

EVALUATING THE POTENTIAL OF SAVENT ECO-FRIENDLY COASTER AS A CATALYST FOR SUSTAINABILITY AWARENESS IN HOSPITALITY EDUCATION

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ABSTRACT

Objective: Sustainability in hospitality education is vital for developing environmentally conscious professionals but often faces a gap between theory and practice. This study explores how a tangible eco-innovation of the SAVENT Eco-Friendly Coaster, made from fibrous plant-based (coconut residue) and pulp-based recycled materials which can bridge this awareness-action divide. The coaster was designed as both a sustainable product and a learning tool to promote sustainability awareness among hospitality stakeholders. Using a qualitative exploratory design, data were collected from 125 participants comprising students (68.8%), lecturers (17.6%), and practitioners (13.6%) from Malaysia (76.8%) and Brunei (23.2%). Participants were recruited through institutional emails, social media, and professional networks linked to the SAVENT website. Thematic analysis revealed four key themes: (1) translating sustainability from concept to consciousness, showing strong conceptual understanding; (2) interpreting innovation through a sustainable lens, highlighting recognition of eco-creativity; (3) envisioning applied learning and practice, noting challenges in implementation such as cost and logistics; and (4) cultural and emotional dimension, emphasizing personal and cultural resonance with local materials. The SAVENT coaster demonstrates how experiential, artifact-based learning can transform abstract sustainability principles into practical, emotionally engaging experiences. Overall, the study affirms that tangible eco-innovations can effectively cultivate environmental consciousness in hospitality education. To evaluate how hospitality stakeholders perceive, interpret, and emotionally respond to this tangible, eco-designed artifact, positioning it as a catalyst for sustainability awareness.

Research Method: This qualitative exploratory study involved one hundred and twenty-five (N = 125) purposively sampled hospitality stakeholders (students, lecturers, practitioners) from Malaysia and Brunei. Data were gathered via an open-ended Jotform after a website review of the SAVENT project and subsequently analyzed using Braun and Clarke's (2021) thematic analysis.

Findings: Findings revealed four interconnected themes: (1) translating sustainability from concept to consciousness; (2) interpreting innovation through a sustainable lens; (3) envisioning applied learning and practical barriers; and (4) cultural and emotional resonance tied to local materials. The results demonstrate that culturally grounded, tangible eco-innovations can serve as symbolic educational artifacts that bridge cognitive and emotional learning, promoting deeper sustainability awareness beyond conventional instruction.

Originality: This study provides original insight into a product-based educational approach, demonstrating that culturally grounded eco-innovation using local waste fosters strong personal and emotional engagement, showing that connecting sustainability to local identity significantly enhances awareness beyond theoretical learning.

Keywords: *Sustainability Awareness, Hospitality Education, Eco-innovation, Circular Economy, Experiential Learning*

1. INTRODUCTION

The hospitality industry stands at the crossroads of creativity, service, and sustainability. As the global tourism and food sectors face increasing scrutiny for their environmental impact, educators are challenged to prepare students with not only operational competencies but also ecological literacy and sustainable values (Jones & Hillier, 2020). In Malaysia, this integration remains an emerging practice, often confined to theoretical instruction rather than experiential engagement (Ismail et al., 2021), leaving educators to search for accessible, contextually relevant ways to promote environmental responsibility.

The SAVENT Eco-Friendly Coaster project represents an innovative step in this direction. Developed as part of a student-led initiative, SAVENT is a small-scale eco-innovation developed from fibrous plant-based (coconut residue) and pulp-based recycled materials. While simple in form, the product carries multiple layers of educational and environmental significance. It functions not merely as a beverage accessory but as a tangible symbol of waste reduction, sustainable design, and local resource utilization. The conceptual foundation of SAVENT aligns with the Sustainable Development Goals (SDGs) (United Nations, 2015), particularly Goal 12: Responsible Consumption and Production, by showcasing how sustainability can be embedded in everyday hospitality items.

Beyond its environmental messaging, SAVENT's value lies in its pedagogical potential. By situating sustainability within a familiar hospitality context, the product encourages students to connect classroom learning with real-world practices. This approach aligns with experiential learning frameworks, which emphasize reflection and application as pathways to deeper understanding (Kolb, 2015). Therefore, the aim of this study is to evaluate the potential of the SAVENT Eco-Friendly Coaster in fostering sustainability awareness, specifically by examining stakeholders' (students, lecturers, and practitioners) perceptions, emotional responses, and envisioned applications of the concept within the context of hospitality education.

2. LITERATURE REVIEW

2.1 SUSTAINABILITY AND HOSPITALITY EDUCATION

Sustainability in hospitality is increasingly regarded as both an ethical responsibility and a strategic advantage. Educational institutions play a critical role in shaping the next generation of industry leaders capable of integrating sustainable thinking into business operations (Ruhanen et al., 2019). However, research has shown that sustainability in hospitality education often remains surface-level, limited to lecture-based instruction rather than embedded, practice-oriented learning (Sánchez-Ollero & Ramón-Cardona, 2021). This disconnect has prompted calls for more experiential and student-centered approaches, which encourage learners to internalize sustainability values through direct engagement (Teng et al., 2022).

2.2 ECO-INNOVATION AND PRODUCT-BASED LEARNING

Eco-innovation, defined as the development of products and processes that contribute to environmental improvement, presents new opportunities for embedding sustainability into hospitality curricula (OECD, 2020). Integrating product-based projects allows students to explore material sustainability, lifecycle awareness, and creative reuse, thus reinforcing environmental responsibility in tangible ways (Chong et al., 2023). The SAVENT Eco-Coaster exemplifies this approach by translating sustainable design principles into a small, functional object that students can relate to their field. Similar educational initiatives have demonstrated that exposure to eco-designed materials increases students' curiosity and empathy toward environmental challenges (Yusof et al., 2021).

2.3 AWARENESS THROUGH DESIGN

Design-driven awareness tools can stimulate emotional and cognitive engagement, making abstract sustainability concepts more accessible (Manzini & Vezzoli, 2020). In hospitality education, visual and tactile media such as prototypes, coasters, and utensils, can foster reflection and dialogue among students (Aziz et al., 2022). This type of 'learning through design' positions sustainability as a lived experience rather than an academic topic. By interacting with products like SAVENT, students are prompted to rethink resource value, material waste, and personal responsibility.

2.4 BRIDGING THE GAP BETWEEN KNOWLEDGE AND ACTION

While awareness is a necessary first step, translating it into behavioral change remains a key challenge. Studies suggest that active engagement with sustainability-oriented projects can enhance students' environmental commitment and sense of agency (Han et al., 2023). Therefore, introducing tools like SAVENT within Food and Beverage (F&B) practical sessions or as awareness materials could nurture an applied understanding of sustainability, leading to a more holistic learning experience.

3.0 METHODOLOGY

3.1 RESEARCH DESIGN

This study employed a qualitative exploratory design to investigate how the SAVENT Eco-Friendly Coaster can serve as a catalyst for sustainability awareness within hospitality education. A qualitative approach was selected to capture participants' subjective interpretations, emotions, and reflections, which are dimensions that quantitative measures may overlook. This design aligns with (Creswell & Poth, 2018), who emphasize qualitative inquiry as suitable for exploring emerging innovations and their perceived meaning in educational settings.

3.2 PARTICIPANTS AND SAMPLING

Participants were selected using purposive sampling based on their background in hospitality education and practice. Recruitment was conducted through institutional e-mails, social media announcements, and professional networks linked to the SAVENT project. Approximately 200 invitations were distributed, yielding 125 valid responses, representing an estimated 62.5% response rate.

Table 1: Demographic Profile of Participants (N = 125)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Country	Malaysia	96	76.8
	Brunei Darussalam	29	23.2
Role	Student	86	68.8
	Lecturer	22	17.6
	Hospitality Practitioner	17	13.6
Field of Study/Expertise	Hospitality	62	49.6
	Tourism	34	27.2
	Hotel Management	12	9.6
	Industry Practice (Practitioners)	17	13.6
Gender	Female	78	62.4
	Male	47	37.6
Age Range	18–24 years	80	64.0
	25–34 years	28	22.4
	35 years and above	17	13.6

Table 1 summarizes the demographic characteristics of the 125 participants who took part in this study. The sample included a balanced representation of hospitality stakeholders from Malaysia and Brunei Darussalam, comprising students, lecturers, and practitioners across hospitality and tourism disciplines.

Most respondents were students (68.8%), followed by lecturers (17.6%) and hospitality practitioners (13.6%). A majority were from Malaysia (76.8%), while Brunei Darussalam (23.2%) contributed a smaller but meaningful regional representation. Although the study included participants from both countries, the cross-national scope was exploratory and intended to capture regional perspectives rather than make direct country comparisons. Academically, participants represented diverse disciplines, with half from hospitality (49.6%), followed by tourism (27.2%), hotel management (9.6%), and industry practitioners (13.6%). The gender distribution leaned female (62.4%), and the dominant age group was 18–24 years (64.0%), reflecting a population of emerging professionals and early-career educators. This composition supports a holistic understanding of sustainability awareness across educational and professional contexts in hospitality and tourism. Participation was voluntary and anonymous.

3.3 DATA COLLECTION PROCEDURE

Data were collected using a Jotform questionnaire (Figure 1) designed to capture participants' perceptions, reflections, and emotional responses toward the SAVENT Eco-Friendly Coaster. Recruitment was conducted via institutional e-mails, social media announcements, and professional networks associated with the SAVENT initiative in Malaysia and Brunei Darussalam. Approximately 200 invitations were distributed, yielding 125 valid responses (response rate \approx 62.5%).

Before completing the questionnaire, respondents were directed to the official SAVENT project website (Figure 2, Savent, 2025), which provided visual and descriptive information about the coaster's concept, material composition, and sustainability objectives. The instrument consisted of several open-ended questions designed to gather insights into respondents' perceptions of SAVENT as an eco-innovation, its potential to promote sustainability awareness, and its applicability within hospitality contexts such as Food and Beverage (F&B) operations or as part of educational learning modules.

All ethical protocols were strictly followed which by participation was voluntary, no personal identifiers were collected, and all data were treated confidentially.

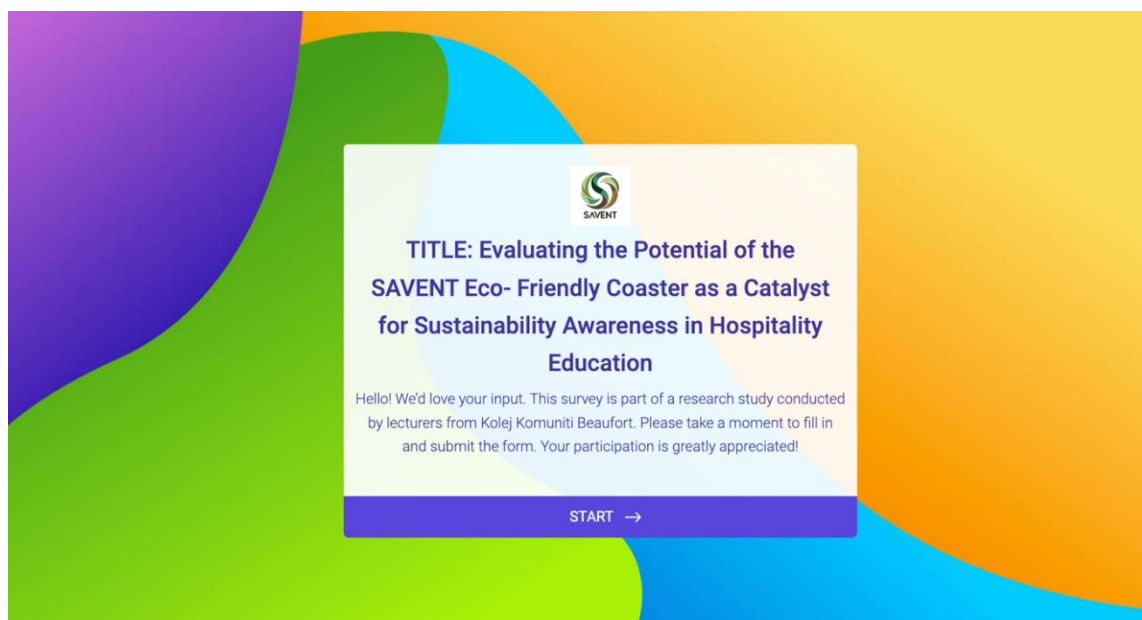


Figure 1: Front page view of the SAVENT JotForm

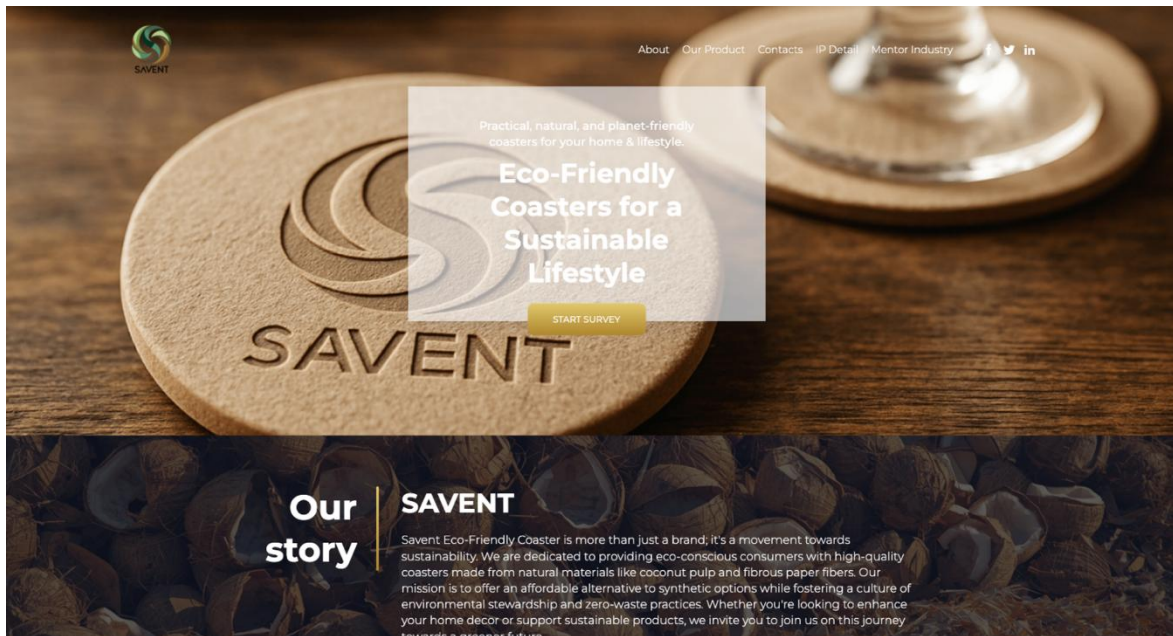


Figure 2: Homepage view of the official SAVENT website

3.4 DATA ANALYSIS

Thematic analysis was conducted following Braun and Clarke's (2021) six-step approach: familiarization, initial coding, theme identification, review, definition, and reporting. The open-ended responses were read multiple times to identify recurring patterns and underlying meanings. Codes were then clustered into themes reflecting common perceptions, emotional responses, and envisioned applications of SAVENT in hospitality education. This process allowed for a deep interpretive exploration of how stakeholders translate sustainability concepts into personal and professional awareness through a tangible eco-innovation.

4.0 RESULTS AND DISCUSSIONS

Thematic analysis revealed four major, interconnected themes that collectively illustrate how stakeholders perceived, interpreted, and emotionally responded to the SAVENT Eco-Friendly Coaster as an educational tool for sustainability awareness. These themes demonstrate a progressive shift from conceptual understanding to personal connection and practical reflection.

4.1 THEME 1: TRANSLATING SUSTAINABILITY FROM CONCEPT TO CONSCIOUSNESS

Participants exhibited a solid conceptual understanding of sustainability principles, suggesting that hospitality education has effectively introduced foundational knowledge. Many respondents linked the SAVENT coaster to the SDGs, particularly Responsible Consumption and Production (SDG 12). However, its tangible and locally inspired design transformed sustainability from a purely theoretical construct into something more relatable, experiential, and actionable. This transition from merely *knowing* to *feeling* sustainability highlights the significance of sensory and visual engagement in fostering deeper environmental awareness.

"I've learned about SDGs before, but this coaster makes me realize how simple waste can be turned into something meaningful." (Student, Malaysia)

The analysis indicated that most participants demonstrated moderate to high sustainability awareness, often describing it in terms of waste reduction, responsible material use, and environmentally conscious hospitality practices. By interacting with the SAVENT coaster which is crafted from fibrous plant-based (coconut residue) and

pulp-based recycled materials, participants were able to translate an abstract concept of sustainability into a tangible, personally relevant experience.

This observation aligns with recent research showing that experiential and student-centered learning approaches in hospitality education significantly enhance environmental consciousness (Liu et al., 2025). Likewise, studies in Malaysian higher education suggest that embedding structured sustainability frameworks such as Economic, Environment, Social and Governance (EESG) into curricula strengthens both awareness and application of sustainable practices (Yeo et al., 2025).

4.2 THEME 2: INTERPRETING INNOVATION THROUGH A SUSTAINABLE LENS

Stakeholders consistently recognized the SAVENT coaster as a creative example of eco-innovation that embodies the principles of sustainable design thinking. Respondents expressed appreciation for its minimalist design, recycled material composition, and functional practicality. The coaster was viewed not merely as a decorative or utilitarian item but as a conversation catalyst for sustainability within hospitality operations. This demonstrates how small-scale innovations can communicate impactful sustainability messages and prove that innovation does not need to be technologically complex to create meaningful change.

“It’s a simple but good idea - a product that reminds us about sustainability every time we use it.” (Lecturer, Brunei)

Participants responded positively to the overall concept of SAVENT, emphasizing its creativity, simplicity, and symbolic meaning. The use of underutilized coconut fibrous residue resonated strongly as a purposeful and localized form of sustainable innovation. Both lecturers and practitioners highlighted how ordinary materials, when repurposed thoughtfully, can contribute simultaneously to educational objectives and sustainability goals.

This finding echoes prior research in hospitality and tourism education, which demonstrates that integrating eco-innovations into student learning contexts enhances engagement and fosters a stronger commitment to sustainable practices (Hung et al., 2023). Similarly, studies in hotel operations have identified that top-management support and product usability are key determinants of the adoption of sustainability-oriented practices (Langgat et al., 2023). In this sense, the SAVENT coaster is perceived as both a pedagogical and operational innovation, potentially bridging the classroom and the hospitality industry while reinforcing sustainability awareness through creative design and practical relevance.

4.3 THEME 3: ENVISIONING APPLIED LEARNING AND PRACTICE

This theme reflects a pragmatic shift in participants’ responses, where enthusiasm for innovation was tempered by concerns about real-world implementation. Many respondents discussed the potential for integrating the coaster into hospitality training modules, F&B service contexts, and guest awareness initiatives. However, several also highlighted challenges such as cost efficiency, durability, and production scalability within institutional or commercial settings. These responses reveal that while sustainability awareness is strong, translating it into operational action remains constrained by logistical and resource-related barriers, which is a clear manifestation of the awareness–action gap.

“It’s a great idea for teaching or branding, but in real operations, cost and production need to be considered.” (Hospitality Practitioner, Malaysia)

Participants provided insightful reflections on how SAVENT could be utilized in Food and Beverage training, sustainability workshops, and institutional branding campaigns. The hands-on, tangible nature of SAVENT was perceived as highly supportive of experiential learning, aligning well with Kolb's (2015).

Nonetheless, participants voiced practical concerns: “But how to implement?,” “Hard to apply at the workplace,” and “Cost issues are always an obstacle.” Such comments echo with broader findings in hospitality research, which indicate that despite strong conceptual interest, operational constraints, particularly those related to cost, resources, and managerial support, often hinder the effective integration of sustainability practices (Lee et al., 2022).

Moreover, Malaysian hotel performance studies emphasize that ease of implementation and senior leadership support are critical enablers for adopting sustainability initiatives (Langgat et al., 2023). Thus, while participants viewed SAVENT as a promising educational and operational innovation, its success ultimately depends on pragmatic implementation strategies that bridge conceptual enthusiasm with feasible application in real hospitality contexts.

4.4 THEME 4: CULTURAL AND EMOTIONAL DIMENSIONS OF SUSTAINABILITY

A powerful theme that emerged from the analysis was the emotional and cultural resonance of sustainability when materials and design reflect local identity. Participants, particularly those from Sabah and Brunei, expressed pride and personal connection to the product’s use of coconut-based materials, viewing it as both environmentally responsible and culturally meaningful.

“It feels close to home - using our own local materials makes sustainability more real and personal.” (Student, Brunei)

The use of coconut residue, a familiar element in both Malaysian and Bruneian culinary and cultural traditions, strengthened participants’ sense of belonging and ownership. This finding highlights that when sustainability is rooted in cultural familiarity, it evokes deeper emotional engagement and fosters a sense of personal responsibility, thereby transforming sustainability from an external obligation into an internalized value.

Several participants described the coaster as a symbol of regional creativity and identity, reinforcing the idea that local materials can embody both environmental and cultural narratives. This aligns with the notion of humanized sustainability education, which integrates emotional, ethical, and cultural dimensions into learning (Koh & Lim, 2022). Although recent research specifically examining cultural-emotional framing in hospitality education remains limited, emerging literature on integrative sustainability frameworks (Yeo et al., 2025) emphasizes the significance of culturally contextualized learning tools.

By tapping into community identity and local materials, the SAVENT coaster transcends its functional purpose. It becomes a symbolic educational artifact that bridges awareness and fostering sustained engagement and may ultimately demonstrate how culturally grounded eco-innovation can humanize sustainability learning within hospitality contexts.

4.5 THEMATIC SYNTHESIS

Across the four themes, the findings in Figure 3 collectively illustrate how the SAVENT Eco-Friendly Coaster functions as both a symbolic and functional medium for advancing sustainability awareness in hospitality education. Participants’ reflections reveal a clear progression that moves from conceptual understanding (Theme 1) to interpretive appreciation of innovation (Theme 2), followed by pragmatic considerations of real-world application (Theme 3), and culminating in emotional and cultural resonance (Theme 4). This trajectory demonstrates that sustainability learning is most impactful when it engages cognitive, practical, and affective dimensions simultaneously. Through its material composition and locally grounded narrative, the SAVENT coaster successfully transformed abstract sustainability concepts into some concrete, emotionally meaningful, and culturally situated learning experience.

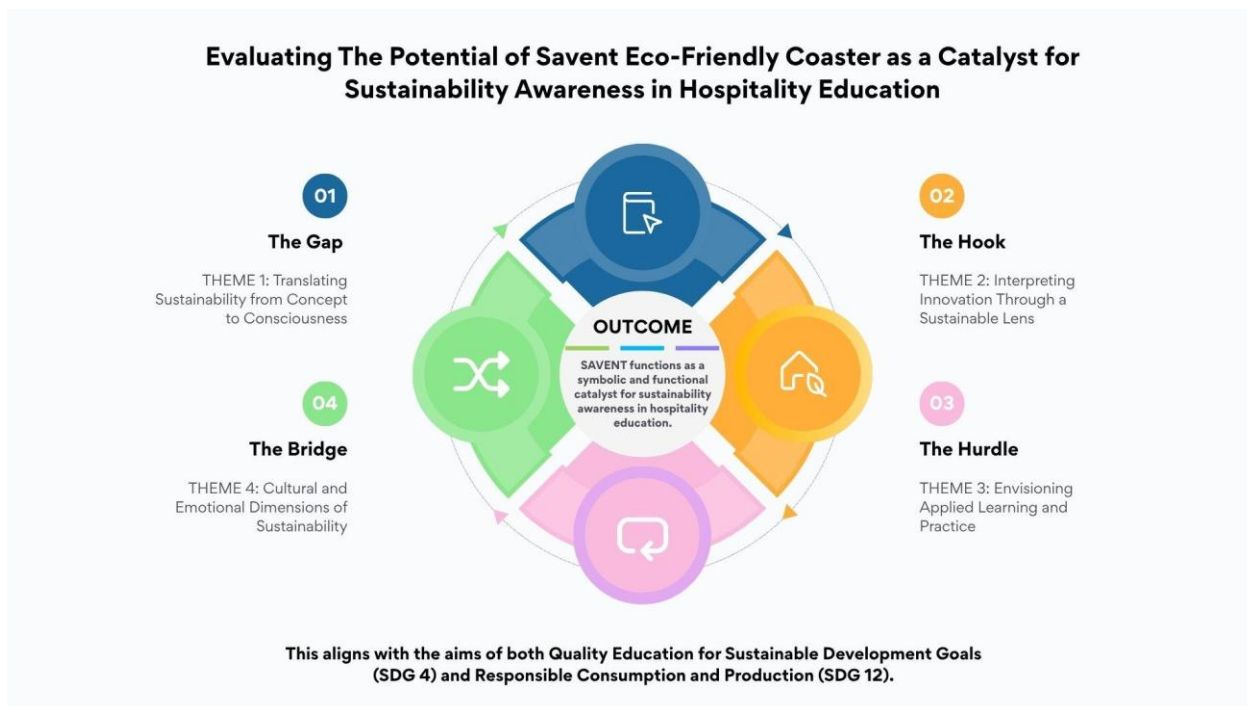


Figure 3: SAVENT Thematic Synthesis

Collectively, the themes underscore that small-scale, culturally embedded eco-innovations can serve as powerful pedagogical tools that bridge the awareness–action gap by linking sustainability education to personal identity, local context, and experiential engagement. The findings further indicate that the SAVENT coaster acts as a catalyst for sustainability awareness, effectively guiding stakeholders (students, lecturers, and practitioners) from awareness to interest, and from interest to application.

This aligns with the aims of both Education for Sustainable Development (SDG 4) and Responsible Consumption and Production (SDG 12). Ultimately, the study affirms that tangible, culturally relevant, and contextually designed tools like SAVENT are essential for translating theoretical sustainability concepts into meaningful and actionable practice within hospitality education.

5. CONCLUSIONS

This study explored the potential of the SAVENT Eco-Friendly Coaster as a pedagogical catalyst for sustainability awareness in Malaysia and Brunei. It concludes that the artifact functions not only as a practical eco-innovation but, more importantly, as a culturally resonant tool that bridges the gap between theoretical sustainability knowledge and tangible practice.

The findings revealed a clear narrative mapping the stakeholders' thought journey. Participants first identified an existing 'Awareness and Exposure Gap' (Theme 1), which SAVENT's tangible and experiential design helped to address. This was followed by 'Positive Acceptance' (Theme 2), where stakeholders, including students, lecturers, and practitioners, acknowledged the coaster as a creative and pedagogically relevant innovation. However, this enthusiasm was tempered by 'Practicality and Implementation Challenges' (Theme 3), mainly concerns related to cost and operational feasibility. The most significant insight emerged from the 'Cultural and Emotional Dimension' (Theme 4), where the use of locally sourced materials fostered pride and personal connection, deepening the meaning of sustainability beyond mere functionality.

Overall, this research affirms that micro-level, product-based interventions hold substantial pedagogical value in sustainability education. The SAVENT coaster

demonstrates that integrating local identity and creative material reuse allows a simple eco-product to transcend its functional role, becoming a pedagogical catalyst that humanizes sustainability and provides experiential, emotional entry points for reflection, dialogue, and behavioral change.

5.1 IMPLICATIONS AND PRACTICAL RECOMMENDATIONS

For educators and institutions, the study underscores the transformative potential of embedding localized eco-innovations into teaching practices to cultivate a deeper, action-oriented sustainability consciousness. Educators can practically achieve this by integrating tangible 'eco-products' like SAVENT as focal points for sensory-based learning and dialogue on material life cycles. The 'Practicality and Implementation Challenges' (Theme 3) regarding cost and feasibility should not be seen as barriers but rather be reframed as advanced learning opportunities. By tasking students with solving these real-world problems, educators can facilitate critical discussions on scalability, social enterprise models, and the true cost of sustainability. Furthermore, the pedagogical value is significantly amplified when educators leverage localism and cultural connection, harnessing the 'Cultural and Emotional Dimension' (Theme 4) by using locally sourced materials to foster a personal sense of place and make sustainability more relevant. By embracing such creative, human-centered learning artifacts, educators can nurture a generation of hospitality professionals who approach sustainability not as an external requirement, but as an internalized, culturally meaningful, and emotionally informed way of thinking and doing.

5.2 LIMITATIONS AND FUTURE RESEARCH

This study acknowledges limitations, including its reliance on self-reported qualitative data susceptible to social desirability bias. The sample's confinement to Malaysia and Brunei limits generalizability, and the focus was on initial perceptions rather than long-term behavioral outcomes. Future research should therefore adopt longitudinal designs to track behavioral and attitudinal changes over time and expand to other cultural contexts to test applicability. Quantitative or mixed-methods studies are also needed to evaluate actual learning outcomes, operational feasibility, and cost-effectiveness, providing stronger empirical evidence for adoption in hospitality education and industry practice. In summary, the SAVENT coaster demonstrates that small-scale, locally inspired eco-innovations can significantly enhance sustainability awareness, pedagogical engagement, and cultural connection in hospitality education.

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REFERENCES

- Abdin, E., Tan, B., Chang, S., et al. (2025). *Validity, reliability, measurement invariance, and equipercentile linking of the DASS-21 in the youth population in Singapore. Frontiers in Psychology, 16*. <https://doi.org/10.3389/fpsyg.2025.1563190>
- Akyıl, Y., Oral, T., & Erdiñç, B. (2024). *Parallel mediating role of FoMO and mental well-being between entrapment and psychological distress. İnsan ve Toplum Bilimleri Araştırmaları Dergisi, 13(5)*, 2319–2329.
- Alt, D. (2015). *College students' academic motivation, media engagement and fear of missing out. Computers in Human Behavior, 49*, 111–119. <https://doi.org/10.1016/j.chb.2015.02.057>
- Aziz, A., Tan, C., & Lim, F. (2022). Design-driven sustainability learning in hospitality education. *Journal of Hospitality Education, 15(2)*, 45–59.
- Braun, V., & Clarke, V. (2021). *Thematic analysis: A practical guide*. Sage.

- Chong, W. H., Yusof, N. M., & Tan, J. H. (2023). Product-based eco-innovation learning in hospitality education. *Journal of Sustainable Tourism Education*, 12(2), 101–118.
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry & research design: Choosing among five approaches (4th ed.)*. Sage.
- Han, H., Kim, W., & Lee, S. (2023). Enhancing student engagement in sustainable hospitality practices through experiential learning. *International Journal of Hospitality Management*, 108, 103387. <https://doi.org/10.1016/j.ijhm.2022.103387>
- Hung, C.-L., Yu, T.-F., Lin, Y.-H., Lin, Y.-C., Chen, Y.-H., & Lo, W.-S. (2023). Reflective and cooperative learning for understanding sustainability through an eco-innovation strategy in rural travel and hospitality: A STEAM case study. *Sustainability*, 15(17), 13152. <https://doi.org/10.3390/su151713152>
- Ismail, R., Ahmad, F., & Mohd Noor, N. (2021). Sustainability integration in Malaysian hospitality education: Current practices and challenges. *Journal of Tourism & Hospitality Education*, 13(1), 45–61.
- Jones, P., & Hillier, D. (2020). Sustainable hospitality education: Preparing students for a greener future. *International Journal of Contemporary Hospitality Management*, 32(7), 2225–2241. <https://doi.org/10.1108/IJCHM-03-2020-0241>
- Koh, Y., & Lim, J. (2022). Humanising sustainability education: Integrating cultural and emotional dimensions into hospitality training. *International Journal of Hospitality Management*, 99, 103123. <https://doi.org/10.1016/j.ijhm.2021.103123>
- Kolb, D. A. (2015). *Experiential learning: Experience as the source of learning and development (2nd ed.)*. Pearson.
- Langgat, J., Ramdani, B., Pavic, S., & Tok, E. (2023). Environmentally sustainable practices and hotel performance: Evidence from Malaysia. *Sustainability*, 15(6), 5289. <https://doi.org/10.3390/su15065289>
- Lee, C., Tan, A., & Lim, P. (2022). Barriers to sustainability adoption in hotel operations: Evidence from Southeast Asia. *Journal of Sustainable Tourism*, 30(10), 2489–2506. <https://doi.org/10.1080/09669582.2021.1998432>
- Liu, S.-Y., Hung, C.-L., Yen, C.-Y., Su, Y., & Lo, W.-S. (2025). Enhancing student behavior with the learner-centered approach in sustainable hospitality education. *Sustainability*, 17(9), 3821. <https://doi.org/10.3390/su17093821>
- Manzini, E., & Vezzoli, C. (2020). *Design for environmental sustainability*. Routledge.
- OECD. (2020). *Eco-innovation in services: Trends, policies and prospects*. OECD Publishing. <https://doi.org/10.1787/9789264300195-en>
- Ruhanen, L., Weiler, B., Moyle, B., & McLennan, C. (2019). Sustainability in tourism and hospitality education: Current trends and future directions. *Journal of Hospitality & Tourism Management*, 39, 112–122. <https://doi.org/10.1016/j.jhtm.2019.03.001>
- Sánchez-Ollero, J. L., & Ramón-Cardona, J. (2021). Sustainability education in hospitality: Challenges in practice-oriented learning. *Tourism & Hospitality Education*, 31(2), 97–109.
- Savent. (2025). *Eco-Friendly Coasters for a Sustainable Lifestyle* [Website]. Retrieved November 2, 2025, from <https://savent.renderforestsites.com/>
- Teng, C. C., Chen, Y. H., & Lo, W. S. (2022). Experiential learning interventions to enhance sustainability awareness in hospitality students. *Journal of Hospitality & Tourism Education*, 34(1), 1–14.
- United Nations. (2015). *Transforming our world: The 2030 Agenda for Sustainable Development*. United Nations General Assembly. <https://sdgs.un.org/2030agenda>
- Yeo, C. M., Lim, C. Y., Tay, L. C., & Chin, M. Y. (2025). Establishing an integrative sustainability framework for higher education in Malaysia: Economic and EESG aspects. *Quantum Journal of Social Sciences and Humanities*, 6(1), 218–236. <https://doi.org/10.55197/qjssh.v6i1.602>

Yusof, N., Chong, W., & Tan, J. (2021). Experiential eco-learning for hospitality students: Fostering curiosity and empathy toward environmental challenges. *Journal of Hospitality and Tourism Education*, 33(3), 150–160.