

## **From Staff Action to Sustainable Impact: Predicting Employee Behavior in Hotel Waste Management – Grupo Arpoador Case**

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**Abstract:** This study applies the Theory of Planned Behavior (TPB) to identify the factors that predict employees' adoption of waste management practices in hotels, using the case of Grupo Arpoador in Rio de Janeiro — recognized for earning the Zero Waste Certification (2023–2024) and the Green Seal (2024). Based on the TPB framework and adopting a qualitative methodology (semi-structured interviews and document analysis), this case study examines how attitudes, subjective norms, and perceived behavioral control shape sustainable behaviors, and how organizational practices such as embedded training, data-driven implementation, and corporate policies strengthen these predictors. Findings not only validate the relevance of TPB in this context by identifying these psychological and organizational factors as important drivers of employees' pro-environmental behavior, but also demonstrate how this behavioral change contributes to operational efficiencies, including reductions in costs related to waste, energy, and water.

**Keywords:** employee sustainable behavior; waste management; sustainable practices; hotels; hospitality sector

## 1. Introduction

In the tourism industry, hotels play a crucial role in the sustainability agenda due to their high consumption of energy and water and the significant generation of waste, especially food waste (Resorts Brasil, 2022). According to Lenzen et al. (2018), the tourism sector is responsible for approximately 8% of global greenhouse gas emissions, which highlights the urgent need to rethink its operational practices. As reported by a company from UK called Business Waste (2025), hotels around the world produce almost 290,000 tonnes of waste every year. The Hotel Waste Statistics (Business Waste, 2025) show that a third of this amount regards food waste. Indeed, the hotel industry is one of the top global contributors to food waste, especially due to the operation of restaurants, buffets, and other food and beverage services (Filimonau; De Coteau, 2019). In this context, the creation of ISO 21401:18 – Sustainability Management System for Accommodation Establishments – represents an important step toward sustainable tourism, since it addresses the management of water, energy, and waste, as well as biodiversity preservation, social inclusion, and economic viability, encouraging hotels to adopt more responsible operational practices (ISO, 2018).

In Brazil, waste management still faces major obstacles, both in terms of infrastructure and public policies, as well as organizational awareness. Low recycling rates, improper waste disposal, and the lack of effective waste reduction policies are aspects that also affect hotel business (Silva; Teixeira, 2020). In this context, hotel chains have been pursuing initiatives aimed at aligning their operations with sustainability principles. As a result, recognized certifications (such as the Zero Waste International Certification and the Green Seal) have gained prominence in the sector, as they serve to validate the company's commitment to environmentally responsible practices in the view of the broader community (González-Rodríguez et al., 2020). Although, these certifications are not mandatory in Brazil, they can be seen as a tool to establish competitive advantage and enhance brand reputation (González-Rodríguez et al., 2020).

However, adopting sustainable practices requires more than infrastructure investment or the pursuit of certifications, it also requires cultural and behavioral changes among the employees (Nisar et al., 2021). This change in daily operations relies on staff members, especially those working directly in kitchens, housekeeping, maintenance, and guest services, who are ultimately responsible for the correct execution of sustainability protocols on the front lines (Chan et al., 2014). Nevertheless, there is still limited academic literature analyzing the relationship between employee role and the effectiveness of waste management practices in hotels, which reveals a significant research gap within sustainability studies in the hospitality sector (Chawla; Lugosi; Hawkins, 2022).

Therefore, considering that employees play a relevant role in the process of sustainable transformation, the research question guiding this study is: "What factors predict employees' adoption of waste management practices in hotels?". To address this, the study applies the Theory of Planned Behavior (TPB) as theoretical framework, which posits that intention—shaped by attitudes, subjective norms, and perceived behavioral control—is the primary antecedent of behavior. Consequently, this article aims to identify and analyze the factors that predict employees' behavior regarding the adoption of waste management practices in a

sustainability-oriented company, through a TPB lens, using a case study of two of the units of Grupo Arpoador, located in Rio de Janeiro. Moreover, the specific objectives are: (i) to understand how employees perceive sustainable initiatives related to waste management (attitude); (ii) to investigate the factors that foster or hinder the adoption of waste management practices, including social influences (subjective norms) and perceived barriers or facilitators (perceived behavioral control).

This hotel group was selected due to its certified achievements in sustainability, including the Green Seal in 2024, and the Zero Waste International Certification for two consecutive years (2023 and 2024), as evidenced by these independent certifications. Grupo Arpoador was the first hotel group in Rio de Janeiro to receive the Zero Waste Certification for two consecutive years (Grupo Arpoador, 2024).

The research adopts a qualitative methodology, based on semi-structured interviews with employees from different departments and with Hubis' leadership (a consultancy company that guides Grupo Arpoador sustainable policies). In addition, a document analysis (Bowen, 2009) was conducted, utilizing secondary data from Grupo Arpoador's sustainability reports and internal documents to understand how employee involvement in sustainable practices has been built, maintained, and encouraged over time.

By exploring the interdependence between sustainable initiatives and employee participation, this study aims to offer new perspectives for waste management in the hospitality sector through the theoretical lens of the Theory of Planned Behavior (TPB). By analyzing the factors that predict employees' pro-environmental behavior, the research emphasizes how attitudes, subjective norms, and perceived behavioral control are shaped by training policies, internal communication, and the development of a sustainability-oriented organizational culture.

As delimitation, the case study concentrates on solid waste management of the hotel units, not restricted only to food waste, but also encompassing recyclable and non-recyclable waste generated by different departments. Furthermore, quantitative environmental performance indicators were not evaluated.

From this Introduction, the paper is divided into four sections: literature review followed by the methodological approach. Then, findings and final considerations.

## **2. Theoretical foundation**

Waste management in the hospitality sector has received increasing attention, as the demand for sustainable practices grows globally (Herzallah et al., 2025). Hotels, as a core part of the tourism industry, generate large volumes of waste, especially food waste, positioning them as critical agents in the pursuit of environmental solutions (Mensah, 2006; Pirani; Arafat, 2014). Several studies (Herzallah, et al., 2025; Nisar et al., 2021) highlight the need for effective waste management strategies in hotels, such as proper waste segregation, composting, recycling, and reducing input consumption (Radwan, Jones; Minoli, 2012).

However, a systematic search on Scopus and Web of Science using keywords such as "waste management," "hotel," "employee behavior," and "sustainability" revealed that the literature seems to be predominantly focused on managerial and technical approaches to food waste management, often overlooking the human element. While valuable, this body of work often treats the employee as a passive executor of top-down directives rather than a central agent of change.

Although some studies acknowledge that the success of sustainability initiatives depends on collaboration across all hotel departments (Chan et al., 2014), there remains a research gap regarding the role of employee as a relevant factor in the effectiveness of waste management, including all hotel departments, not only regarding food waste operations. Understanding how a sustainability-oriented organizational culture influences proactive employee behavior and staff involvement in decision-making and sustainable practices directly impacts environmental outcomes is relevant.

Therefore, the present study addresses it by investigating the human factors behind the day-to-day implementation of integrated waste management (across all waste streams) from the perspective of all operational staff (e.g., housekeeping, front desk, maintenance), not just kitchen and restaurant teams. For instance, Chawla, Lugosi, and Hawkins (2022) applied the TPB theory to food waste but specifically within food and beverage teams. This leaves a significant opportunity to understand the holistic behavioral dynamics across a hotel's entire operational structure.

By adopting the TPB as a theoretical lens, we assume that human behavior is influenced by three main components: attitudes (individual evaluations of the behavior), subjective norms (perceived social pressures), and perceived behavioral control (the perceived ease or difficulty of performing the behavior), as in Ajzen (1991). The TPB is widely recognized as one of the most robust theories for predicting intentional behavior, including in organizational and sustainability contexts (Yuriev et al., 2020). Table 1 presents the TPB core constructs, and the applications found on the literature review about hotel waste management.

Applying TPB to the context of waste management in hotels allows us to understand how employees form intentions to act sustainably and what organizational and cultural factors support or hinder such the translation of intention into behavior. For example, a strong sustainability-oriented organizational culture may directly influence employees' perceived subjective norms, thereby strengthening their intention to adopt sustainable practices (Ramayah et al., 2013). Additionally, when employees feel they have the necessary control and resources - such as training, infrastructure, and leadership support - they are more likely to engage in sustainable behaviors in their daily work. In this study, the behavioral intention to engage in waste management practices will be analyzed through the three core dimensions of the TPB, also considering how shared values within the hotel and mechanisms of learning influence this process.

Table 1: TPB Constructs for Hotel Waste Management

Variable	Definition	Application in Previous Sustainability Studies
Attitude	The degree to which an individual has a favorable or unfavorable evaluation of the specific behavior (Ajzen, 1991).	Positive attitudes towards sustainability have been found to significantly predict intentions to reduce energy consumption (Yuriev et al., 2020) and participate in recycling programs (Ramayah et al., 2013) in various organizational settings.
Subjective Norms	The perceived social pressure from important others (e.g., managers, peers) to perform or not perform the behavior (Ajzen, 1991).	In hotels, leadership commitment and team culture have been shown to create social pressure that encourages pro-environmental behaviors like towel reuse and waste separation (Chan et al., 2014).
Perceived Behavioral Control	The perceived ease or difficulty of performing the behavior, influenced by factors like resources, knowledge, and autonomy (Ajzen, 1991).	The availability of training, infrastructure (e.g., clearly labeled bins), and a sense of empowerment are key to PBC, directly impacting the intention to perform sustainable actions like composting (Chawla et al., 2022).

Source: The authors

The literature review revealed a potential gap in researches related to waste management in the hospitality sector: few studies analyze the role of hotel staff as a whole — including front desk agents, kitchen staff, housekeeping, and other operational employees — in the implementation of effective waste management practices – not food waste management (Chawla, Lugosi, & Hawkins, 2022; Herzallah, et al., 2025; Nisar et al., 2021). Although some studies (Chan et al., 2014; Chawla, Lugosi, & Hawkins, 2022) have examined the relationship between employees and sustainability initiatives, their primary focus has been on food waste and has largely been confined to kitchen and restaurant teams. Notably, Chawla, Lugosi, and Hawkins (2022) analyzed this relationship through the framework of the Theory of Planned Behavior. However, hotels generate various types of waste beyond food, such as plastics, paper, glass, bathroom waste, and other organic materials. The lack of research exploring the potential contribution of different departments within the hotel to waste management limits the understanding of how a sustainability-oriented organizational culture can be integrated across all staff, leading to more comprehensive and lasting results.

### 3. Research Method

This section presents the research design, as well as the data collection and treatment.

### 3.1. Study Design

From a qualitative approach, this study combined primary and secondary data to provide a comprehensive understanding of the subject: the role of employee in waste management practices at Grupo Arpoador, in order to understand the factors that predict employees' behavior regarding the adoption of waste management practices in a sustainability-oriented company, based on the TPB theory.

Primary data was obtained through semi-structured interviews with three stakeholder groups: (1) Grupo Arpoador employees and management, (2) sustainability consultants from Hubis (Innovation for Sustainability Hub), which advises Grupo Arpoador on environmental strategy implementation, and (3) an ABIH (Brazilian Hotel Industry Association), representative that oversees the Green Seal certification standard. Stakeholders from Groups 2 and 3 provided critical insights into industry standards, operational challenges and the institutional frameworks shaping waste management practices in Brazilian hospitality.

Table 2: Interviewers Profile

Identification/role	Area	Time at the company
Leader 1	General Management	15 years
Leader 2	Kitchen	2 years
Leader 3	Human Resources	3 years
Employee 1	Kitchen	10 years
Employee 2	Front Desk	2 years and 9 months
Employee 3	House Keeping	10 months
Specialist 1	Sustainability Consultant	4 years and 2 months
Specialist 2	Sustainability Consultant	4 years and 2 months
Representative 1	Hospitality Association	N/A

Source: The authors

Group 1 interviews were structured to cover the main topics, such as having an icebreaker moment at the beginning and discussing their previous knowledge in sustainability, before joining Grupo Arpoador and learning about their practices. Then, there were questions about their perception about the relevance of the subject in question, followed by their knowledge of project operations, how communication between leadership and staff was and if there was any resistance to adapting on any side of the spectrum. Their opinion about the challenges when implementing the initiative, the success factor and the lessons learned were also mapped.

When interviewing the staff, two new questions were added: one to measure the autonomy and accountability; and, when interviewing the leadership, another aim at addressing if there were

any financial restrictions and the approval process of the projects. Appendix 1 provides the interview guide.

Secondary data included the analysis of operational reports and external certification guidelines to contextualize interview findings. The secondary data collection included Grupo Arpoador's 2024 Sustainability Report and operational dashboards, alongside industry frameworks including the Zero Waste Certification Guide and ESG Brazil Resort Guide. These documents collectively communicate the hotel group's sustainable operations, demonstrating its achievement of diverting 90% of waste from landfills through recycling and composting programs, along with significant reductions in food waste (40%) and water consumption (16%). The dashboards provided waste composition metrics, enabling real-time monitoring of recyclable, compostable and non-recyclable streams, while temporal comparisons (2022-2024) revealed progressive efficiency gains across operational areas.

The certification guidelines and ESG (Environmental, Social and Governance) framework offered benchmarks for evaluating Grupo Arpoador's practices against industry standards, particularly emphasizing three key dimensions: waste diversion targets, employee training protocols and third-party verification processes. These resources showed the interdependence of technical infrastructure, policy alignment and human factors in achieving sustainability goals, while highlighting the hotel group's integration of global ESG principles with local operational strategies, including renewable energy adoption and community partnerships.

### *3.2. Data Analysis*

The data analysis employed a thematic content analysis approach, following the procedures outlined by Bardin (2011) to examine interview transcripts and secondary documents, guided by the TPB theory to assess how employee's role in waste management was influenced by attitudes, subjective norms and perceived behavioral control. The coding process began with a manual transcription of all interviews, followed by a floating reading. Subsequently, a categorical framework was established a priori based on the three core constructs of the TPB (attitudes, subjective norms, perceived behavioral control). The transcripts then underwent a vertical (within each interview) and horizontal (across all interviews) analysis, where recurring patterns were identified, coded, and categorized into these pre-defined themes. These emergent categories were then confronted and triangulated with secondary data sources, such as sustainability reports and certification guidelines. This triangulation—cross-referencing data from interviews, documents, and the theoretical framework—strengthened the validity of the findings. The themes that emerged (embedded training, corporate policies and data-driven implementation), which represent the organizational drivers, were further analyzed to clarify the behavioral and organizational mechanisms driving sustainable practices.

To examine how these factors affect employees' involvement in waste management operations, a framework proposed by Chawla, Lugosi, and Hawkins (2022) was adapted (see Figures 1 and 2). The revised framework focuses on organizational practices that shape the waste management culture among employees: embedded training, corporate policies, and data-driven implementation, rather than emphasising operational pressures, corporate policies, and established work practices. At the organizational level, corporate policies establish a foundation

for data-driven approaches, ensuring training initiatives are systematically implemented and evaluated. These structural elements also influence employee attitudes, their perceived behavioral control and subjective norms. These factors then directly shape the adoption of sustainable behaviors and practices among employees. By tracing these relationships, the framework provides a structured approach to understanding how organizational strategies, mediated by individual attitudes, can effectively promote sustainability in the workplace.

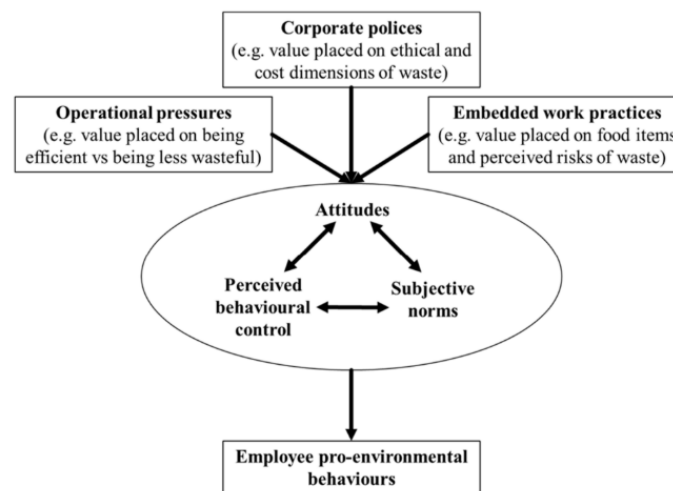


Figure 1: Original Framework

Source: (Chawla; Lugosi; Hawkins 2022)

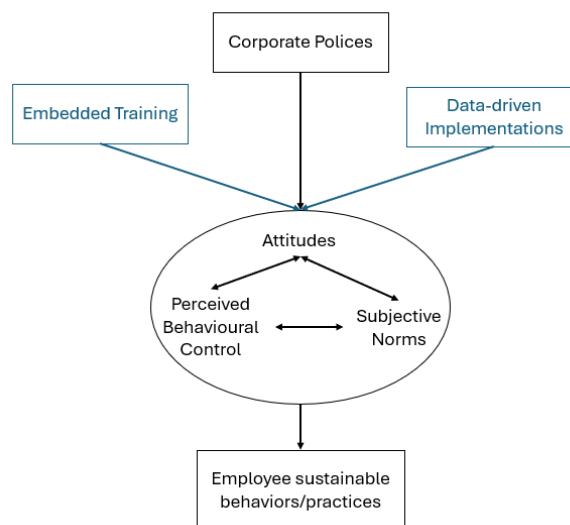


Figure 2: Revised framework

Source: The authors

The findings present the interplay of these themes (embedded training, corporate policies and data-driven implementation) to illustrate how Grupo Arpoador tries to align individual behaviors with organizational sustainability goals.

#### **4. Findings**

Different from previous literature that focus on food waste (Chan et al., 2014; Chawla; Lugosi; Hawkins, 2022; Pirani; Arafat, 2014), this case study covered the hotel waste management practices, including all sectors of Grupo Arpoador hotels. The interviews done with the three leaders and the two specialists revealed the strong role of employees in the waste management operations at the hotels of Grupo Arpoador, as highlighted:

*“The employees are the ones who will make the waste management strategy happen. Without them, it's just a plan on paper.” – Leader 1*

*“Employee engagement is essential to maintaining operational efficiency, as employees are the people most likely to correct errors when waste is not disposed of correctly, as well as being the people most capable of analyzing processes to generate and propose waste reduction strategies.” – Specialist 2*

The perspectives of organizational leaders and specialists are consistent with the analysis of secondary data: both declare that the employees are a vital component of a successful waste management strategy and are critical for a company to achieve certifications like "Zero Waste". The guidance provided by The Zero Waste Certification guide, for example, underscores the critical contribution of employees. The guide stresses the importance of internal education and awareness initiatives and advocates for the creation of a multidisciplinary team with representatives from all departments to foster a comprehensive approach. These strategies are intended to inform all staff members about the advantages and goals of Zero Waste, as confirmed by employee interviews. Employee behavior is further examined in Sections 4.1 to 4.3, detailing the three components of the TPB, while other dimensions of Figure 2 are discussed in Sections 4.4 to 4.6.

##### *4.1 Attitude*

Attitude has been defined by Ajzen (1991) as the degree to which a person has (un)favourable evaluation or appraisal of the behavior in question. The interview with HR Leader (Leader 3) suggested that employees have a positive attitude regarding the waste management practices and that many of them were unfamiliar with the waste management practices before working at the hotel, the reason why the group considers crucial the onboarding and training sessions regarding the topic. All the employees interviewed said that, when they started working for the group, they were trained in the topic and raised awareness of its benefits.

*“In most cases, employees are very receptive to the policies and begin implementing them without hesitation.” – Leader 3*

*“The onboarding experience was transformative - I learned more at the hotel than in science class. And during the initial training sessions, the sustainability issue was constantly present.” - Employee 1*

The employees understand their individual contribution to operational efficiency in waste management and perceive that each one has a role to play in reaching the major objective. The waste practices are part of their daily routines, and most of them declared that they expanded these practices to their personal lives:

*“Here I learned to believe that what I do matters. The little thing you do matters. Try to do our best, even if it's not very big.” - Employee 3*

*“I started buying sustainable detergent for my home and I read all the labels at the supermarket.” - Employee 2*

According to the TPB, attitude is the favorable or unfavorable evaluation of a specific behavior, indicating whether the person considers the action a good or bad idea. In this case all employees interviewed expressed a “good idea” about the waste management practices.

#### 4.2 Subjective Norms

Subjective norms are the “perceived social pressure that is the expectations of significant reference persons to perform or not perform a behavior.” (Bamberg; Möser; 2007, p. 16). Grupo Arpoador aims to be a reference on sustainability practices and the Zero Waste Certification with reveals a cultural expected behavior oriented to sustainability. In addition to the initial training already mentioned, the group offers constant update meetings on the topic, making clear and explicit the importance of the theme for the achievement of its objectives.

*“What helped convince the team first was the reality check, photos and figures on waste in the world, in Brazil, and the sector. Then, the construction of a common goal, a purpose. The experience of our zero-waste culture.” – Leader 2*

*“The hotel's sustainability culture is very evident, which leaves no room for employees who resist the policies. The learning process is respected, and employees help each other when they notice a mistake during waste management.” – Leader 3*

*“The importance of sustainability for the hotel was clearly demonstrated from the interview onward.” – Employee 1*

Meetings and communications encompass all relevant areas, with robust data utilization underpinning these processes. Additionally, the organization benefits from an internal Multidisciplinary Sustainability Committee consisting of employees and leaders from Grupo Arpoador, as well as an external sustainability consultant that promotes the expected standard of conduct: recognizing sustainability as a collective responsibility that necessitates active involvement from all members. The Committee has monthly meetings and is currently focused

on the promoting and implementing the actions required for acquiring the Green Key Certification - an international sustainability certification aimed at business in the tourism and hospitality sector. As a result, the group's culture and leadership practices exert social pressure that impacts the employee's behavior.

The interviews indicated that staff members maintain a consistent and standardized discourse across the team. For instance, all respondents began their remarks with similar statements regarding the importance of implementing ESG practices at the hotels, which was emphasized during their hiring process by Grupo Arpoador. Additionally, employees displayed familiarity with waste management procedures in various hotel departments, including those outside their direct responsibilities, reflecting this shared organizational culture.

*"I realize that proper waste management is very valuable for the hotel and its employees. The integration of various departments in promoting proper waste separation and avoiding waste is part of the hotel's organizational culture." – Specialist 1*

#### 4.3 Perceived Behavioral Control

According to Ajzen (1991), Perceived Behavioral Control (PBC) refers to actors' evaluations of how easy or difficult it may be to enact certain behaviors. The interviews showed that continuous training in addition to a transparent and open approach have created an environment of learning and trust in Grupo Arpoador hotels, where colleagues feel comfortable teaching each other.

*"The training approach is gradual, an invitation that facilitates learning. They always ask if you understand and if you're having any difficulties." – Employee 2*

*"At first, I forgot, but over time, it became automatic to separate the waste. And if I make a mistake, I don't mind being reminded to pay more attention." – Employee 1*

In addition, valuing the employee's role, listening, and encouraging initiative also contributes to foster a strong sense of accountability, as identified in the interviews:

*"The kitchen staff realized that breakfast meals were responsible for the largest amount of waste compared to other meals - such as lunch and dinner - so they thought about implementing measures that could reduce this food waste, for example, meals started to follow the a la carte model and the food was divided into smaller portions, which avoids waste and maintains quality." - Leader 2*

*"Because we have a high turnover, we conduct regular training sessions, and the employees themselves help organize them. Training often takes place in one of the hotel rooms. It's very practical; we give tours of the hotel and demonstrate how it works in real life." - Consultant 2*

In an attempt to listen and encouraging initiatives, there are monthly follow-up meeting that help to identify adjustments and opportunities for improvement. As pointed by interviewed Leader 2 from Kitchen, the team feels more confident and independent to act because they understand that their efforts will be measured and recognized. This sense of autonomy and influence is further reinforced by their participation in the Multidisciplinary Sustainability Committee, where employees can actively contribute to the implementation and refinement of practices. Grupo Arpoador developed a dashboard that allows for quick course corrections by identifying where action is needed and to what extent.

*“We provide a lot of training, show numbers, and demonstrate results. This dashboard is always present in management meetings.” – Leader 3*

#### 4.4 Corporate Policies

Corporate policies, which included leadership commitment, certification mandates and supplier contracts (Chawla, Lugosi and Hawkins; 2022). Analysis of the hotel's sustainability reports and internal documentation revealed concrete examples of these policies in practice, including: interviews with sustainability consultants from Hubis revealed that Grupo Arpoador's pursuit of Zero Waste certification end up institutionalizing the accountability, by transforming sustainability from an aspirational goal into a measurable requirement. Policies such as the elimination of single-use plastics were strictly enforced, reinforcing subjective norms by establishing clear expectations across all levels of the organization. Other documented measures included formal waste segregation protocols, mandatory sustainability criteria in procurement agreements, and the establishment of a multidisciplinary committee to oversee policy implementation.

The case study reveals that leadership's alignment between their stated sustainability values and their decision-making actions is paramount. This consistency ensures that financial considerations, while always reviewed, do not override other critical factors like environmental impact. The most important driver remains the commitment to upholding the zero-waste certification.

*“What works? The owners' will.” – Specialist 1*

#### 4.5 Embedded Training

Embedded training covers onboarding practices, peer learning and strategies to mitigate high employee turnover. Based on the interviews, employees frequently emphasized the importance of hands-on training in reinforcing sustainable behaviors. For instance, kitchen staff mentioned that newly hired employees quickly adopted waste segregation practices through peer correction, suggesting that sustainability had become an ingrained aspect of the organizational culture.

*“There must be follow-up; human labor demands constant attention and care. It takes work, especially at the beginning, to break down resistance and create a culture.” - Leader 3*

Efficiency has been identified as a significant driver, with financial benefits reflected in sustainability reports. For instance, the 2024 report highlights key accomplishments: the adoption of renewable energy resulted in a 40% reduction in costs, while the introduction of a technological system for monitoring and controlling water consumption reduced hotel water use by 16% within just three months (Sustainability Report, 2024). The integration of a sustainable culture through waste management enabled further investments in sustainability initiatives, such as sourcing organic food from local suppliers. It is noteworthy that Grupo Arpoador appears to achieve these outcomes through ongoing awareness, training, and fostering team autonomy.

"I sought to increase team productivity so I could take on the higher costs of organic, artisanal, local, and small suppliers." - Leader 2

#### *4.6. Data-driven Implementations*

Finally, data-driven implementation emerged as a critical tool for enhancing perceived behavioral control, with practices such as real-time dashboard monitoring, waste audits and transparent reporting playing a key role. Employees and managers both receive monthly waste reports, which quantify the waste management achievements (such as compostable waste rate). It works as a motivational tool that created collective ownership, which influences perceived behavioral control. By linking individual actions to measurable outcomes, the hotel strengthened attitudes toward sustainability, making environmental responsibility a tangible and meaningful aspect of daily work, where the primary reward was the recognition of their contribution and a sense of belonging to a collective that achieved its goals.

While proper daily waste management practices are essential, greater emphasis is placed on data-driven management that ensures accountability and fosters continuous collaborative learning.

*"At today's meeting, the Dashboard was presented and we were able to assess how we are doing in relation to our objective. We can see the result of our efforts in the graphs and if adjustments are needed, it is easier to know what we have to do." - Employee 3*

Finally, across all the organizational aspects mentioned above, Grupo Arpoador demonstrates a cohesive strategy to value human resources, beginning with structured onboarding programs that integrate sustainability principles from day one. These programs include practical training in waste segregation, introductions to data-monitoring tools, and mentorship systems designed to embed sustainable practices into daily routines. This is complemented by continuous training, clear internal communication, and recognition mechanisms, collectively fostering a culture where employees feel empowered and accountable toward shared environmental goals.

*"When the hotel achieved the Zero Waste Certificate and the Green Seal, we celebrated these achievements with all the employees. Everyone knew their fundamental role in the hotel's achievement of these awards, which was even celebrated at the hotel's end-of-year celebration party." - Leader 1*

Therefore, recognizing the importance of the employee seems to be a fundamental link for the success of the waste management project. (Chan et al.; 2014; Chawla; Lugosi; Hawkins, 2022)

#### **4. Final Considerations**

This study applied the TPB to understand the factors that predict employees' behavior regarding the adoption of waste management practices in a sustainability-oriented company, using Grupo Arpoador as a case study. By applying a framework adapted from Chawla; Lugosi; Hawkins (2022) that has TPB as theoretical lens, the research demonstrated how attitudes, subjective norms and perceived behavioral control can be powerful predictors of sustainable behavior in this context.

The findings reveal that Grupo Arpoador's success in fostering these behaviors stems from organizational practices that strengthen the TPB dimensions, particularly through its integrated approach combining embedded training, data-driven implementation and strong corporate policies. The analysis identified three key mechanisms that drive the adoption of sustainable waste management practices: (i) training programs that build practical skills and foster peer learning, particularly important in an industry with high turnover rates; (ii) clear organizational norms established through sustainability certifications and leadership commitment, which create shared accountability across departments; and, (iii) transparent performance monitoring through dashboards, that connects individual actions to measurable environmental outcomes. These elements work in synergy to transform waste management from a requirement into an organizational value.

This study also contribute to the existing literature by demonstrating that effective waste management requires constructive people management practices across all hotel departments and highlights how cultural alignment can overcome common barriers like staff turnover. The case also provides practical insights for the hospitality industry, showing that sustainability initiatives combine both operational benefits and intangible advantages like employee pride and brand differentiation. Grupo Arpoador's experience reinforces the literature (Chan et al., 2014; Chawla; Lugosi; Hawkins, 2022) by showing that environmental sustainability in hotels relies not only on technical solutions, but on cultivating an organizational ecosystem where employees at all levels are empowered and motivated to drive continuous improvement.

Regarding the limitations, this paper relied on a limited number of in-person interviews, concentrating on the stakeholders most directly involved with waste management in the hotels. Expanding the range of interviewees to include more diverse stakeholders could provide richer and more nuanced insights.

In addition, no quantitative analysis was carried out. Incorporating such approach could reinforce and validate the qualitative findings, also offer a clearer understanding of the underlying patterns. Thus, future studies should integrate quantitative methods, thereby enriching discussions and strengthening the evidence base.

Finally, future research could also examine the impacts of these sustainable practices on financial performance and brand image – two critical factors that may drive more hotels to adopt environmentally responsible strategies.

## References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Bamberg, S., & Möser, G. (2007). Twenty years after Hines, Hungerford and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology*, 27(1), 14–25. <https://doi.org/10.1016/j.jenvp.2006.12.002>
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bardin, L. (2011). *Análise de conteúdo* (L. A. Reto & A. Pinheiro, Trans.). Edições 70. (Original publicado em 1977).
- Black, J. S., & Gregersen, H. B. (1997). Participative decision-making: An integration of multiple dimensions. *Human Relations*, 50(7), 859–878. <https://doi.org/10.1023/A:1016984726582>
- Bohdanowicz, P. (2006). Environmental awareness and initiatives in the Swedish and Polish hotel industries—Survey results. *International Journal of Hospitality Management*, 25(4), 662–682. <https://doi.org/10.1016/j.ijhm.2005.06.006>
- Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2), 27–40. <https://doi.org/10.3316/QRJ0902027>
- Business Waste. (n.d.). Hotel waste statistics. [BusinessWaste.co.uk. https://www.businesswaste.co.uk/sectors/hotel-waste-management](https://www.businesswaste.co.uk/sectors/hotel-waste-management)
- Chan, E. S. W., Hon, A. H. Y., Chan, W., & Okumus, F. (2014). What drives employees' intentions to implement green practices in hotels? The role of knowledge, awareness, concern and ecological behavior. *International Journal of Hospitality Management*, 40, 20–28. <https://doi.org/10.1016/j.ijhm.2014.03.001>
- Chan, W. W., & Wong, K. F. (2006). Hotel environmental management decisions in China. *International Journal of Contemporary Hospitality Management*, 18(3), 261–270. <https://doi.org/10.1108/09596110610658550>
- Chawla, G., Lugosi, P., & Hawkins, R. (2022). Factors influencing hospitality employees' pro-environmental behaviours toward food waste. *Sustainability*, 14(15), 9015. <https://doi.org/10.3390/su14159015>

Filimonau, V., & De Coteau, D. A. (2019). Food waste management in hospitality operations: A critical review. *Tourism Management*, 71, 234–245. <https://doi.org/10.1016/j.tourman.2018.10.009>

González-Rodríguez, M. R., Díaz-Fernández, M. C., & Font, X. (2020). Factors influencing willingness of customers of environmentally friendly hotels to pay a price premium. *International Journal of Contemporary Hospitality Management*, 32(1), 60–80. <https://doi.org/10.1108/IJCHM-02-2019-0125>

Grupo Arpoador. (2024). Relatório de sustentabilidade. <https://grupoarpoador.com.br>

Herzallah, F., et al. (2025). Green synergy in hospitality: Unveiling the nexus between environmentally sustainable practices and hotel green performance. *Tourism Management*. <https://www.sciencedirect.com/science/article/pii/S0278431925002245>

International Organization for Standardization. (2018). ISO 21401:2018 – Tourism and related services — Sustainability management system for accommodation establishments — Requirements. Geneva: ISO.

Jones, P., Hillier, D., & Comfort, D. (2016). Sustainability in the global hotel industry. *International Journal of Contemporary Hospitality Management*, 28(1), 36–67. <https://doi.org/10.1108/IJCHM-10-2014-0510>

Lenzen, M., Sun, Y. Y., Faturay, F., Ting, Y. P., Geschke, A., & Malik, A. (2018). The carbon footprint of global tourism. *Nature Climate Change*, 8(6), 522–528. <https://doi.org/10.1038/s41558-018-0141-x>

Martínez, P., & Del Bosque, I. R. (2013). CSR and customer loyalty: The roles of trust, customer identification with the company and satisfaction. *International Journal of Hospitality Management*, 35, 89–99. <https://doi.org/10.1016/j.ijhm.2013.05.009>

Mensah, I. (2006). Environmental management practices among hotels in the Greater Accra region. *International Journal of Hospitality Management*, 25(3), 414–431. <https://doi.org/10.1016/j.ijhm.2005.02.003>

Mensah, I. (2019). Sustainable resource use strategies in the hotel industry in Ghana: The role of environmental management practices. *Environment, Development and Sustainability*, 21(3), 1101–1120. <https://doi.org/10.1007/s10668-017-0069-9>

Nisar, T. M. (2021). Green human resource management practices and environmental performance in Malaysian green hotels: The role of green intellectual capital and pro-environmental behavior. *Journal of Cleaner Production*, 320, 128757. <https://doi.org/10.1016/j.jclepro.2021.128757>

- Pirani, S. I., & Arafat, H. A. (2014). Reducing food waste generation in the hospitality industry. *Journal of Cleaner Production*, 132, 129–145. <https://doi.org/10.1016/j.jclepro.2015.02.033>
- Radwan, H. R. I., Jones, E., & Minoli, D. (2012). Solid waste management in small hotels: A comparison of green and non-green small hotels in Wales. *Journal of Sustainable Tourism*, 20(4), 533–550. <https://doi.org/10.1080/09669582.2011.621540>
- Ramayah, T., Lee, J. W. C., & Lim, S. (2013). Sustaining the environment through recycling: An empirical study. *Journal of Environmental Management*, 102, 141–147. <https://doi.org/10.1016/j.jenvman.2012.12.025>
- Silva, M. A., & Teixeira, R. M. (2020). Gestão de resíduos sólidos no Brasil: Avanços, entraves e perspectivas. *Revista Desenvolvimento e Meio Ambiente*, 54, 345–365. <https://doi.org/10.5380/dma.v54i0.70525>
- Somech, A. (2002). Explicating the complexity of participative management: An investigation of multiple dimensions. *Educational Administration Quarterly*, 38(3), 341–371. <https://doi.org/10.1177/0013161X02383003>
- Yuriev, A., Dahmen, M., Paillé, P., Boiral, O., & Guillaumie, L. (2020). Pro-environmental behaviors through the lens of the Theory of Planned Behavior: A scoping review. *Resources, Conservation and Recycling*, 155, 104660. <https://doi.org/10.1016/j.resconrec.2019.104660>

**APPENDIX 1**  
Semi Structured Interview Guide

<p>1. IceBreaking and general relevance and knowledge regarding the topic</p>	<ul style="list-style-type: none"> <li>Name, background, other previous experiences and when did start to work w/ this company</li> <li>What do you know about waste management in general?</li> <li>Have you ever had any previous experience with this topic?</li> </ul>
<p>2. Check the relevance perception of the project among employees and leaders</p>	<ul style="list-style-type: none"> <li>To what extent is waste management seen as an area of concern in the hotel?</li> <li>What are the specific policies/procedures in place at the unit level to address this challenge?</li> </ul>
<p>3. Check the knowledge of project operation among employees and leaders</p>	<ul style="list-style-type: none"> <li>Tell me about your experience of waste management in this organisation. What initiatives have been tried in the past?</li> <li>Tell me about this experience of zero waste certification in this organisation. What are the initiatives and who are the key people involved and how?</li> </ul>
<p>4. Check if there is any resistance to change perception and the communication role in the project implementation</p>	<ul style="list-style-type: none"> <li>Could you talk me through some of the other behaviour change initiatives that have been implemented in the hotel in the past? What was done and how? What was the outcome of such initiatives?</li> <li>Tell me about your interactions with other departments. Is waste management something that is often discussed and communicated?</li> </ul>
<p>5. Check if there is financial restriction or what is the criteria for initiative approval? (just for Leaders)</p>	<ul style="list-style-type: none"> <li>Tell me about any suggested actions or initiatives that were not approved. What were the proposals and challenges?</li> </ul>
<p>6. Key challenges, success factors and lessons learned</p>	<ul style="list-style-type: none"> <li>In your opinion, what were the main challenges of this sustainability project at the hotel? Are there any other important initiatives to address this challenge?</li> <li>In your opinion, what were the main success factors of this project? And the lessons learned?</li> <li>Specifically, regarding the food waste project, what were the main success factors, challenges and lessons learned.</li> </ul>
<p>7. Check level of autonomy and accountability (just for employees)</p>	<p>In your opinion, is there any other important initiative to address this challenge (training, infrastructure provision, measuring)?</p>
<p>8. Closing remarks</p>	<p>Any other comments or feedback that you think might be relevant to this research?</p>

Note: This guide was also used for Specialist interviews, discarding non-applicable questions.