

Upcycled food waste in personal care products

1. Introduction

Food waste is a global concern and is especially prevalent in the hospitality industry, where hotel buffets, restaurant kitchens, and event catering often produce significant surplus (De Visser-Amundson, 2020; Filimonau & De Coteau, 2019; Vizzoto et al., 2021). Traditional approaches to managing hospitality food waste include donation, composting, and in recent years also third market places like Too Good to Go (Vizzoto et al., 2021). However, emerging circular economy strategies—such as upcycling food waste into personal care products—offer innovative ways to reduce waste while creating new revenue streams and sustainability value (Kanwal et al., 2024).

This study examines how consumers respond to personal care products made from upcycled food ingredients, particularly in terms of willingness to use, purchase intention and willingness to pay. We explore two key factors: the presence of a brand and whether the disclosure of the upcycled nature of the ingredients influence consumer evaluations of these products. Our findings are especially relevant to hospitality businesses that provide unbranded or white-label toiletries and are seeking ways to enhance their sustainability profiles.

In addition to offering environmental benefits, this approach allows hotels and restaurants to partner with social enterprises working to solve food waste problems—aligning with growing guest expectations around responsible business practices (Mansoor et al., 2025).

2. Literature Review

2.1 Food Waste in Hospitality and Upcycling Opportunities

It is estimated that one in seven plates are wasted in the hospitality industry due to operational complexity, buffet culture, and unpredictable demand (De Visser-Amundson & Kleijnen, 2020; Vizzoto et al., 2021). While food waste management has been extensively studied (see e.g., Cardenas et al., 2024; Vizzoto et al., 2021), less attention has been given to upcycling—the process of converting food waste into new, higher-value products (Bridgens et al., 2018). In the context of hospitality, upcycled products such as soaps, lotions, and scrubs offer a dual benefit:

reducing food waste and enhancing the sustainability appeal of personal care products. This is relevant with research showing that guests increasingly value green practices, especially when they are visible and tangible (e.g., refillable dispensers, biodegradable packaging; Mansoor et al., 2025). Personal care products made from upcycled ingredients may therefore serve as a compelling addition to sustainability initiatives in hotels, provided they are accepted by consumers.

2.2 Branding, Trust, and Ingredient Disclosure

Branding plays a critical role in shaping consumer trust—especially for novel or unfamiliar products (Lassoued & Hobbs, 2015). Well-known brands serve as credibility shortcuts, while unbranded items require alternative signals of value, for example eco-friendliness (Reinders et al., 2017). Disclosing the use of upcycled ingredients can serve as such a signal, particularly in settings where sustainability and innovation are valued (Fatemi et al., 2023). However, prior research warns of a potential "ick factor" if consumers perceive reused materials as dirty or inferior, making the interaction between branding and disclosure critical to understand (Meng & Leary, 2021). In the context of upcycled personal care products, branding and disclosure are expected to interact in shaping consumer evaluations. For well-established brands, the disclosure of upcycled ingredients may have limited additional impact, as brand trust and perceived quality already mitigate potential concerns. In contrast, for lesser-known or non-branded products, disclosing upcycled content can serve as a positive differentiator, enhancing consumer interest by signalling environmental responsibility and product distinctiveness compared to standard offerings. Thus, the disclosure of upcycled ingredients is predicted to exert a stronger positive effect on product evaluation when brand cues are absent or weak.

3. Methodology

3.1 Research Design

We conducted a 2 (Brand vs. No Brand) × 2 (Upcycled Disclosure vs. No Disclosure) between-subjects experiment. A research assistant, posing as a junior product developer for a personal care company, presented two new products—a hand cream and dry body oil—to participants. They explained the brand, product, and ingredients, stating the purpose was to gather feedback

on products the company plans to launch. After the presentation, participants left in groups of 3–4 to interact with the physical products, examining packaging and trying them. This simulated the sensory experience consumers have in retail or hotel settings.

Participants were randomly assigned to one of four conditions:

- Brand with upcycled ingredient disclosure (N = 35)
- Brand without disclosure (N = 37)
- No brand with disclosure (N = 35)
- No brand without disclosure (N = 34)

The branded products used Marie Stella Maris, a well-known Dutch personal care brand, while the no-brand condition used the fictitious name Ella Bella Lune. In the disclosure condition, presentation images and text explicitly mentioned upcycled ingredients; in non-disclosure, conventional ingredients were described. Products and presentations were identical except for the brand name to maintain orthogonality and mimic real-world hotel toiletry scenarios.

3.2 Participants

141 participants ($M_{\text{age}} = 21$) took part: 64% female, 33% male, 3% preferred not to say. After exposure to the products and presentation, participants completed a survey. All gave informed consent, and the study was ethically approved (ref. EC11/23/202424744).

3.3 Measures

We assessed:

- **Purchase Intention:** 7-item semi-differential scale (e.g., “very likely/unlikely to purchase”), adapted from De Visser-Amundson et al. (2021).
- **Willingness to Pay (WTP):** Open-ended question referencing typical product prices (€20–30), asking how much they would pay.
- **Manipulation Checks:** Verified familiarity with Marie Stella Maris/Ella Bella Lune and awareness of upcycled ingredient disclosure.

4. Results

4.1 Purchase Intention

A 2 (Brand: *Marie Stella Maris* vs. *Ella Bella Lune*) \times 2 (Disclosure: No Disclosure vs. Disclosure) ANOVA revealed a significant main effect of disclosure, $F(1, 137) = 8.21, p = .005, \eta^2 = .057$. Disclosure of upcycled ingredients increased purchase intention ($M = 4.77$) compared to no disclosure ($M = 4.06$). No main effect was found for brand, $F(1, 137) = 0.06, p = .805$. Importantly, the interaction between disclosure and brand was statistically significant, $F(1, 137) = 4.990, p = .027, \eta^2 = .035$, suggesting that the impact of disclosure depended on whether the product was branded or not. More specifically, disclosure significantly increased purchase intention for the no-brand *Ella Bella Lune* ($M = 5.09$ vs. 3.79), but had little effect for the brand *Marie Stella Maris* ($M = 4.46$ vs. 4.30 ; Figure 1).

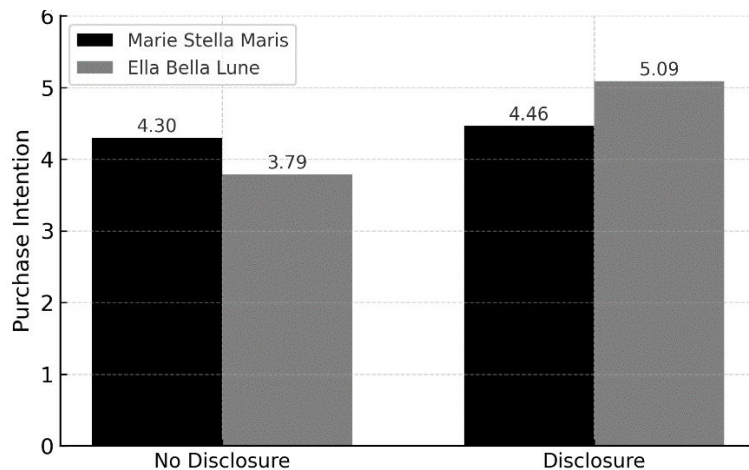


Figure 1: Effect of brand and ingredient disclosure on purchase intention

4.2 Willingness to Pay

For willingness to pay (WTP), no significant main effects were found for disclosure ($F(1, 137) = 0.88, p = .350$) or brand ($F(1, 137) = 0.002, p = .961$). However, similar and consistent with purchase intention, the interaction was significant, $F(1, 137) = 3.89, p = .051, \eta^2 = .028$. We find the same pattern such that disclosure increased WTP for *Ella Bella Lune* (€18.14 vs. €14.85; $p = .044$), but not for *Marie Stella Maris* (€15.86 vs. €17.03; $p = .461$; Figure 2).

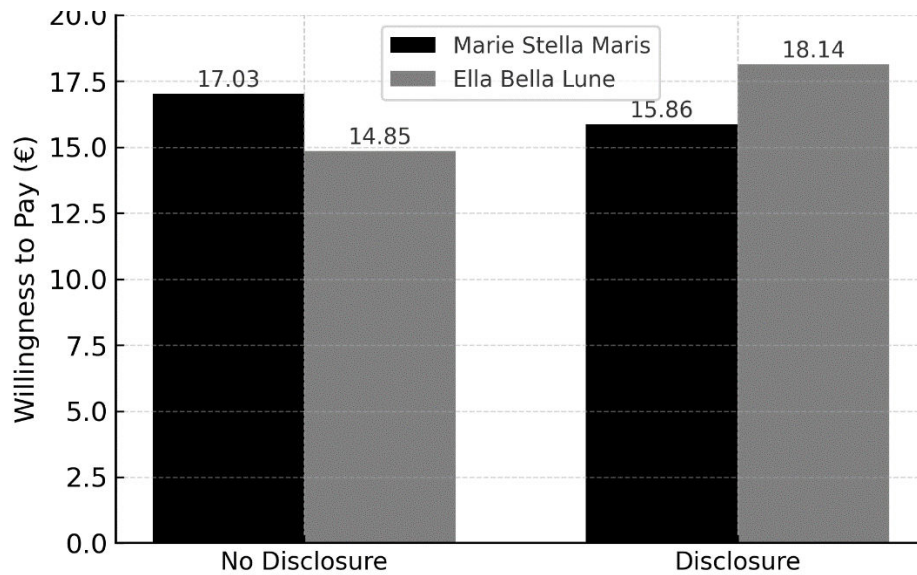


Figure 2: Effect of brand and ingredient disclosure on willingness to pay

5. Discussion and Managerial Implications

The results of this study provide important insights for hospitality businesses exploring upcycled personal care products as part of their sustainability strategies. We found that disclosure of upcycled ingredients significantly increased both purchase intention and willingness to pay for the unbranded product (*Ella Bella Lune*). For the established brand (*Marie Stella Maris*), disclosure had little additional effect. This result aligns with previous findings showing that disclosing the upcycled origin of the ingredients can have a positive effect product positioning, differentiation and in turn on consumer evaluations (see e.g., De Visser-Amundson et al., 2021; De Visser-Amundson et al., 2023). For the established brand (*Marie Stella Maris*), disclosure had little additional effect, suggesting that brand equity may buffer potential consumer hesitation toward unfamiliar upcycled content (Meng & Leary, 2021; Fatemi et al., 2023).

Our findings are particularly relevant for hospitality contexts where unbranded or white-label personal care products are common, such as in-room amenities, spa products, or toiletries in bathrooms in common areas of the hotel. Hotels and restaurants that generate food waste through buffets, catering, or kitchen operations could consider collaborating with social enterprises to upcycle surplus food into high-value personal care products. As our study shows, transparent

disclosure of upcycled ingredients can enhance consumer evaluations when brand cues are absent, thereby turning food waste into a visible symbol of the property's sustainability commitment. This may help hospitality businesses not only reduce operational waste but also meet increasing guest expectations for tangible and innovative green practices (Mansoor et al., 2025), while contributing to circular economy solutions.

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