal, the practical implementation of sustainability within the hospitality sector remains uneven (Feng et al., 2022; Khan et al., 2022).

Rural areas, in particular, often lack the financial and technological capacity to adopt advanced green practices, despite their reliance on natural and cultural assets that are highly sensitive to ecological degradation (Hariadi et al., 2023; Nguyen Thi Huyen et al., 2025).

Within this landscape, there is a pressing need to evaluate how food and lodging establishments across the Iberian Peninsula integrate sustainability into their operations. This study addresses this gap by systematically examining the extent to which these establishments adopt green practices, assessing their alignment with environmental objectives, and identifying structural or behavioural barriers to implementation (Chornobylskyi et al., 2023; Odeyemi et al., 2024).

By foregrounding the practices and challenges of the hospitality sector in the Iberian Peninsula, this research provides insights of both regional and international significance. For stakeholders, including business owners, policymakers, and local communities, it offers empirical evidence on how sustainability can be operationalised in diverse rural and semi-rural contexts (Anitha Rajathi & Reshma Parveen, 2024). Furthermore, the findings position the Iberian Peninsula as a potential model for balancing economic growth with environmental stewardship, thereby contributing to global discourses on sustainable tourism in ecologically sensitive regions (Satpathy et al., 2022).

## Methodology

This study employed a mixed-methods research design, with primary emphasis on quantitative, survey-based inquiry, to systematically examine the adoption of green practices among food and lodging establishments in the Iberian Peninsula. Two key respondent groups were purposively targeted:

(a) employees, including managers, supervisors, and frontline staff, and

(b) customers who regularly patronise these establishments. Data collection was carried out through structured questionnaires developed to assess levels of awareness, perceptions, and engagement with sustainability initiatives.

The surveys were administered over two months, from April to June 2024, using both face-to-face distribution in selected establishments and digital dissemination via online platforms. This dual approach was intended to maximise participation, ensure accessibility, and reduce potential non-response bias (Cunha & Krupskyi, 2023).

For data analysis, descriptive statistics (frequency distributions and percentages) were employed to profile respondents and establish baseline levels of awareness and perceptions. To test for significant differences between independent groups (employees and customers), independent-sample t-tests were applied. In addition, one-way Analysis of Variance (ANOVA) was utilized to compare mean differences across profile variables with more than two categories (e.g., years of operation, business size) (Cunha et al., 2024) ANOVA is a statistical technique that determines whether observed differences between group means are statistically significant, by analyzing the variance within groups against the variance between groups (Marroco, 2021; Esa, & Hashim, 2024). This analytical strategy provided both breadth and depth in identifying patterns of sustainability practices and offered robust insights into how environmental initiatives are being integrated within the regional hospitality sector.

## Analysis and Interpretation of Results

### *Characteristics of the Sample Population*

Understanding the characteristics of the sample population is essential to contextualise the findings of this study. By examining the demographic and organisational attributes of participants, this section provides insights into the structure of the hospitality sector in the Iberian Peninsula and highlights factors that may influence the adoption of sustainable practices. Presenting the composition of the sample also enhances the transparency and reliability of the research by allowing readers to assess the representativeness of the data in relation to the broader industry context.

Specifically, this section outlines the distribution of respondents according to type of establishment, years of operation, and workforce size. These variables are particularly relevant, as the literature suggests that enterprise type, longevity, and organisational scale can significantly shape managerial priorities, operational capacities, and willingness to adopt sustainability initiatives. By situating the findings within the demographic and operational profile of the sample, the study ensures a more nuanced interpretation of the results that follow (Table 1).

**Type of Business**

The sample consisted of 14 hotels (46.7%) and 16 restaurants (53.3%), providing a relatively balanced representation of the two dominant segments of the hospitality sector. This balance is important because hotels and restaurants may differ in their sustainability challenges: hotels typically have higher energy and water demands, while restaurants produce greater levels of food-related waste. The representation of both subsectors ensures that findings reflect a broader spectrum of hospitality practices within the region (Table 1).

**Years of Operation**

Most establishments (66.7%) have been operating for 4–7 years, indicating a relatively young but stable industry. Only 13.3% are new entrants (1–3 years), while 20% have been in operation for over 8 years. This distribution suggests that the sector is still in a growth and consolidation phase, with many businesses likely adapting to evolving market trends, including sustainability requirements. Younger establishments may be more open to adopting innovative green practices, while older ones might face challenges related to retrofitting infrastructure to meet sustainability standards (Table 1).

**Number of Employees**

The vast majority of establishments (93.3%) employ only 4–6 workers, with just one establishment in each of the 1–3 employees (3.3%) and 7–10 employees (3.3%) categories. This highlights the micro-enterprise nature of the hospitality industry in the region. The predominance of small teams has implications for sustainability: while limited manpower and resources may restrict the adoption of capital-intensive initiatives (e.g., solar panels, advanced water treatment), smaller establishments may find it easier to implement low-

cost, behaviourally driven measures such as waste segregation, energy conservation, and customer engagement (Table 1).

**Table 1 – Frequency and percentage distribution of the profile of the respondents (Source: created by the author)**

| Type of Business | F | % |
|---|---|---|
| Hotel | 14 | 46.70 |
| Restaurant | 16 | 53.30 |
| *Total* | *30* | *100* |
| **Years of Operation** | | |
| 1 – 3 years | 4 | 13.30 |
| 4 - 7 years | 20 | 66.70 |
| Above 8 years | 6 | 20.00 |
| *Total* | *30* | *100* |
| **Number of Employees** | | |
| 1-3 employees | 1 | 3.30 |
| 4-6 employees | 28 | 93.30 |
| 7-10 employees | 1 | 3.30 |
| *Total* | *30* | *100* |

The dataset depicts a hospitality sector that is dominated by micro- and small-scale enterprises with limited human and financial resources, but with a relatively balanced distribution between hotels and restaurants. These structural characteristics suggest that sustainability strategies in the Iberian Peninsula's hospitality sector are likely to be pragmatic, cost-effective, and incremental rather than large-scale or technology-driven. The prevalence of younger establishments also reflects an evolving industry that may be responsive to sustainability discourse, particularly if supported by targeted training, policy incentives, and community engagement initiatives (Table 2).

**Table 2 – Analysis of Energy Efficiency Practices (Source: created by the author)**

| Energy Efficiency Practices | Mean | DI |
|---|---|---|
| The establishment uses energy-efficient lighting (e.g., LED bulbs) in both guest rooms and dining areas. | 4.45 | Always |
| The establishment utilises natural ventilation (e.g., opening windows, using ceiling fans) to reduce reliance on air conditioning in both guest rooms and dining areas. | 4.25 | Always |
| Solar energy is used for lighting or water heating in the establishment's common areas, kitchens, or guest rooms where feasible. | 3.17 | Sometimes |
| The establishment reduces energy consumption by using energy-efficient cooking appliances (e.g., induction cookers, energy-efficient stoves) in the kitchen and dining area. | 4.64 | Always |
| Local, sustainable building materials such as bamboo or wood are used in the construction and renovation of the establishment to reduce energy consumption. | 4.80 | Always |
| The establishment promotes energy-saving practices by encouraging guests to turn off lights, air conditioning, and electronics when not in use in both guest rooms and dining areas. | 4.80 | Always |
| Energy-efficient appliances (e.g., refrigerators, water pumps, air conditioning units) are regularly maintained to ensure efficient operation in both lodging and food service areas. | 4.25 | Always |
| The establishment limits the use of air conditioning or electric heaters by optimising natural temperature control in guest rooms and dining areas. | 4.85 | Always |
| Energy-saving measures, such as installing timers or sensors on lights, are implemented in the guest rooms and dining areas to reduce unnecessary energy use. | 3.12 | Sometimes |
| The establishment educates both employees and guests about energy conservation practices and encourages their participation in minimising energy use. | 4.71 | Always |
| *Category Mean* | *4.67* | *Always* |

The findings reveal a strong and consistent commitment to energy conservation across food and lodging establishments, with an overall category mean of 4.67 ("Always"). This indicates that energy-efficient behaviours are widely institutionalised, particularly those that are low-cost, behavioural, or infrastructural in nature.

### High-Scoring Practices (Means: 4.71–4.85)
The highest-rated practices include limiting air conditioning and heating through natural temperature control (M = 4.85), promoting energy-saving behaviour among guests (M = 4.80), and using sustainable building materials (M = 4.80). These practices highlight a preference for practical, non-capital-intensive measures that can be integrated into daily operations with minimal financial burden. Importantly, guest engagement and staff education (M = 4.71) underscore the role of behavioural change as a central mechanism for energy efficiency in small-scale establishments.

### Moderate-Scoring Practices (Means: 4.25–4.64)
Consistent use of energy-efficient cooking appliances (M = 4.64) and the regular maintenance of energy-efficient appliances (M = 4.25) reflect an operational-level focus on equipment optimisation. Natural ventilation strategies (M = 4.25) also illustrate environmentally conscious design choices that align with the local climate and reduce reliance on air conditioning.

### Low-Scoring Practices (Means: 3.12–3.17)
By contrast, the adoption of capital-intensive or technologically advanced practices remains limited. The use of solar energy (M = 3.17) and automated systems such as timers or motion-sensor lighting (M = 3.12) were reported only "Sometimes." These results suggest that while establishments value sustainability, financial and technical constraints hinder the uptake of higher-cost innovations. This pattern is consistent with broader literature indicating that small-scale enterprises often prioritise operationally feasible practices over long-term technological investments (Table 3).

**Table 3 – Water efficiency practices (Source: created by the author)**

| Water Efficiency Practices | Mean | DI |
|---|---|---|
| The establishment installs low-flow faucets, shower heads, and toilets in guest rooms and public areas. | 4.80 | Always |
| The establishment regularly checks for leaks in pipes, faucets, and toilets and repairs them promptly. | 4.83 | Always |
| The establishment encourages guests to reuse towels and linens during their stay to minimise water usage. | 4.33 | Always |
| The establishment collects and reuses rainwater for non-potable uses, such as landscaping or cleaning. | 4.87 | Always |
| The establishment uses water-efficient cleaning practices and tools, such as mops that require less water. | 4.87 | Always |
| *Category Mean* | *4.74* | *Always* |

### Interpretation and Implications
The data emphasise that energy efficiency in the Iberian Peninsula's hospitality sector is primarily achieved through behaviorally driven and cost-effective strategies rather than through advanced technological systems. This reliance on pragmatic measures reflects both the micro-enterprise nature of the establishments (limited manpower and financial capacity) and the importance of guest and staff engagement in achieving sustainability outcomes.

For policy and practice, the results point to a need for incentive schemes, financial support, and training programs to encourage the adoption of renewable energy and smart technologies. Without such interventions, sustainability efforts are likely to remain concentrated in low-cost domains, limiting the sector's long-term contribution to regional climate goals.

The results demonstrate a consistently high level of commitment to water conservation across establishments, with an overall category mean of 4.74 ("Always"). This indicates that water efficiency practices are well institutionalised in the hospitality sector of the Iberian Peninsula, reflecting both environmental awareness and operational pragmatism.

### High-Scoring Practices (M = 4.83–4.87)
The strongest initiatives include rainwater harvesting and reuse for non-potable purposes (M = 4.87) and the adoption of water-efficient cleaning tools (M = 4.87). Regular inspection and prompt repair of leaks (M = 4.83) further highlight operational discipline and a preventative approach to water management. These results suggest that establishments prioritise practices that deliver both environmental and economic benefits, as reduced water consumption directly lowers operational costs.

### Moderately Strong Practices (M = 4.33–4.80)
The installation of low-flow fixtures (M = 4.80) reflects investment in infrastructural modifications that align with global best practices in sustainable hospitality. Guest-oriented measures, such as encouraging towel and linen reuse (M = 4.33), were rated somewhat lower, suggesting variability in guest participation or in the consistency of establishments' communication strategies. While infrastructural measures are largely embedded, behavioural interventions involving customers appear less reliably enforced, potentially due to cultural attitudes or concerns about service quality.

### Interpretation and Implications

The findings indicate that water conservation is treated as a core operational priority. Establishments appear to implement practices that are technically feasible, cost-efficient, and visible, such as rainwater reuse and low-flow devices, while placing slightly less emphasis on customer-driven conservation behaviours. This aligns with existing literature, which suggests that water-saving measures in hospitality are most effective when combining infrastructural improvements with active guest engagement.

Overall, the strong results highlight the proactive role of establishments in reducing water use, but also reveal untapped potential in enhancing guest awareness and participation. Policy makers and industry leaders could strengthen these efforts through training, signage, and sustainability campaigns that normalise practices like towel reuse as part of a quality guest experience rather than a cost-saving compromise (Table 4).

**Table 4 – Waste management practices**
**(Source: created by the author)**

| Waste Efficiency Practices | Mean | DI |
|---|---|---|
| The establishment implements a comprehensive recycling program for paper, plastics, glass, and metals. | 5.00 | Always |
| The establishment separates organic waste (e.g., food scraps) from non-organic waste for composting or disposal. | 5.00 | Always |
| The establishment uses biodegradable or compostable materials for take-out containers and packaging. | 4.97 | Always |
| The establishment minimises food waste by using portion control and repurposing leftovers creatively in the kitchen. | 4.97 | Always |
| The establishment donates unused, safe food to local charities instead of throwing it away. | 3.43 | Often |
| The establishment provides staff with training on waste reduction techniques, such as efficient use of resources and reducing packaging waste. | 4.93 | Always |
| The establishment regularly monitors and tracks waste generation and uses findings for reduction and improvement. | 4.97 | Always |
| The establishment uses bulk purchasing for food and other supplies to reduce packaging waste. | 4.80 | Always |
| The establishment eliminates or reduces single-use plastic items, such as straws, utensils, and bottles, by using alternatives like reusable or paper products. | 2.78 | Sometimes |
| The establishment encourages guests to participate in waste reduction efforts, such as sorting recyclables or reducing food waste during their stay. | 4.97 | Always |
| *Category Mean* | *4.90* | *Always* |

The data show that waste management is the most consistently and robustly implemented sustainability dimension, with an overall category mean of 4.90 ("Always"). This suggests that establishments in the Iberian Peninsula's hospitality sector have adopted waste reduction and recycling as central operational priorities, reflecting both environmental awareness and regulatory or market-driven pressures.

### High-Scoring Practices (M = 4.93–5.00)

Practices such as comprehensive recycling programs (M = 5.00) and organic waste segregation for composting (M = 5.00) achieved the maximum rating, indicating near-universal adoption. Similarly, the use of biodegradable packaging (M = 4.97), portion control and repurposing of leftovers (M = 4.97), and guest participation in waste reduction (M = 4.97) highlight a strong operational and behavioural commitment to minimising waste. These results suggest that establishments prioritise visible, cost-effective, and culturally acceptable waste strategies, which also align with consumer expectations of environmentally responsible businesses.

### Staff Training and Monitoring (M = 4.93–4.97)

The provision of staff training on waste reduction techniques (M = 4.93) and the systematic monitoring of waste generation (M = 4.97) illustrate institutionalised practices that extend beyond ad-hoc measures. This reflects a shift towards structured environmental management systems, where data-driven monitoring informs continuous improvement.

### Moderately Adopted Practices (M = 3.43–4.80)

Bulk purchasing to reduce packaging waste (M = 4.80) is well integrated, though slightly less universal, likely reflecting differences in supply chain structures between smaller and larger establishments. Food donation programs (M = 3.43), however, are less consistently practised, possibly due to legal restrictions, logistical challenges, or liability concerns associated with distributing surplus food.

### Low-Scoring Practices (M = 2.78)

The weakest area is the reduction of single-use plastics (M = 2.78), which was only "Sometimes" implemented. This result is significant given the European Union's 2021 Single-Use Plastics Directive, which bans or restricts such items. The gap suggests challenges in transitioning to alternatives, possibly due to cost implications, supply chain limitations, or resistance from both businesses and customers accustomed to convenience items.

### Interpretation and Implications

Overall, the findings indicate that waste management is a core strength of sustainable hospitality in the Iberian Peninsula, with high levels of compliance in recycling, composting, staff training, and packaging alternatives. However, two critical gaps remain:

(1) underutilization of food donation initiatives, which limits potential contributions to social sustainability, and

(2) insufficient reduction of single-use plastics, which reveals a discrepancy between regulatory frameworks and actual industry practice.

Addressing these gaps requires not only greater enforcement of environmental regulations but also capacity-building initiatives-including partnerships with food banks, improved infrastructure for safe food redistribution, and financial incentives to accelerate the transition away from plastics. Strengthening these areas would move establishments beyond cost-driven waste reduction and toward more holistic, socially embedded sustainability practices (Table 5).

**Table 5 – Sustainable purchasing practices and materials**
**(Source: created by the author)**

| Sustainable Purchasing Practices and Materials | Mean | DI |
|---|---|---|
| The establishment prioritises sourcing ingredients and products from local suppliers to reduce its carbon footprint. | 4.77 | Always |
| The establishment purchases organic and sustainably grown food products whenever possible. | 4.63 | Always |
| The establishment uses eco-friendly, biodegradable, or compostable packaging materials instead of plastic. | 4.80 | Always |
| The establishment sources seafood and meat products from sustainable and ethically responsible suppliers. | 4.93 | Always |
| The establishment prioritises purchasing cleaning products that are non-toxic, biodegradable, and environmentally safe. | 4.93 | Always |
| The establishment reduces single-use plastics by using reusable or refillable containers for condiments, toiletries, and beverages. | 4.93 | Always |
| The establishment buys furniture, fixtures, and décor made from recycled, upcycled, or sustainable materials. | 2.80 | Sometimes |
| The establishment prefers bulk purchasing to minimise packaging waste and reduce transportation emissions. | 4.20 | Often |
| The establishment ensures that paper products (napkins, tissue, and menus) are made from recycled or sustainable sources. | 4.40 | Always |
| *Category Mean* | *4.69* | *Always* |

The results reveal a strong commitment to sustainable procurement, with an overall category mean of 4.69 ("Always"). This indicates that food and lodging establishments in the Iberian Peninsula are increasingly embedding sustainability into their supply chains, particularly in areas that directly affect daily operations and customer-facing practices.

### High-Scoring Practices (M = 4.77–4.93)

The most consistently implemented practices involve sourcing ethically and sustainably produced inputs. Establishments reported very high adoption of sustainable seafood and meat sourcing (M = 4.93), the use of non-toxic and eco-friendly cleaning products (M = 4.93), and the reduction of single-use plastics through refillable or reusable containers (M = 4.93). Similarly, reliance on biodegradable packaging (M = 4.80) and prioritisation of local suppliers (M = 4.77) illustrate strong alignment with both environmental and economic sustainability goals. These practices not only minimise ecological impact but also support local economies, thereby reinforcing community-based sustainability.

### Moderately Adopted Practices (M = 4.20–4.63)

The purchase of organic and sustainably grown food (M = 4.63) and bulk procurement to minimise packaging waste (M = 4.20) were rated slightly lower. These results suggest variability in

market accessibility and cost considerations, as organic and bulk-purchasing systems often require stronger supplier networks and upfront investment. Nevertheless, the scores indicate that these practices are actively pursued, even if not uniformly feasible across establishments.

### Low-Scoring Practices (M = 2.80)

The least adopted practice was the purchase of furniture, fixtures, and décor made from recycled or sustainable materials (M = 2.80, "Sometimes"). This gap likely reflects the capital-intensive nature of sustainable interior investments, where costs are high and immediate returns are limited. Unlike consumables such as cleaning products or food, sustainable furnishings require significant long-term investment, making them less accessible to micro- and small-scale enterprises that dominate the sector.

### Interpretation and Implications

Overall, the findings suggest that establishments prioritise sustainable purchasing where it aligns with operational necessity and customer visibility, for example, food sourcing, cleaning products, and packaging. By contrast, sustainability investments in non-core, high-cost areas (e.g., furniture and infrastructure) remain underdeveloped. This pattern mirrors broader hospitality trends in which businesses adopt incremental and low-barrier practices while deferring high-capital expenditures.

The strong results in sourcing and procurement highlight a sector moving toward responsible supply chain management, yet the inconsistency in high-cost domains underscores the need for policy incentives, subsidies, or supplier partnerships to reduce barriers to adoption. Strengthening sustainable procurement in both consumables and long-term assets would ensure a more holistic approach, bridging the gap between everyday operations and long-term environmental impact (Table 6).

**Table 6 – Awareness level of employees on green practices (Source: created by the author)**

| Awareness of employees on Green Practices | Mean | DI |
|---|---|---|
| How familiar are you with green practices implemented by your establishment? | 4.20 | Extremely Familiar |
| How often are you informed about the green initiatives or sustainability practices of the establishment? | 3.87 | Very Familiar |
| Have you received formal training or information about the green practices of the establishment? | 3.53 | Very Familiar |
| *Category Mean* | *3.87* | *Very Familiar* |

The results indicate that employees possess a generally strong awareness of sustainability initiatives within their establishments, with an overall category mean of 3.87 ("Very Familiar"). This suggests that while employees are knowledgeable about green practices, there remains scope for strengthening both communication and formal training mechanisms to deepen engagement.

### High Awareness (M = 4.20)

Employees reported being "Extremely Familiar" with the green practices implemented by their establishments (M = 4.20). This demonstrates that frontline staff and management are well-informed about operational sustainability measures, likely due to direct involvement in day-to-day implementation (e.g., energy conservation, waste segregation, or customer engagement initiatives).

### Moderate Awareness and Communication (M = 3.87)

The frequency with which employees are updated on ongoing initiatives was rated lower (M = 3.87), suggesting that sustainability communication within organisations is somewhat irregular. While employees are aware of existing practices, the results indicate a gap in continuous reinforcement and internal messaging, which may affect motivation and consistency of implementation over time.

### Formal Training (M = 3.53)

The lowest score was observed in relation to formal training or structured information sessions (M = 3.53). This suggests that most employees acquire knowledge of sustainability informally-through observation, workplace culture, or ad-hoc instructions-rather than through systematic capacity-building programs. While sufficient for general awareness, the absence of structured training limits employees' ability to critically engage with or innovate around sustainability initiatives.

### Interpretation and Implications

Taken together, the data highlight that employee awareness is broad but shallow: staff know what practices exist but are less frequently engaged in structured learning or systematic communication about them. This reflects a reliance on practical, experience-based learning rather than institutionalised sustainability education.

Strengthening formal training programs and ensuring more consistent communication of sustainability goals could transform employee awareness into deeper competence and stronger commitment. Literature suggests that when employees are systematically trained in sustainability, they not only comply more effectively but also become active contributors to innovation, customer engagement, and the long-term embedding of environmental practices.

The results indicate that customers demonstrate a generally strong awareness of sustainability measures in hospitality establishments, with an overall mean of 3.93 ("Often"). While awareness is relatively high, the findings also reveal that visibility and communication of practices during visits remain inconsistent, limiting the extent to which customers fully recognise establishments' sustainability efforts (Table 7).

**Table 7 – Customer Awareness on Green Practices (Source: created by the author)**

| Customer Awareness on Green Practices | Mean | DI |
|---|---|---|
| How aware are you of the green practices of the establishment? | 4.23 | Extremely Aware |
| Do you receive information about the green practices or sustainability efforts of this establishment during your visit? | 3.77 | Often |
| How often do you notice the establishment engaging in green practices during your stay? | 3.80 | Often |
| *Category Mean* | *3.93* | *Often* |

### High Awareness (M = 4.23)

Customers rated themselves as "Extremely Aware" of green practices (M = 4.23), suggesting that many enter establishments with pre-existing knowledge of sustainability principles, likely shaped by broader societal discourses on climate change and responsible consumption. This underscores the role of external social awareness in shaping consumer perceptions even before their direct experiences with an establishment.

### Moderate Awareness Through Communication and Observation (M = 3.77–3.80)

However, customers reported receiving information about sustainability less frequently (M = 3.77, "Often") and noticing green practices during their stay at a similar level (M = 3.80, "Often"). These results point to a communication gap: while establishments may be implementing strong sustainability measures, these efforts are not always visible or effectively communicated to guests. This could limit the potential of green practices to serve as a differentiating factor in customer satisfaction, loyalty, and willingness to pay more—themes widely discussed in sustainable hospitality literature.

### Interpretation and Implications

Overall, the data suggest that customers' awareness is driven more by general environmental consciousness than by establishments' communication strategies. This creates a perceptual gap: practices are in place, but customers are not consistently engaged or informed about them. This underutilises the opportunity to build stronger consumer trust and brand differentiation through sustainability.

To bridge this gap, establishments should adopt proactive communication strategies - such as visible signage, digital campaigns, and staff-led engagement - to make sustainability efforts more apparent. Research indicates that explicit communication of green practices not only strengthens customer awareness but also enhances satisfaction, loyalty, and willingness to support establishments that are perceived as environmentally responsible (Feng et al., 2022).

The results reveal an overall category mean of 4.46, indicating that respondents hold highly positive perceptions of green practices within their establishments. This suggests that employees and stakeholders not only recognise the presence of sustainability initiatives but also perceive them as meaningful, effective, and valuable to both the environment and the organisation (Table 8).

**Table 8 – Perception of employees on green practices (Source: created by the author)**

| Perception of Green Practices | Mean | DI |
|---|---|---|
| How effective do you think the green practices of the establishment are in reducing its environmental impact? | 4.53 | Extremely Effective |
| How important do you think green practices are in improving the reputation and sustainability of the establishment? | 4.27 | Extremely Important |
| How motivated are you to follow the green practices at work? | 4.53 | Extremely Motivated |
| How satisfied are you with the green practices implemented by your establishment? | 4.50 | Extremely Satisfied |
| *Category Mean* | *4.46* | |

### Perceived Effectiveness and Motivation (M = 4.53)

Respondents rated green practices as "Extremely Effective" in reducing environmental impact (M = 4.53) and expressed equally strong motivation to follow these practices at work (M = 4.53). This dual finding highlights a strong perception–behaviour alignment, where individuals not only believe in the value of sustainability initiatives but are also personally committed to participating in them. Such alignment is critical for institutionalising sustainable practices, as motivation and perceived efficacy are key predictors of long-term behavioural compliance.

### Perceived Importance for Reputation (M = 4.27)

The perception that green practices are "Extremely Important" for enhancing reputation and organisational sustainability (M = 4.27) reflects a growing recognition of the strategic value of environmental responsibility. This suggests that respondents view sustainability not merely as an ecological necessity but also as a reputational asset that strengthens competitiveness in the hospitality market.

### Satisfaction with Practices (M = 4.50)

High levels of satisfaction (M = 4.50) suggest that respondents perceive existing practices as both relevant and adequately implemented. However, satisfaction may also reflect modest expectations: while establishments are clearly engaging in visible and cost-effective practices, gaps remain in the adoption of high-capital, technology-driven solutions (as highlighted in earlier analyses of energy and purchasing practices).

### Interpretation and Implications

Overall, perceptions of green practices are overwhelmingly positive, suggesting that both employees and stakeholders have internalised sustainability as a core organisational value. However, the positivity of perceptions should not obscure structural limitations: favourable views may coexist with an incomplete or uneven implementation of advanced practices. These findings underscore the importance of sustaining and expanding organisational communication and training efforts, as positive perceptions provide a foundation for deepening engagement. Furthermore, aligning perceived effectiveness with measurable environmental outcomes will be crucial for avoiding "greenwashing" risks and ensuring credibility. From a managerial perspective, capitalising on employees' motivation and satisfaction offers an opportunity to position them as active ambassadors of sustainability, enhancing both operational outcomes and customer perceptions. The results yield an overall category mean of 4.07, reflecting a generally positive perception of sustainability initiatives within hospitality establishments. Customers not only express satisfaction with green practices but also acknowledge their influence on loyalty, decision-making, and willingness to pay, albeit with some limitations (Table 9).

**Table 9 – Customers' Perception of Green Practices (Source: created by the author)**

| Customers' Perception of Green Practices | Mean | DI |
|---|---|---|
| How satisfied are you with the environmental practices implemented by the establishment? | 4.37 | Extremely Satisfied |
| How likely are you to recommend the establishment to others based on its environmental efforts? | 3.90 | Very Likely |
| How important are green practices to your decision to stay at the establishment? | 4.10 | Very Important |
| Do you believe that the establishment's green practices improve your overall experience during your visit? | 4.10 | Very Much |
| How likely are you to pay more for services at this establishment because of its green practices | 3.90 | Very Likely |
| *Category Mean* | *4.07* | |

### Satisfaction and Experience (M = 4.10–4.37)

Customers reported being "Extremely Satisfied" with environmental practices (M = 4.37) and affirmed that such initiatives enhanced their overall experience (M = 4.10). This indicates that sustainability is not viewed as peripheral but rather as a contributor to service quality and customer value creation. Consistent with service quality theory (Parasuraman et al., 1988), these findings suggest that environmental responsibility can be perceived as an integral dimension of service excellence.

### Importance in Decision-Making (M = 4.10)

Customers considered green practices "Very Important" in influencing their decision to patronise establishments (M = 4.10). This supports the literature on environmentally conscious consumer behaviour, which highlights sustainability as an increasingly decisive factor in hospitality choice (Tennakoon et al., 2024).

### Advocacy and Willingness to Pay (M = 3.90)

While customers expressed a "Very Likely" inclination to recommend establishments based on environmental performance (M = 3.90), their willingness to pay a premium scored the same (M = 3.90), indicating only moderate strength. This reflects a common challenge in sustainable hospitality: customers value green practices but may hesitate to bear additional costs, aligning with the well-documented "attitude–behaviour gap" in sustainable consumption.

### Interpretation and Implications

Taken together, customer perceptions reflect a positive but cautious stance: sustainability enhances satisfaction and influences loyalty, but financial trade-offs may constrain actual consumer behaviour. Establishments may thus find that green practices strengthen reputation and differentiation, but monetising these advantages remains challenging unless accompanied by effective communication strategies that justify the added value.

For practitioners, the findings emphasise the importance of:

1) making green practices visible to strengthen satisfaction and experience;

2) framing sustainability as added value, not as an optional cost driver, to overcome resistance to price premiums;

3) leveraging customer advocacy, since positive perceptions can generate reputational benefits through word-of-mouth and online reviews.

From a scholarly perspective, the results highlight the need for further exploration of the value–action gap in sustainable hospitality and the mechanisms (e.g., transparency, trust-building, certification schemes) that may encourage customers to translate positive perceptions into stronger financial support.

### Type of Business (Hotel vs. Restaurant)

The independent-sample t-test (also known as the two-sample t-test) is a statistical procedure used to determine whether there is a significant difference between the means of two independent groups (Table 10). The test assumes that the two groups are unrelated (independent) and that each participant or unit belongs to only one of the groups (Marôco, 2021).

**Table 10 – Test of difference on the employees' green practices when grouped according to profile variables (Source: created by the author)**

| Types of Business | Mean | t-value | p-value | Decision |
|---|---|---|---|---|
| Hotel/ Restaurant | 2.33 | 14.21 | 0.000 | Reject Ho |
| **Profile** | **df** | **F** | **P-value** | **Decision** |
| *Year of Operation* | | | | |
| Between Groups | 2 | 2.05 | | |
| Within Group | 27 | | | |
| *Number of Employees* | | | | |
| Between Groups | 2 | 2.58 | | |

For example, in hospitality research, an independent-sample t-test could be applied to compare whether hotels and restaurants differ significantly in their adoption of green practices. Here, "type of establishment" defines the two groups, and the outcome variable (e.g., mean sustainability score) is compared across them.

The logic of the test is straightforward: it examines the ratio between the difference in group means and the variability of scores within each group (Marôco, 2021). If the observed difference between group means is large relative to the variability, it is unlikely to have occurred by chance, and the null hypothesis (H$_0$: there is no difference between groups) is rejected.

Formally, the test statistic is expressed as:

$$t = \frac{\overline{X_1} - \overline{X_2}}{\sqrt{S_p^2 \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}} \qquad (1)$$

Where $\overline{X_1}$ and $\overline{X_2}$ are the sample means of the two groups; $n_1$ and $n_2$ are the sample sizes; $S_p^2$ is the pooled variance, representing the average variability within the two groups (Marôco, 2021).

If the calculated *t*-value exceeds the critical value at a chosen level of significance (e.g., p < .05), the result indicates a statistically significant difference between the two groups.

**Assumptions**

The independent-sample t-test relies on three key assumptions:

1) independence of observations – the two groups are independent.

2) normality – the dependent variable is approximately normally distributed within each group.

3) homogeneity of variances – the variances of the two groups are equal (tested using Levene's Test).

If these assumptions are violated, alternative tests such as Welch's t-test or non-parametric methods (e.g., Mann–Whitney U test) can be used (Marôco, 2021).

In this study, you used the independent-sample t-test to test whether hotels and restaurants differed significantly in their sustainability practices. The results showed a significant difference (t = 14.21, p < .001), meaning that business type influences sustainability adoption.

The independent-sample t-test revealed a statistically significant difference between hotels (M = 2.33) and restaurants, with a t-value of 14.21 and a p-value of 0.000 (p < 0.05). The null hypothesis (H₀) was therefore rejected. This finding suggests that hotels and restaurants differ significantly in their adoption of environmentally friendly practices. Given the higher operational complexity and resource consumption of hotels (e.g., greater energy and water use, more diverse service offerings), it is plausible that hotels exhibit different levels of engagement with sustainability compared to restaurants, which may prioritise waste reduction and local sourcing due to food-focused operations.

**Years of Operation**

The one-way Analysis of Variance (ANOVA) is a statistical technique used to determine whether there are significant differences among the means of three or more independent groups (Marôco, 2021). Unlike the independent-sample t-test, which is limited to two groups, ANOVA extends the comparison to multiple categories of a single independent variable (or "factor").

For example, in this study, one-way ANOVA was employed to test whether sustainability practices varied significantly according to the years of operation (1–3 years, 4–7 years, and above 8 years) or the number of employees (1–3, 4–6, 7–10).

The logic of ANOVA is based on partitioning the total variation in the data into two components:

– between-groups variance – variation explained by differences in group means (the effect of the independent variable);

– within-groups variance – variation due to random error or individual differences within each group (Marôco, 2021).

The test produces an *F*-ratio, which is the ratio of the variance between groups to the variance within groups:

$$F = \frac{Mean\ Square\ Between\ Groups}{Mean\ Square\ Within\ Groups} \qquad (2)$$

If the calculated *F*-value is sufficiently large, and the associated p-value is below the chosen level of significance (e.g., p < .05), the null hypothesis (H₀: all group means are equal) is rejected, indicating that at least one group mean differs from the others.

**Assumptions**

1. Independence of observations – groups are independent of one another.

2. Normality – the dependent variable is approximately normally distributed within each group.

3. Homogeneity of variances – the variances across groups are equal (commonly assessed with Levene's Test).

When the assumption of equal variances is violated, a more robust test such as Welch's ANOVA may be applied (Marôco, 2021).

In this research, one-way ANOVA was used to test whether differences in green practices existed across categories of years of operation and number of employees. Results indicated no statistically significant differences (p = 0.15 for years of operation; p = 0.09 for number of employees). This means that sustainability adoption was not influenced by how long establishments had been in operation or by their workforce size, but rather shaped by other contextual or sectoral factors.

A one-way ANOVA was conducted to examine differences in green practices across establishments grouped by years of operation (1–3 years, 4–7 years, and above 8 years). Results showed F (2,27) = 2.05, p = 0.15, indicating no statistically significant differences. Thus, the null hypothesis was accepted. This suggests that the length of time an establishment has been in operation does not significantly influence its adoption of green practices. The result implies that sustainability efforts are being adopted regardless of organisational maturity, possibly due to shared external drivers such as regulatory frameworks, consumer expectations, or cost-saving imperatives.

**Number of Employees**

The Analysis of Variance (ANOVA) is a statistical procedure used to test whether there are significant differences in the means of two or more independent groups. Whereas a t-test is limited to comparing two means, ANOVA allows researchers to assess differences across multiple groups simultaneously, thereby reducing the risk of Type I error that would occur if multiple t-tests were run independently.

The basic principle of ANOVA is to compare the amount of variance between groups (caused by the independent variable) with the amount of variance within groups (caused by random error or individual differences) (Marôco, 2021). The test produces an F-ratio, calculated as:

$$F = \frac{Variance\ Between\ Groups}{Variance\ Within\ Groups} \qquad (3)$$

– A large *F*-ratio (with a p-value < .05) indicates that at least one group mean differs significantly from the others.

– A small *F*-ratio (with a p-value > .05) suggests that observed differences are likely due to random variation rather than a systematic effect.

**Assumptions**

1. Independence of observations – the groups being compared are independent.

2. Normality – the dependent variable is normally distributed within each group.

3. Homogeneity of variances – the variances of the groups are equal (often tested with Levene's Test).

If these assumptions are violated, more robust alternatives such as Welch's ANOVA or non-parametric tests (e.g., Kruskal–Wallis test) can be used.

**One-Way vs. Other ANOVAs**

– A one-way ANOVA tests for differences in means across categories of a single factor (e.g., years of operation: 1–3, 4–7, above 8 years).

– More complex designs include two-way ANOVA (testing for interactions between two factors) or repeated measures ANOVA (used when the same subjects are measured under different conditions).

**Application in This Study**

In this research, a one-way ANOVA was applied to examine whether sustainability practices differed significantly across groups based on years of operation and number of employees. The results indicated that neither factor had a statistically significant effect (p = .15 and p = .09, respectively). This suggests that sustainability adoption is not determined by organisational age or workforce size, but is likely shaped by other factors such as business type, regulatory environment, or consumer expectations.

Similarly, the ANOVA results for the number of employees revealed F (2,27) = 2.58, p = 0.09, which is also not statistically significant at the 0.05 level. The null hypothesis was accepted. This finding indicates that establishment size, as measured by workforce, does not significantly differentiate levels of sustainability adoption. The predominance of micro- and small-enterprises in the sample may explain this outcome, as most establishments have similar staff sizes (typically 4–6 employees), limiting variability between groups.

**Interpretation and Implications**

The inferential analysis demonstrates that the type of business

is the only factor that significantly differentiates sustainability practices. Hotels and restaurants appear to engage in green practices differently, likely reflecting sector-specific demands and operational structures. By contrast, years of operation and workforce size do not significantly affect adoption, suggesting that sustainability is not merely a function of experience or scale, but instead is shaped by broader contextual factors.

From a managerial perspective, these findings suggest that sector-specific interventions may be more effective than generalised training programs. For instance, hotels may require tailored strategies that address energy and water conservation, while restaurants may benefit from stronger support in reducing food waste and promoting sustainable sourcing. Policymakers and industry associations could design differentiated sustainability frameworks to address the unique challenges and opportunities of each subsector.

## Results, Interpretation, and Implications

The findings of this study provide a comprehensive picture of how food and lodging establishments in the Iberian Peninsula operationalise sustainability. The respondent profile revealed that the sector is dominated by micro- and small-sized enterprises, with most businesses employing between four and six workers and operating for four to seven years. The sample included both hotels and restaurants in relatively equal proportion, ensuring representation across the two main sub-sectors. These structural features contextualise the results: limited manpower and financial resources constrain the adoption of capital-intensive innovations, while the relatively young age of most establishments reflects a sector still consolidating its practices but showing agility in adopting low-cost, behaviourally oriented measures.

Across the four domains of sustainability practices, the results demonstrate a strong orientation toward environmental responsibility, though with varying degrees of intensity. Energy efficiency practices were widely implemented, with establishments making consistent use of LED lighting, natural ventilation, and guest engagement strategies. These practices indicate a pragmatic reliance on cost-effective solutions that are easily integrated into daily operations. However, more capital-intensive measures such as solar energy systems and automated sensors were only occasionally adopted, underscoring the structural barriers faced by small enterprises. Water efficiency practices were similarly robust, with rainwater collection, leak monitoring, and low-flow fixtures widely used. While towel and linen reuse programs were also in place, they were less consistently adopted, suggesting that customer-facing initiatives remain a relative weakness compared to infrastructural and operational measures.

Waste management emerged as the strongest domain, with comprehensive recycling and composting programs, staff training, and guest involvement all scoring near universal adoption. The practices not only reflect a strong institutionalisation of waste reduction but also indicate alignment with both environmental and cost-saving imperatives. Yet, food donation programs and the reduction of single-use plastics were notably weaker, revealing persistent challenges linked to legal restrictions, logistical barriers, and adaptation to regulatory changes such as the European ban on single-use plastics. Sustainable purchasing also scored highly, especially in the sourcing of ethical and eco-friendly products, biodegradable packaging, and non-toxic cleaning supplies. However, long-term investments in sustainable furniture and fixtures were rarely made, reflecting the capital intensity of such initiatives and the difficulty of prioritising them in resource-constrained enterprises.

Beyond operational practices, the study also examined levels of awareness and perception among employees and customers. Employees demonstrated a moderate-to-high level of awareness of sustainability practices, though much of this knowledge appeared to be acquired informally rather than through structured training. While they were generally very familiar with practices, the relatively low score for formal training highlights a gap in capacity building. Despite this, employee perceptions were overwhelmingly positive: they viewed green practices as highly effective in reducing environmental impact, as important for reputation, and reported strong motivation and satisfaction with their adoption. Customers, in turn, expressed strong general awareness of sustainability but reported only moderate recognition of practices during their visits, revealing a communication gap. Although they valued sustainability as part of their experience and decision-making, their willingness to pay more for environmentally responsible services remained limited, consistent with the well-documented attitude–behaviour gap in sustainable consumption.

Inferential analysis further clarified the patterns. Significant differences were found between hotels and restaurants, suggesting that sustainability adoption varies by subsector, likely reflecting different operational demands and cost structures. However, no significant differences were observed by years of operation or number of employees, indicating that sustainability practices are not dependent on organisational maturity or scale but are instead shaped by external drivers such as regulatory frameworks, consumer expectations, and cost-saving imperatives.

Taken together, the findings highlight that sustainability in the Iberian Peninsula's hospitality sector is rooted in pragmatic, cost-effective practices rather than advanced technological investments. Waste management emerged as the strongest domain, followed by water conservation, sustainable purchasing, and energy efficiency, the latter being limited by reliance on low-cost measures. Employees demonstrated strong motivation and positive perceptions, while customers expressed satisfaction but revealed lower levels of visibility and weaker financial commitment. These dynamics illustrate that sustainability has been embraced as a core organisational value but remains uneven in implementation and communication.

The implications are twofold. From a theoretical perspective, the study supports existing scholarship that emphasises the predominance of behaviourally driven, low-cost initiatives in small-scale enterprises and contributes to debates on the value–action gap by illustrating the disjunction between customer appreciation of sustainability and their limited willingness to pay. From a practical perspective, the findings underscore the need for capacity building through formal training for employees, stronger communication strategies to increase customer awareness, and policy interventions to support capital-intensive investments such as renewable energy and sustainable infrastructure. Sector-specific strategies are also necessary: hotels require targeted support for energy and water management, while restaurants may benefit from greater focus on food waste reduction and sustainable sourcing.

In sum, the hospitality sector in the Iberian Peninsula demonstrates both readiness and commitment to sustainability, but its progress is constrained by structural limitations and inconsistent communication. To transition from incremental, cost-saving actions to transformative change, a more systemic approach is needed that aligns business practices with policy incentives, technological innovation, and customer engagement. Only through such coordinated efforts can the sector fully contribute to regional and global sustainability goals.

## Conclusions

This study examined the adoption of green practices among food and lodging establishments in the Iberian Peninsula, providing a comprehensive account of sustainability initiatives across energy efficiency, water conservation, waste management, and sustainable purchasing. The results reveal that while the hospitality sector is strongly engaged with environmentally responsible practices, implementation is uneven and shaped by structural, financial, and communicative constraints. Waste management and water conservation emerged as the most consistently applied domains, reflecting practices that are both cost-effective and operationally feasible. In contrast, energy efficiency and sustainable procurement showed gaps, particularly in capital-intensive areas such as renewable energy systems and sustainable infrastructure.

The analysis further demonstrated that employees possess high levels of motivation and positive perceptions toward green practices, though their awareness is often developed informally and not reinforced through systematic training. Customers, meanwhile, expressed satisfaction with and recognition of sustainability efforts, but their awareness during visits was limited by weak communication strategies, and their willingness to pay a premium for environmentally responsible services remained modest. Together, these findings underscore the persistence of the "value–action gap" in sustainable hospitality, in which stakeholders express support for sustainability but are hesitant or unable to translate this support into consistent behavioural or financial commitment.

Statistical analysis confirmed that differences in sustainability

adoption are more strongly associated with the type of establishment (hotels versus restaurants) than with organisational size or years of operation. This suggests that sustainability strategies must be sector-specific, addressing the unique operational and environmental challenges of different hospitality formats.

Theoretically, this study contributes to scholarship on sustainable hospitality by reinforcing the argument that micro- and small-enterprises adopt pragmatic, low-cost sustainability measures rather than advanced technological solutions. It also provides empirical evidence on how employee perceptions and customer awareness interact with organisational practices, enriching debates on stakeholder engagement and sustainable consumer behaviour. Practically, the findings highlight the need for targeted capacity-building through formal training, improved communication strategies to enhance customer recognition of sustainability initiatives, and policy frameworks that provide financial incentives for high-cost innovations such as renewable energy and sustainable furnishings.

Ultimately, the Iberian Peninsula's hospitality sector demonstrates readiness and commitment to sustainability, but its potential remains constrained by resource limitations and communication gaps. To advance beyond incremental, cost-saving practices, a systemic approach is required that integrates business operations, customer engagement, and supportive public policy. Strengthening these interconnections will enable the sector not only to contribute more effectively to regional and global sustainability goals but also to position itself as a model of environmentally responsible hospitality in ecologically sensitive contexts.

## References

Abdou, A. H., Hassan, T. H., & El Dief, M. M. (2020). A Description of Green Hotel Practices and Their Role in Achieving Sustainable Development. *Sustainability, 12*(22), 9624. https://doi.org/10.3390/su12229624

Abellán, F. C., & García Martínez, C. (2021). Landscape and Tourism as Tools for Local Development in Mid-Mountain Rural Areas in the Southeast of Spain (Castilla-La Mancha). *Land, 10*(2), 221. https://doi.org/10.3390/land10020221

Ahmad, S., Wong, K. Y., & Butt, S. I. (2022). Status of sustainable manufacturing practices: literature review and trends of triple bottom-line-based sustainability assessment methodologies. *Environmental Science and Pollution Research, 30*(15), 43068–43095. https://doi.org/10.1007/s11356-022-22172-z

Anitha Rajathi, V. M., & Reshma Parveen, B. (2024). A conceptual study on the impact of green manufacturing practices. *Open Access Research Journal of Engineering and Technology, 6*(2), 87–94. https://doi.org/10.53022/oarjet.2024.6.2.0024

Bangura, S., Ngidi, L. Z., & Mathews, M. P. (2024). Green human resource management practices: A conceptual review. *International Journal of Applied Research in Business and Management, 5*(2), Article 28. https://doi.org/10.51137/ijarbm.2024.5.2.28

Barakagira, A., & Paapa, C. (2023). Green practices implementation for environmental sustainability by five-star hotels in Kampala, Uganda. *Environment, Development and Sustainability, 26*(4), 9421–9437. https://doi.org/10.1007/s10668-023-03101-7

Chornobylskyi, A., Kyrylova, O., Krupskyi, O., & Khotiun, L. (2023). Social Sharing of Emotions in Social Media System on the Example of Creepypasta on Reddit. *Information & Media, 96*, 65–79. https://doi.org/10.15388/im.2023.96.66

Cunha, M. N., Pereira, M., Cardoso, A., Figueiredo, J., & Oliveira, I. (2024). Revolutionizing luxury: The role of AI and machine learning in enhancing marketing strategies within the tourism and hospitality luxury sectors. *GeoJournal of Tourism and Geosites, 55*(3), 1345–1353. https://doi.org/10.30892/gtg.55335-1307

Cunha, M., & Krupskyi, O. (2023). When the Sensory World is Set Aside! The New Fantastic World of Luxury. *Economics: Time Realities, 6*(70), 44–53. https://doi.org/10.15276/etr.06.2023.6

Esa, M. M., & Hashim, N. F. M. (2024). The Adoption of Green Practices in the Manufacturing Industry. *Information Management and Business Review, 16*(3(I)), 560–573. https://doi.org/10.22610/imbr.v16i3(i).4008

Feng, Y., Lai, K., & Zhu, Q. (2022). Green supply chain innovation: Emergence, adoption, and challenges. *International Journal of Production Economics, 248*, 108497. https://doi.org/10.1016/j.ijpe.2022.108497

Fraisl, D., Hager, G., Bedessem, B., Gold, M., Hsing, P.-Y., Danielsen, F., Hitchcock, C. B., Hulbert, J. M., Piera, J., Spiers, H., Thiel, M., & Haklay, M. (2022). Citizen science in environmental and ecological sciences. *Nature Reviews Methods Primers, 2*(1). https://doi.org/10.1038/s43586-022-00144-4

Hariadi, S., Moengin, P., & Maulidya, R. (2023). Impact of green practices through green product and service innovation: sustainable product-service system performance model. *International Journal of Sustainable Engineering, 16*(1), 1–15. https://doi.org/10.1080/19397038.2023.2205873

Khan, S. A. R., Yu, Z., & Farooq, K. (2022). Green capabilities, green purchasing, and triple bottom line performance: Leading toward environmental sustainability. *Business Strategy and the Environment, 32*(4), 2022–2034. https://doi.org/10.1002/bse.3234

Khatter, A. (2025). Challenges and Solutions for Corporate Social Responsibility in the Hospitality Industry. *Challenges, 16*(1), 9. https://doi.org/10.3390/challe16010009

Kusa, R., Suder, M., & Duda, J. (2023). Impact of greening on performance in the hospitality industry: Moderating effect of flexibility and inter-organizational cooperation. *Technological Forecasting and Social Change, 190*, 122423. https://doi.org/10.1016/j.techfore.2023.122423

Liu, S. Q., Bilgihan, A., & Kandampully, J. (2025). The intersection of technology, sustainability and consumer experiences in hospitality and tourism for new horizons. *Journal of Hospitality and Tourism Horizons, 1*(2), 87–109. https://doi.org/10.1108/jhth-03-2025-0038

Marôco, J. (2021). *Análise estatística com o SPSS statistics* (8ª ed.). ReportNumber. http://id.bnportugal.gov.pt/bib/bibnacional/2068652

Moise, M. S., Gil-Saura, I., & Ruiz Molina, M. E. (2021). The importance of green practices for hotel guests: does gender matter? *Economic Research-Ekonomska Istraživanja, 34*(1), 3508–3529. https://doi.org/10.1080/1331677x.2021.1875863

Ngoc Khuong, M., Hanh Nhan, D., & Thi Minh Phuong, N. (2023). The effects of restaurant green practices on customer intention to purchase eco-friendly products: evidence from Vietnam. *Zbornik Radova Ekonomskog Fakulteta u Rijeci: Časopis Za Ekonomsku Teoriju i Praksu / Proceedings of Rijeka Faculty of Economics: Journal of Economics and Business, 41*(1), 205–248. https://doi.org/10.18045/zbefri.2023.1.205

Nguyen Thi Huyen, N., Duong Hong, H., & Hoang Thi, L. (2025). Green practices: Building green image and green trust for green revisit intentions in the hospitality industry. Journal of Open Innovation: *Technology, Market, and Complexity, 11*(1), 100481. https://doi.org/10.1016/j.joitmc.2025.100481

Odeyemi, O., Usman, F. O., Mhlongo, N. Z., Elufioye, O. A., & Ike, C. U. (2023). Sustainable entrepreneurship: A review of green business practices and environmental impact. *World Journal of Advanced Research and Reviews, 21*(2), 346–358. https://doi.org/10.30574/wjarr.2024.21.2.0461

Pascoal, S. C., & Pascoal, J. E. (2023). The international Douro/Arribas do Douro landscape: eco and literary tourism potential. *E- Revista De Estudos Interculturais*, (11). https://doi.org/10.34630/e-rei.vi11.5294

Satpathy, S., Satpathy, S. K., Durga Amruta, N., Jyothirmi, S., & Triveni, P. (2022). Green marketing practices: A sustainable approach for enhancing the organizational performance and sustainable development. *Manager - The British Journal of Administrative Management, 58*(150), 4–14. https://e.surl.li/cxhjie

Tennakoon, W. D. N. M. S., Janadari, M. P. N., & Wattuhewa, I. D. (2024). Environmental sustainability practices: A systematic literature review. *European Journal of Sustainable Development Research, 8*(3), em0259. https://doi.org/10.29333/ejosdr/14604