



**Can Technology-driven Sustainability and CSR Enhance
Consumers' Happiness and Well-Being?**

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Abstract

Purpose: Sustainability in the luxury sector has shifted from concept to necessity, yet consumer responses to sustainable initiatives, particularly through technology-led sustainability and corporate social responsibility (CSR), remain underexplored. Building on the Cognitive Appraisal Theory, this study addresses this gap by examining how luxury firms’ sustainability initiatives impact consumer-level brand happiness (BH) and well-being.

Design: The primary data were collected from 454 UK and USA respondents, with the analysis done following the structural equation modelling and multi-group analysis.

Findings: The research finds that technology-driven sustainability initiatives and CSR actions by luxury brands positively influence brand attitudes, which in turn enhance BH and perceived well-being. The multi-group analysis indicates that consumers, regardless of gender, demonstrate a heightened concern for luxury brands’ sustainable practices.

Practical implications: Drawing on this study’s insights, luxury brands should strategically highlight their technologies as central to sustainability efforts, while marketers should develop authentic narratives to communicate CSR, enhancing BH and perceived well-being.

Originality: Theoretically, this pioneering study underscores the pivotal role of advanced technologies as brand-level sustainable initiatives and introduces BH into the sustainable luxury discourse.

Keywords: sustainable luxury, technology-led sustainability, brand attitude, brand happiness, perceived well-being.

1. Introduction

While the luxury market is experiencing unprecedented growth, its contribution to climate change and biodiversity loss is mounting (ShabbirHusain *et al.*, 2025). Over the years, numerous luxury brands have faced substantial criticism for unsustainable practices. For example, companies such as Versace, Hermès, and Christian Dior have been accused of promoting products that contribute to waterway pollution. However, the sustainability of fashion luxury brands has garnered increasing attention recently, precipitated by the COVID-19 pandemic and heightened consumer awareness regarding the environmental and societal impacts associated with luxury brands. Notably, Millennials and Gen Z, comprising nearly 70% of the global luxury consumer base, are increasingly scrutinising the unsustainable practices of luxury brands (e.g., use of non-biodegradable materials, cruelty toward animals, and water pollution) (Lux Magazine, 2023). Moreover, the drive towards sustainability in luxury brands is bolstered by global initiatives like the UN's net-zero target and regional regulations such as the EU's guidelines on sustainable and circular textiles, prompting many luxury brands to undertake requisite initiatives. Hence, significant industry developments and initiatives are unfolding rapidly. Yet, the paradoxes and uncertainties surrounding how consumers perceive, react to, and embrace sustainable initiatives by luxury brands underscore the critical need for robust practical and academic inquiry.

Moreover, the luxury retail sector is actively embracing cutting-edge technologies, namely, augmented reality (AR), virtual reality (VR), and virtual try-ons (VTO), while capitalising on contemporary contexts such as the global pandemic and evolving consumer preferences for convenience. The adoption and implementation of these technologies enable luxury brands to advance environmental sustainability significantly. For instance, a notable benefit of AR-enabled purchasing is the substantial reduction in product returns (Gu *et al.*, 2021; Zalando, 2023). Use of technologies such as AR-guided purchases reduce the need for customers to travel to physical stores, decreasing carbon emissions (Periyasamy and Periyasami, 2023). However, luxury brands rarely highlight the environmental benefits of cutting-edge technologies like AR or communicate their role in encouraging sustainable consumption. This oversight may stem from the inherent contradiction between luxury and sustainability or a lack of understanding regarding whether customers perceive these technologies as environmentally sustainable (ShabbirHusain *et al.*, 2025), thereby necessitating further research in this niche domain.

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To remain competitive and secure consumer loyalty, luxury brands must maintain a strong and appealing presence while integrating contemporary sustainable practices that address societal, environmental, and ethical issues (e.g., fair trade and good governance) (Diallo *et al.*, 2021). Accordingly, these firms consistently highlight their corporate social responsibility (CSR) efforts as integral to their business ethics and sustainability initiatives (Diallo *et al.*, 2021; Li and Kang, 2024). However, extant findings on the effectiveness of CSR actions on consumers' luxury brand evaluations are highly inconclusive (Sipilä *et al.*, 2021), with positive, insignificant, or even adverse outcomes instead of unidirectional results, requiring further investigation on how luxury firms' CSR initiatives may influence brand evaluations, such as brand attitudes.

Indeed, fostering positive brand evaluations is essential, as these evaluations are intrinsically tied to brand-induced consumer happiness (Mansoor and Paul, 2022). Happiness holds significant marketing implications, as happy customers tend to be more satisfied, loyal, and committed to a brand. Happy customers, or brand happiness (BH), often lead to increased brand recommendations among consumers. While BH as a construct has been extensively studied within the marketing domain, its validation at consumer-controlled brand touchpoints (e.g., brand attitudes) remains underexplored and warrants further investigation (Banerjee *et al.*, 2024; Mansoor and Paul, 2022; Schnebelen and Bruhn, 2018).

Recent literature (e.g., ShabbirHusain *et al.*, 2025; Geiger-Oneto and Minton, 2019) noted that most literature focuses on the purchase and use of luxury products, while luxury post-consumption phenomena (e.g., disposal of used luxury, perceived well-being) has received scant research attention. Accordingly, scholars (Batat, 2022; Cristini *et al.*, 2022) called for research to examine how luxury consumption generates well-being at individual (micro) and social (macro) levels. Given the mentioned research gaps, the following research questions (RQs) are formulated that the current study will explore:

- Do technology-led sustainability and CSR efforts influence consumers' attitudes toward luxury brands?
- Do favourable brand attitudes elevate BH?
- Does BH enhance consumers' perceived well-being?

Gender role theory suggests societal norms shape attitudes and behaviours. While women favour sustainability due to ecological concerns, men avoid sustainable choices to maintain their masculine identity (Brough *et al.*, 2016). Kaur *et al.* (2024) have therefore called for studies

exploring the differential impact of gender within the sustainable luxury domain. Similarly, we presume that along the above RQs, gender differences might play a pivotal role in determining how customers react to luxury brands' sustainability initiatives. Altogether, this study addresses the central question: can technology-driven sustainability and CSR enhance luxury consumers' happiness and well-being across genders? In this regard, we explored two key regions: the United States of America (USA) and the United Kingdom (UK). Home to iconic luxury brands – including Gucci, Louis Vuitton, and Tiffany, leading sustainable practices – the USA and Europe together comprised 56% of the worldwide market for luxury products in 2021, while these regions were ranked highly in the top markets for luxury products in 2023 (Statista, 2024). Additionally, these regions' Digital Adoption Index was high, with decent penetration rates of AR and VR technologies (Statista, 2023), making them ideal contexts for this study.

Accordingly, this research offers five research contributions to the extant literature. *First*, by analysing the role of technology-led perceived brand sustainability (TPBS) in generating brand attitudes, this study would unfold the potential contribution of the latest technologies as brand-level sustainable initiatives. *Second*, the relationship between brands' CSR actions (BCA) and brand attitudes would add new knowledge to CSR's effectiveness and communication in luxury contexts. *Third*, in response to research calls (Banerjee *et al.*, 2024; Schnebelen and Bruhn, 2018), this research would show how consumer-controlled brand touchpoints (i.e., brand attitudes) lead to BH. In addition, to the best of the author's knowledge, the current study would be the first to introduce BH, a promising new branding asset, in a sustainable luxury context. *Fourth*, by verifying the connection from BH to consumers' perceived well-being, this study would shed light on the effectiveness and strength of BH, which is scarce in the existing literature (Schnebelen and Bruhn, 2018). *Fifth*, the current research will reveal likely gender-based differences in how customers respond to luxury brands' sustainability initiatives. Overall, this study's findings enable luxury brand marketers to devise strategies that effectively leverage the role of advanced technologies and their CSR efforts in enhancing consumer happiness and perceived well-being.

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12. Literature review and hypotheses formulation

2.1 Theoretical Framework

We ground our study in Cognitive Appraisal Theory (CAT) (Lazarus, 1991), which posits that individuals’ affective responses stem from their evaluations of product or service attributes and experiences. Applying CAT to sustainable luxury branding, we propose that consumers’ cognitive appraisals of brand-level initiatives – specifically, technology-led sustainability and CSR – elicit emotional responses such as brand happiness and well-being by inducing favourable brand attitudes. For example, Gucci’s Equilibrium platform (Equilibrium, 2025), which transparently communicates its sustainability and social impact efforts, enables consumers to perceive the brand as purposeful and trustworthy, thereby fostering positive emotional outcomes. CAT thus provides a meaningful lens to explain how appraisals of ethical and sustainable brand attributes translate into psychological benefits for consumers. This approach aligns with prior consumer behaviour research demonstrating how cognitive appraisals of brand attributes (e.g., quality, ethics) trigger emotional outcomes (Kim, 2022; Milaković and Ahmad, 2023).

2.2 Technology-led perceived brand sustainability and brand attitudes

Advanced technologies such as AR and VR offer luxury firms valuable opportunities to engage a diverse customer base while showcasing their pro-environmental benefits. These innovations are particularly effective in cultivating positive brand attitudes among eco-conscious luxury consumers, who are renowned for their technological savvy and deep commitment to environmental sustainability (Lee *et al.*, 2020; Lux Magazine, 2023; McKinsey, 2023). Brand attitude, conceptualised as the overall evaluation of a brand, stems from brand attributes and the associated benefits (Park *et al.*, 2010). Promoting eco-friendly attributes of luxury products has been shown to generate favourable brand attitudes (Perez *et al.*, 2020). Sani-Elia *et al.* (2023) reported that born sustainable brands elicit stronger brand attitudes than those adopting sustainability later. However, while links between brand sustainability and attitudes are well-documented, the role of technology in enhancing sustainability perceptions within the luxury context remains underexplored.

Aligning with the CAT, this study argues that AR technologies function as cognitive stimuli that shape consumers’ appraisal processes. Specifically, AR’s pro-environmental benefits

(e.g., reducing returns) could be appraised as goal-congruent by sustainability-driven luxury consumers, fostering TPBS. Indeed, the AR may mitigate the appraisal conflict between indulgence and sustainability by demonstrating how technology reduces waste (e.g., virtual showrooms). Besides, the hedonic and exclusive luxury shopping experiences offered by AR (Kumagai and Nagasawa, 2022) trigger positive emotional appraisals, which – when paired with sustainability cues – reinforce favourable brand attitude formation. Hence, it is hypothesised that:

H1: TPBS positively affects brand attitudes.

2.3 Brands' CSR actions and brand attitudes

Firms engage in CSR activities to enhance brand attitudes, yet the impact of CSR on luxury brand evaluations remains inconsistent. Some studies highlight its positive effects; for instance, Amatulli *et al.* (2018) found that external CSR efforts (e.g., charitable donations) outperform internal efforts (e.g., employee benefits) in motivating purchases. Similarly, Janssen *et al.* (2014, 2017) demonstrated that CSR initiatives foster favourable brand attitudes. Conversely, other findings challenge this view. Vock (2022) reported negligible effects of CSR on luxury brand evaluations, while Diallo *et al.* (2021) noted that CSR actions might reduce consumers' willingness to pay a premium. Despite these challenges, stakeholders' demand for robust CSR engagement compels luxury firms to act. From a CAT standpoint, CSR initiatives serve as cognitive evaluative stimuli that may shape consumer attitudes through goal congruence and emotional reappraisal. CAT could further explain how CSR mitigates negative emotions (e.g., guilt) tied to luxury consumption (Hagtvedt and Patrick, 2016) by reframing purchases as socially responsible – a reappraisal that fosters emotional alignment.

Consistent with the above discussion and the essence of the CAT, this study argues that appraisals of CSR actions positively influence brand attitudes, especially among Gen Z and Gen Alpha, who strongly value corporate responsibility (Lux Magazine, 2023). Furthermore, CSR contributes to a firm's ESG score, bolstering reputation and competitiveness, positioning CSR as a vital strategy for luxury brands to cultivate favourable brand attitudes. Therefore, this study hypothesises that:

H2: BCA positively affects brand attitudes.

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12.4 Brand attitudes and brand happiness

BH is the “consumer’s greatest emotional fulfilment, a moment-based experience of pleasant high and low arousal emotions, induced at different brand contact points” (Schnebelen and Bruhn, 2018, p. 102). Schnebelen and Bruhn’s (2018) work identified several consumer-brand-associated affective factors, such as brand self-relevance, as important determinants of BH. Relating to this context, Mansoor and Paul (2022) reported that the perception of a masstige luxury brand heightens consumers’ BH, referred to as brand-induced happiness. This study extends these insights by positing that favourable brand attitudes, an affective factor, can positively influence BH.

Besides, eco-conscious consumers increasingly view themselves as socially and environmentally responsible and expect their preferred luxury brands to align with these goals. When luxury brands sustain eco-conscious consumers’ self-relevant ideals (e.g., sustainability, exclusivity), these goal-congruent appraisals trigger high-arousal positive emotions (e.g., joy, pride) (Sarkar *et al.*, 2023), fostering BH. For instance, brands like Gucci or L’Oréal Luxe leverage CSR and sustainable technologies (e.g., AR-driven virtual try-ons) to signal value alignment, which, according to the CAT, consumers may appraise as self-congruent, amplifying emotional fulfilment and psychological well-being. Moreover, the *anticipation hypothesis* (Richins, 2013) suggests that pre-purchase expectations often evoke greater enjoyment than ownership. Thus, Schnebelen and Bruhn (2018) argued that pre-purchase factors are stronger triggers of BH than post-purchase experiences. Accordingly, this study hypothesizes that brand attitudes, a pertinent pre-purchase consideration, may positively accentuate luxury consumers’ BH. Hence, the following hypothesis is formulated:

H3: Brand attitudes have a positive effect on BH.

12.5 Brand happiness and consumer well-being

As theorised by the CAT, brand experiences inherently evoke positive emotions, including consumer well-being, which could be categorized as subjective and social-environmental well-being. Subjective well-being refers to an individual’s level of contentment with their life (Diener *et al.*, 1999). Social-environmental well-being could be referred to as a consumer’s perceived sense

of fulfilment and positive emotional state derived from their contribution to society and the environment through their consumption behaviours.

Prior studies on consumer well-being revealed that brand love enhances it (Attiq *et al.*, 2022). Kim *et al.* (2012) illustrated that positive brand perceptions foster consumer well-being. Essentially, these results denote that consumers are driven from one emotional state (e.g., brand love) to another (e.g., consumer well-being) throughout their consumption journey. Similarly, this study infers that BH propels a consumer toward experiencing well-being and life satisfaction. Diverging from traditional views that well-being stems solely from consumption (Kim and Chang, 2023; Kumagai and Nagasawa, 2022), this study therefore draws on *anticipated emotions* (Phillips and Baumgartner, 2002) to argue that well-being can emerge before actual consumption. Contemplating future benefits of sustainable luxury brands may evoke positive emotions. In this context, BH arises from favourable brand attitudes shaped by sustainability initiatives (e.g., technology-led sustainability, CSR actions). This aligns with CAT, as appraising sustainability initiatives fosters a sense of interconnectedness with nature and society (Pai *et al.*, 2022), enabling consumers to mindfully recognize their positive impact, thereby enhancing both subjective and social-environmental well-being through favourable cognitive evaluations. Based on this discussion, the following hypothesis is devised:

H4: BH has a positive effect on consumers' well-being, including (a) subjective well-being and (b) social-environmental well-being.

2.6 Gender as a moderator

According to the gender role theory, people's attitudes and perceptions are greatly influenced by society's expectations and norms surrounding gender roles (Franke *et al.*, 1997). Women tend to prioritise sustainability in their purchasing decisions, driven by higher ecological awareness (Grau-Berlanga *et al.*, 2023). Conversely, men often engage in consumption behaviours that reflect competitiveness and a desire to maintain a masculine identity, detracting them from adopting sustainable practices (Brough *et al.*, 2016). In this study's context, while Thomas (2022) identified that perceptions of CSR's effect on luxury purchase intention are stronger for women than men, Olšanová *et al.* (2022) reported the opposite. In contrast, Tan *et al.* (2022) found that the impact of mindfulness on conspicuous consumption through status anxiety is higher for married men than

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4 1 their counterparts. Although Jain and Mishra (2018) anticipated a moderating effect of gender in
5 2 the luxury value dimensions-purchase intention relationship, their findings did not support this.
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7 3 Drawing on this discussion, we propose the following hypothesis:

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10 5 **H5:** The direct connections between TPBS, BCA, brand attitudes, BH, and consumers’
11 6 well-being differ based on gender.
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15 8 Figure 1 provides the proposed model drawn based on this study’s hypotheses.
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17 9 [Please insert figure 1 here]

18
19 10 **3. Method**

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21 12 This study primarily focuses on sustainable luxury brands, defined as those that prioritize ethical
22 13 and environmental responsibility across design, production, and consumption to address issues
23 14 like exploitation, environmental harm, and animal cruelty in the luxury sector.
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27 17 *3.1 Sample and procedure*

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29 18 The purposeful sampling method (Taufique *et al.*, 2024) was utilised to gather responses from
30 19 participants, justified by three primary considerations: (1) an inclusive sampling frame is
31 20 unavailable; (2) this method empowers researchers to engage with discerning and knowledgeable
32 21 participants who can deliver the most relevant data in line with study purposes; (3) the chosen
33 22 technique is the most appropriate to gather criteria-based participants (Robinson, 2014). Here, the
34 23 criteria for selecting samples were: (a) participants buy/use luxury apparel; (b) participants are
35 24 aware of luxury brands selling through AR and VR-enabled apps/websites; (c) participants are
36 25 from regions where the luxury sales are high in recent years; and (d) participants are fluent in
37 26 English. As mentioned in the introduction, citizens from the USA and the UK were asked to fill
38 27 out the survey.
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41 29 A self-administered structured questionnaire was developed using the Google Forms. In
42 30 line with previous studies (e.g., Pai *et al.*, 2022), respondents were chosen through the Prolific
43 31 survey website, which is one of the credible online platforms for sourcing panel data (Peer *et al.*,
44 32 2022). A sample size of 200 participants is deemed essential for estimating a model with structural
45 33 equation modelling (SEM) (Hair *et al.*, 2014). However, this study’s sample size was 454,
46 34 analogous to a previous study (Pai *et al.*, 2022) in a similar context. The respondents were
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1 predominantly from the UK (55.07%). The majority were female (58.59%), aged between 29-43
2 years (Gen Y, 37.44%). Educational attainment was notably high, with 42.51% holding a
3 bachelor's degree. Professionally, the participants were diverse, with businesspersons constituting
4 the largest segment (35.46%). Supplementary_material_appendix_1 presents the full list.

3.2 Measures and scales

7 An opening paragraph was provided to inform respondents of the context, followed by the two
8 scenarios regarding a fictitious brand named 'Brand A' (details are in
9 Supplementary_material_appendix_1). Afterward, the construct measurement items were
10 presented. With minor revisions to retain the original meaning, items were adapted from prior
11 studies while reported items' reliability statistics were considered. A 7-point Likert scale was
12 employed to scale (1=strongly disagree to 7=strongly agree) (Diallo *et al.*, 2021; Pai *et al.*, 2022)
13 all constructs except brand attitude, which was measured by a 7-point semantic differential scale
14 adapting 4 items (*e.g.*, *In general, my feelings toward Brand A, as a brand, are- Unfavourable*
15 *[1].....Favourable [7]*) from Park *et al.* (2010). The complete list of measurement items with their
16 sources and scales is provided in Supplementary_material_appendix_1.

3.3 Data screening

19 Collected data were screened for completeness, consistency, and accuracy. Common method bias
20 (CMB) was addressed through procedural remedies, including ensuring respondent anonymity and
21 employing varied scale formats and labels (*e.g.*, Likert and semantic differential). As for statistical
22 remedy, we conducted a full collinearity test (Kock, 2015), where all latent variables' variance
23 inflation factor (VIF) values were below 3.3, confirming no collinearity or CMB issues. The
24 screened data were analysed following a two-stage (*i.e.*, measurement and structural model) SEM
25 technique using SmartPLS 3.2.9 software.

4. Analysis and results

3.1 Measurement model validation

29 At this stage, internal consistency, convergent validity, and discriminant validity were estimated.
30 The factor loadings of all measurement items, ranging from 0.678 to 0.966, are above the
31 acceptable threshold value of 0.60 (Hair *et al.*, 2014). Cronbach's Alpha and composite reliability

values for all constructs exceed the permissible value of 0.70, with the average variance extracted (AVE) values surpassing the ideal threshold of 0.50 (Hair *et al.*, 2014). Additionally, the Fornell-Larcker test reveals that the square root of AVE for the diagonal elements (representing inter-construct correlation) is higher than the off-diagonal elements (correlations between respective constructs), supporting acceptable discriminant validity (Fornell and Larcker, 1981) (see Supplementary_material_appendix_1). In summary, the measured factor loadings, Cronbach's Alpha, composite reliability, AVE values, and the Fornell-Larcker Criterion table indicate satisfactory internal consistency and convergent and discriminant validity for the measurement items in this study.

3.2 Structural model validation

The structural analysis results for hypotheses testing (Table I) indicate that TPBS and BCA positively enhance brand attitudes, where impact sizes are $\beta=0.261$ ($p=0.000$) and $\beta=0.363$ ($p=0.000$), respectively. Thus, H1 and H2 are supported. Table I also exhibits that brand attitudes positively boost BH ($\beta=0.610$; $p=0.000$), endorsing H3. Furthermore, our fourth hypothesis, BH leads to subjective well-being (H4a) and social-environmental well-being (H4b), is supported by the results ($\beta=0.653$; $p=0.000$ and $\beta=0.716$; $p=0.000$) in Table I. Additionally, mediation analysis reveals that TPBS and BCA exert an indirect positive influence on perceived well-being, mediated sequentially through brand attitudes and happiness.

Table I further suggest that TPBS and BCA cumulatively explain 31.6% variations in brand attitudes. Brand attitudes explain 37.2% of variations in BH. Besides, BH explains 42.6% in subjective well-being and 51.2% in social-environmental well-being.

[Please insert Table I here]

We performed a multi-group analysis (MGA) using SmartPLS to explore the potential moderating effect of gender among the hypothesised direct paths. Unexpectedly, the calculated permutation *p values* show that none of the direct paths of our proposed model significantly differ based on gender (see Supplementary_material_appendix_1). Thus, H5 is not supported.

5. Discussions

This research endeavoured to investigate how luxury brands' sustainable initiatives elevate consumer-level BH and perceived well-being. The specific findings are discussed in the following sub-sections considering this study's RQs.

RQ1: do technology-led sustainability and CSR efforts influence consumers' attitudes toward luxury brands?

The findings demonstrate how TPBS function as cognitive stimuli that shape brand attitudes through goal-congruent appraisals. First, TPBS significantly enhances brand attitudes ($H1: \beta=0.261; p=0.000$), revealing that eco-conscious consumers favourably appraise luxury brands employing eco-technologies (e.g., AR/VTO) as aligning with their environmental values. This supports CAT's premise (Lazarus, 1991) that technology-driven sustainability is cognitively evaluated as both experientially rewarding and goal-congruent, triggering positive brand attitudes. Second, aligning with prior findings (Janssen *et al.*, 2014, 2017; Olšánová *et al.*, 2022; Sipilä *et al.*, 2021), BCA's stronger impact ($H2: \beta=0.363; p=0.000$) on brand attitudes reflects CAT's secondary appraisal mechanism: consumers assess CSR actions (e.g., ethical sourcing) as credible demonstrations of commitment. That means luxury brands may cultivate favourable brand attitudes by performing and promoting their internal and external CSR. Noticeably, BCA holds a slight edge over TPBS (β difference=0.102) in enhancing positive brand attitudes, highlighting the dominance of BCA in the sustainable luxury domain.

RQ2: do favourable brand attitudes elevate BH?

In this regard, the results demonstrate that brand attitudes significantly enhance BH ($H3: \beta=0.610; p=0.000$), a finding that aligns with CAT's core premise regarding goal-congruent appraisals. When sustainability-conscious consumers evaluate luxury brands' eco-initiatives (e.g., tech-driven sustainability, CSR) as self-congruent, they undergo a primary appraisal process where these brand attributes are assessed as aligning with their environmental values and social identity (Lazarus, 1991). This appraisal triggers the following emotional evaluations, transforming positive brand attitudes into heightened BH – a state of contentment and pleasure (Mansoor and Paul, 2022). That means luxury brands engaging in sustainable initiatives address dominant luxury consumers' goal of representing themselves as socially and environmentally concerned citizens, thereby facilitating

1 a pleasing and desirable psychological state for consumers. Besides, the current outcome endorses
2 Schnebelen and Bruhn’s (2018) finding, postulating that pre-purchase conditions like brand
3 attitudes intensify BH.

4
5 *RQ3: does BH enhance consumers’ perceived well-being?*

6 Consistent with the earlier assertion (Attiq *et al.*, 2022), this study noted that positive brand
7 experiences (e.g., BH) heighten consumers’ both subjective (H4a: $\beta=0.653$; $p=0.000$) and social-
8 environmental well-being (H4b: $\beta=0.716$; $p=0.000$), a relationship best understood through CAT
9 lens. When consumers experience BH with sustainable luxury brands, they undergo a two-stage
10 appraisal process: first evaluating how the brand’s sustainability initiatives align with their
11 personal values, then assessing their potential contribution to broader societal and environmental
12 goals. This cognitive-emotional sequence explains why even pre-consumption anticipation of
13 purchasing from sustainable luxury brands can foster well-being. This finding is critical in the
14 extant literature because while most studies (Kim and Chang, 2023; Kumagai and Nagasawa,
15 2022) emphasise consumption as a prerequisite for perceived well-being, this study has unpacked
16 that pre-consumption situations like thinking about buying from a sustainable luxury brand can
17 foster feelings of well-being. In this regard, this study establishes that thinking about the benefits
18 of future consumption can evoke positive emotions like perceived well-being. Importantly, the
19 effects of happiness on perceived well-being ($\beta=0.653$ and $\beta=0.716$) are relatively stronger than
20 other relationships, with the impact of happiness on social-environmental well-being showing a
21 slightly greater impact ($\Delta\beta=0.063$) than on subjective well-being. This suggests that enhancing
22 happiness effectively and considerably drives desired well-being outcomes among luxury
23 consumers – a key goal for marketers. Although not initially hypothesised, our results indicate that
24 TPBS and BCA indirectly enhance perceived well-being through brand attitudes and happiness,
25 reinforcing the criticality of brand-level eco-friendly initiatives driven by technological innovation
26 and CSR efforts in fostering consumer well-being.

27 Additionally, unlike earlier assertions that sustainability considerations during
28 consumption vary across males and females (Grau-Berlanga *et al.*, 2023; Olšánová *et al.*, 2022),
29 the results do not substantiate gender as a moderator within the current model. This may be due to
30 consumers’ high level of concern for luxury brands’ sustainable practices, regardless of gender, as
31 noted in recent reports (Lux Magazine, 2023; McKinsey, 2023). Besides, environmental

behaviours and decisions influenced by personal well-being are adopted across genders as part of a broader commitment to ethical and sustainable living rather than as reflections of fashion or aesthetic choices. However, beta differences in each path show that the effect of TPBS on brand attitudes is significant for females, supporting the past assertion that women are likely to consider sustainability during their purchasing decisions (Grau-Berlanga *et al.*, 2023). Contrarily, the impact sizes of almost all other paths are comparatively greater for males than females, which presents an intriguing contrast to the previous argument by Grau-Berlanga *et al.* (2023).

6. Theoretical contributions

This research offers multiple theoretical contributions to existing literature. *First*, drawing on the Cognitive Appraisal Theory, this study represents the first attempt to establish TPBS as a positive determinant of brand attitudes in the luxury context. In this regard, the study addresses a notable research gap by extending the proven link between perceived brand sustainability and brand attitudes (Sani-Elia *et al.*, 2023) and confirming the pivotal role of the latest technologies (e.g., AR, VTO) as firm-level sustainable initiatives. Luxury consumption is associated with experiential shopping. Here, the current finding shows that AR technologies may elicit favourable brand attitudes among today's young and eco-conscious luxury consumers (McKinsey, 2023) while simultaneously providing them with an experiential shopping experience.

Second, the current findings regarding CSR actions on consumers' brand evaluations are indecisive (Sipilä *et al.*, 2021). Some studies (Amatulli *et al.*, 2018; Janssen *et al.*, 2014, 2017; Olšanová *et al.*, 2022; Sipilä *et al.*, 2021) show CSR has a positive impact, while other streams of research highlight its insignificant (Vock, 2022) and even adverse (Diallo *et al.*, 2021) outcomes in terms triggering consumers evaluations of luxury brands. To this end, this study contributes to resolving these past equivocal findings by elucidating CSR's role in enhancing consumer evaluations of sustainable luxury brands. The application of CAT remains uncommon in consumer behaviour research, particularly within luxury contexts. However, the above two findings substantiate CAT's relevance by demonstrating how TPBS and CSR actions function as cognitive stimuli that trigger sequential appraisals, driving emotional outcomes like happiness and well-being.

Third, to the best of our knowledge, this study is pioneering in introducing the concept of BH within the sustainable luxury sector. In this regard, the study answers prior research calls

(Banerjee *et al.*, 2024; Schnebelen and Bruhn, 2018) by identifying if consumer-controlled brand touchpoints (i.e., brand attitudes) can trigger BH. The significance of BH in the current context supports the *anticipation hypothesis* (Richins, 2013) by showing that merely anticipating buying a favoured brand can provide happiness and contentment without necessarily purchasing or using the brand. This finding also complements Mansoor and Paul’s (2022) finding by showing that positive perceptions of luxury can stimulate happiness.

Fourth, by substantiating the connection from BH to consumers’ perceived well-being, our study highlights the effectiveness and strength of BH, an aspect that has been relatively under-explored in the existing literature (Schnebelen and Bruhn, 2018). By building upon and corroborating the concepts of *anticipated emotions* (Phillips and Baumgartner, 2002), the positive link between BH and consumers’ perceived well-being asserts that feelings of well-being can arise even before actual consumption occurs. Consequently, this study serves as a timely response to the calls for research (Batat, 2022; Cristini *et al.*, 2022) to investigate if luxury consumption may impact consumers’ perceived well-being.

Fifth, in response to Kaur *et al.*’s (2024) research call, we have tested the moderating effects of gender. Our findings reveal that sustainability considerations during purchase and resulting happiness and well-being in the luxury domain do not differ significantly across men and women. This result somewhat contradicts our proposed hypothesis; however, it highlights an important insight: consumers, regardless of gender, demonstrate a heightened concern for luxury brands’ sustainable practices.

7. Conclusions and managerial implications

The future of luxury will pivot on an optimal blend of technology and sustainability, as technology holds great potential to equip the luxury industry with tools for succeeding in sustainability goals (Lee *et al.*, 2024). Accordingly, conscientious luxury brands (e.g., L’Oréal Luxe, Gucci) leverage technology (e.g., AR) to offer customers immersive and gratifying shopping experiences. Simultaneously, these technologies foster environmental sustainability, although luxury firms are cautious about explicitly communicating this aspect. Drawing on this study’s finding regarding TPBS’s link with brand attitudes (H1), luxury retailers can strategically promote AR technologies as integral components of their sustainable initiatives. The results indicate that luxury firms using technologies to support environmental sustainability are perceived favourably by consumers.

Therefore, luxury brand retailers should develop compelling campaigns that emphasise the dual benefits of their latest technologies, offering both gratifying shopping experiences and environmental sustainability. Specifically, such campaigns should highlight firms' year-on-year investment in AR and how these technologies contribute to reducing carbon footprints while providing satisfying shopping experiences. Brands can further enhance their outreach by collaborating with virtual influencers, leveraging their broad appeal and credibility to resonate with eco-conscious consumers.

In light of the ongoing argument on the coexistence of CSR and luxury (Diallo *et al.*, 2021; Vock, 2022), this study showed that CSR enhances positive brand attitudes (H2). Hence, luxury marketers should effectively communicate their internal CSR, including augmented benefits (e.g., healthcare for the entire family) offered to employees, and external CSR, such as philanthropic activities. Since sustainable luxury is all about authenticity and quality, marketers should craft a subtle, authentic, and genuine storyline to communicate their CSR initiatives, irrespective of CSR types. Such a strategy would ensure brands' credibility and appeal to consumers by demonstrating that their commitment to sustainability is real and consistent with their core values. For example, with the Rolex Award for Enterprise, the premium watchmaker Rolex provides financial assistance to young entrepreneurs whose ideas aim to improve the environment or culture (Pinto, 2023).

Since BCA has a slightly higher effect than TPBS on brand attitudes, allocating additional resources toward CSR actions appears beneficial for luxury brands. Alongside cause-related marketing initiatives (e.g., donations for building hospitals), ethical sourcing of raw materials could be emphasised as part of firms' CSR activities (Pankiw *et al.*, 2020). To make it simple for customers to confirm the brand's dedication to ethical sourcing, luxury retailers might use a web address or QR code within their advertisements that would direct them to the brand's website for more specific information (Pankiw *et al.*, 2020). These campaigns are anticipated to bolster favourable brand attitudes and maximise BH (H3). BH can be further influenced by fostering the consumer-brand relationship with surprising and delightful elements (e.g., special day gifts) (Schnebelen and Bruhn, 2018). This may contribute to consumer satisfaction, an essential component of happiness.

Furthermore, BH is a crucial factor identified in this study for inducing perceived well-being (H4), which is an abstract social value acknowledging the sustainability initiatives of luxury brands and the desire of customers for sustainable luxury. Indeed, sustainable luxury goods can

1 potentially raise customers' socio-environmental well-being and quality of life. According to our
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3
4 1 results, the impact sizes of BH on subjective well-being and social-environmental well-being
5 2
6 3 ($\beta=0.653$ and $\beta=0.716$) are the strongest among all relationships. Thus, by investing in mechanisms
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8 5 like TPBS and BCA that trigger favourable brand attitudes, happiness, and well-being, the luxury
9 6
10 7 products market should move toward goods congruent with consumers' self-perception and
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12 9 contribute meaningfully to their overall well-being.
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14 7 Besides, although gender was not a significant moderating factor, beta differences across
15 8
16 9 each path for men and women suggest the potential value of tailored campaigns (Kim, 2020) –
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18 11 emphasising TPBS for female luxury shoppers and BCA for male shoppers.
19 12

20 11 **8. Limitations and future research avenues**

21 12 This research has several limitations, paving the way for future research. *First*, the current research
22 13
23 14 employed a scenario-based approach, predominantly measuring consumers' pre-consumption
24 15
25 16 feelings and reactions to brands undertaking sustainable initiatives. Future research, particularly
26 17
27 18 combining qualitative and quantitative analysis, is recommended to assess post-consumption
28 19
29 20 emotions in a similar context, providing further insight into how luxury brands perform in terms
30 21
31 22 of their sustainable actions. *Second*, we found no significant differences in consumer responses
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33 24 between the UK and USA, likely due to cultural similarities – though this explanation awaits
34 25
35 26 further validation. Besides, the samples of this study were limited to Western countries, calling for
36 27
37 28 more investigation of the same in Eastern countries, including the Middle East (e.g., Kuwait, UAE)
38 29
39 30 and Asian regions (e.g., China, Korea, India), where luxury sales are experiencing rapid growth.
40 31
41 32 *Third*, gender did not significantly moderate any relationships in this study, highlighting a need
42 33
43 34 for future investigation. Future researchers may also consider incorporating pertinent moderators
44 35
45 36 like consumer wisdom (Luchs *et al.*, 2021), which is arguably highly relevant at the intersection
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47 38 of sustainability and personal well-being.
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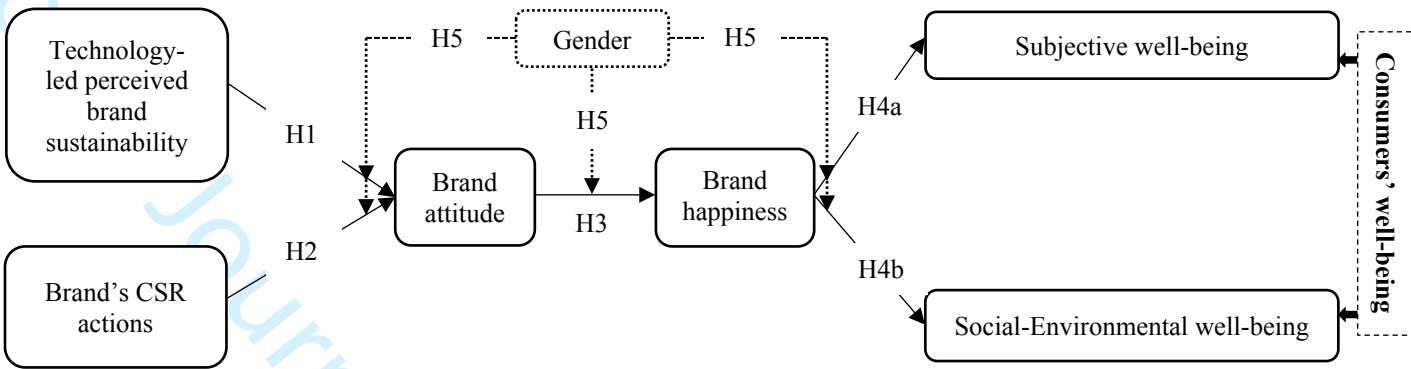


Figure 1 The proposed model (created by authors).

Table I Structural Model Evaluation (n=454)

Hypothesis	Structural paths	Path coefficient	<i>t</i> value	<i>p</i> value	R ²	Status
H1	TPBS → BA	0.261	4.179	0.000	0.316	Supported
H2	BCA → BA	0.363	5.153	0.000		Supported
H3	BA → BH	0.610	17.697	0.000	0.372	Supported
H4a	BH → SW	0.653	22.060	0.000	0.426	Supported
H4b	BH → SEW	0.716	31.262	0.000	0.512	Supported
Mediation test results						
	TPBS → BA → BH → SW	0.104	3.802	0.000		Significant
	TPBS → BA → BH → SEW	0.114	3.834	0.000		Significant
	BCA → BA → BH → SW	0.144	4.618	0.000		Significant
	BCA → BA → BH → SEW	0.158	4.676	0.000		Significant

Source(s): Authors own work

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Table I Sample demographics

	Classes	Frequency	Percentage
Age (years)	18-28 (Gen Z)	101	22.25
	29-43 (Gen Y)	170	37.44
	44-63 (Gen X)	141	31.06
	64 or above (Baby Boom)	42	9.25
	Total	454	100
Gender	Male	188	41.41
	Female	266	58.59
	Total	454	100
Profession	Business	161	35.46
	Service holder	32	7.05
	Student	52	11.45
	Others	209	46.04
	Total	454	100
Schooling	Higher secondary or lower	171	37.67
	Bachelor's degree	193	42.51
	Master's degree	78	17.18
	Above master's degree/PhD	12	2.64
	Total	454	100
Nationality	UK	250	55.07
	USA	204	44.93
	Total	454	100

Source(s): Authors own work

Scenarios

#Scenario 1

Imagine that you are considering buying a luxury unisex jacket. You know about a brand named 'Brand A'. This brand's AR app offers a 360-degree view, virtual try-on, and made-to-order options for its luxury unisex jackets, improving online shopping by reducing uncertainties and potential returns. This sustainable approach minimises product waste and transport-related emissions, providing a convenient alternative to traditional retail.

#Scenario 2

Brand A has recently enhanced employee benefits, introduced cost-saving manufacturing software, and supported a new paediatric hospital through financial donations. Additionally, it prioritised transparency by acquiring certification for the traceability and origin of its raw materials.

Table II Measurement items

Constructs	Indicators	Wording	Sources
Technology-led perceived brand sustainability (TPBS)	TPBS1	'Brand A' utilizes green technology	Kim <i>et al.</i> (2015)
	TPBS2	'Brand A' invests in the environment	
	TPBS3	'Brand A' demonstrates eco-friendly practices	
	TPBS4	'Brand A' achieves environmental innovativeness	
Brands' CSR actions (BCA)	BCA1	'Brand A' is really concerned about its employees' healthcare	Amatulli <i>et al.</i> (2018)
	BCA2	'Brand A' offers efficiently manufactured products	
	BCA3	'Brand A' is helpful to others in need	
	BCA4	'Brand A' adheres to the law on traceability and product origin	
Brand attitude (BA)	In general, my feelings toward Brand A, as a brand, are...		Park <i>et al.</i> (2010)
	BA1	Unfavourable (1).....Favourable (7)	
	BA2	Bad (1).....Good (7)	
	BA3	Negative (1).....Positive (7)	
	BA4	Unpleasant (1).....Pleasant (7)	
Brand happiness (BH)	BH1	I would feel glad buying/using Brand A	Schnebelen and Bruhn (2018)
	BH2	I would feel cheerful buying/using Brand A	
	BH3	I would feel joyful buying/using Brand A	
	BH4	Buying/ using Brand A would make me feel lively	
	BH5	Buying/ using Brand A would make me feel peppy	
	BH6	Buying/ using Brand A would make me feel vigorous	
	BH7	Buying/ using Brand A would make me feel proud	
	BH8	Buying/ using Brand A would make me feel superior	
	BH9	Buying/ using Brand A would make me feel Worthy	
	BH10	Buying/ using Brand A would make me feel relaxed	
	BH11	I would feel myself at ease buying/ using Brand A	
	BH12	Buying/ using Brand A would make me feel comfortable	
Subjective well-being (SW)	SW1	Buying from Brand A would make me a happier person than anyone else	Diener <i>et al.</i> (1985)
	SW2	Buying from Brand A would make me satisfied with my life	
	SW3	Buying from Brand A would make me feel that, in most ways, my life is close to my ideal	

	SW4	Buying from Brand A would make me feel that I have gotten one of the important things I want in life	
Social-environmental well-being (SEW)	SEW1	Buying from Brand A will make me feel that I contributed something important to society	Vinzenz <i>et al.</i> (2019)
	SEW2	I feel that by using Brand A, our world could become a better place for all people	
	SEW3	Buying from Brand A will make me feel that I contributed something important to preserve the environment	
	SEW4	Buying from Brand A will make me that I contributed something fundamental to saving the environment	
	SEW5	Buying from Brand A will make me feel that I contributed something important to protect the environment	

Table III Relevant psychometric properties of measurement items

Constructs	Indicators	α	CR	AVE	CFA load (λ^*)
Technology-led perceived brand sustainability (TPBS)	TPBS1	0.946	0.961	0.862	0.897
	TPBS2				0.932
	TPBS3				0.943
	TPBS4				0.940
Brands' CSR actions (BCA)	BCA1	0.885	0.921	0.744	0.837
	BCA2				0.858
	BCA3				0.910
	BCA4				0.844
Brand attitudes (BA)	BA1	0.964	0.974	0.903	0.949
	BA2				0.947
	BA3				0.959
	BA4				0.946
Brand happiness (BH)	BH1	0.963	0.968	0.714	0.792
	BH2				0.867
	BH3				0.886
	BH4				0.900
	BH5				0.886
	BH6				0.864
	BH7				0.877
	BH8				0.678
	BH9				0.834
	BH10				0.860

Constructs	Indicator s	α	CR	AVE	CFA load (λ^*)
Subjective well-being (SW)	BH11	0.962	0.972	0.897	0.835
	BH12				0.836
	SW1				0.931
	SW2				0.957
	SW3				0.952
Social-environmental well-being (SEW)	SW4	0.973	0.979	0.904	0.947
	SEW1				0.921
	SEW2				0.941
	SEW3				0.963
	SEW4				0.966
	SEW5				0.961

*All factor loadings (λ) are significant at $p < 0.001$
Note: α =Cronbach's alpha; CR=composite reliability; AVE=average variance extracted;
CFA=confirmatory factor analysis

Source(s): Authors own work

Table IV Fornell-Larcker Table

	BA	BCA	BH	SEW	SW	TPBS
BA	0.950					
BCA	0.523	0.863				
BH	0.610	0.532	0.845			
SEW	0.485	0.419	0.716	0.951		
SW	0.290	0.268	0.653	0.714	0.947	
TPBS	0.484	0.614	0.550	0.465	0.289	0.928

Source(s): Authors own work

Table V Multi-group analysis based on gender

Paths	β (Male)	β (Female)	β Difference	Permutation p value
TPBS $\rightarrow$ BA	0.199	0.298*	-0.099	0.456
BCA $\rightarrow$ BA	0.430*	0.317*	0.113	0.442
BA $\rightarrow$ BH	0.625*	0.602*	0.022	0.759
BH $\rightarrow$ SW	0.637*	0.670*	-0.032	0.575
BH $\rightarrow$ SEW	0.725*	0.710*	0.015	0.745

*significant at 0.001 level

Source(s): Authors own work

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