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How the perception of sustainable packaging influences consumer perception of a luxury brand

Author: Tran Vu Ngoc, Mai
Supervisor: Professor Pleyers, Gordy
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Introduction

Amidst challenging macroeconomic conditions, the luxury market is projected to achieve a record-setting revenue of €1.5 trillion in 2023, representing an 8% to 10% growth from the previous year, thereby demonstrating significant resilience within the industry (D'Arpizio et al., 2024). Despite encountering setbacks such as the declining popularity of Korean beauty routines among younger demographics in Asia and restrictive local policies affecting travel retail, the beauty sector alone saw a growth of 4% to 5%, reaching €72 billion (D'Arpizio et al., 2024).

This rapid growth has heightened the focus on the luxury market from both business and consumer perspectives. As such, the integration of sustainable practices has transcended altruistic motives, becoming a strategic business imperative for luxury brands (Kapferer, 2010). For example, LVMH has been a pioneer in this area, having established an Environmental Charter back in 2001, which underscores sustainable development as integral to its strategy. Further reflecting this commitment, Dior Cosmetics has eliminated silicones from their products, and Guerlain has utilized LVMH's EDIBOX software to evaluate their Environmental Performance Index and carbon dioxide emissions. A notable emphasis has been placed on sustainable packaging, particularly within the luxury skincare market, where collaborations with packaging producers are enhancing the adoption of sustainable materials.

Despite these initiatives, the collection and recycling rates of cosmetic packaging remain low, posing both challenges and opportunities for the adoption of sustainable, compostable, or biodegradable materials (Cinelli et al., 2019). This issue is critical for luxury brands, as it influences consumer perceptions significantly due to a negative influence on brand image.

Luxury consumers are not solely motivated by product quality but also by the social messages conveyed through brand ownership. Dubois and Czellar (2002) emphasize that social value serves as a key motivational driver in the consumption of luxury goods, with brand-associated symbols representing a shared social meaning of prestige. Expanding on this notion, Kapferer and Bastien (2017) argue that any item capable of serving as a social signifier qualifies as a luxury, implying that owning certain luxury items signifies class or membership in an elite group (Brun & Castelli, 2013). This underscores the importance of sustainable initiatives in

luxury brands, which not only strive towards a sustainable economy but also aim to maintain positive consumer perceptions and ongoing support for the brands.

This study investigates the perception of sustainable packaging on consumer perceptions of a luxury beauty brand. It specifically examines whether the use of recycled materials in skincare product packaging, which is proved to be considered as ‘sustainable’ by consumers, can engender more favorable consumer attitudes. Regarding the choice of product, the trend of self-care, particularly through skincare, has gained significant traction during and after the COVID-19 pandemic, notably on platforms like TikTok where "skinfluencers" have emerged as pivotal influencers. This digital phenomenon has sparked my interest in the skincare product category, motivating me to explore it further. Employing a 2 x 2 mixed experimental design, this study analyzes the effects of perceived sustainability and luxury on brand perceptions. Data collected from an online survey of 132 participants was analyzed using SPSS, which revealed a positive relationship between sustainability perception and brand attitude. This relationship was further explored between luxury and non-luxury brands, including an examination of trust in brands' sustainable positioning and perceived contradictions between sustainability and luxury. The paper concludes with proposals for enhancing sustainable packaging practices among luxury brands.

Part 1: Theoretical framework

1. Sustainable development in the beauty industry

According to a report by McKinsey & Company, the global beauty market, including sectors such as skincare, fragrance, makeup, and haircare, generated an estimated revenue of approximately $430 billion in the year 2022. Amid the challenges posed by a volatile macroeconomic landscape and ongoing global economic uncertainties, this market demonstrates notable resilience and is expected to reach $580 billion by 2027. This projection indicates a compound annual growth rate (CAGR) of approximately 6% (McKinsey & Co., 2023).

The beauty market is categorized into six price segments: ultra-luxury, true luxury, prestige, entry prestige, masstige, and mass. This segmentation is further explained through the representation of corresponding brands within each category, as detailed in Figure 1.

	Skin Care		Fragrance		Colour Cosmetics	
	Price Point	Illustrative Brands	Price Point	Illustrative Brands	Price Point	Illustrative Brands
Ultra Luxury	$3,000+	La Prairie*	$5,000+	Guerlain*	$1,000+	n/a
True Luxury	$200–3,000	La Mer	$250–5,000	Byredo	$100–1,000	Clé de Peau
Prestige	$80–200	SK-II	$100–250	Dior	$60–100	Yves Saint Laurent
Entry Prestige	$40–80	Shiseido	$70–100	Hugo Boss	$45–60	Bobbi Brown
Masstige	$20–40	Kiehl's	$45–70	Kenzo	$25–45	Clinique
Mass	<$20	Nivea	<$45	Revlon	<$25	E.l.f.

Figure 1 - Six price segments of the beauty market (McKinsey & Co.,2023)

For the scope of this study, the focus will be specifically on the skincare category. According to McKinsey & Company's analysis, skincare remains as the largest category of the beauty market, contributing to 45% of the sector's total market value (McKinsey & Co., 2023). While

mass sub-segment currently holds the largest market share, it is the luxury and prestige segments that are expected to have the most significant growth. These segments are anticipated to witness CAGRs of 11% and 7%, respectively, by the year 2027 (McKinsey & Co., 2023).

The cosmetics sector is currently navigating a significant transition towards sustainability, a shift catalyzed by consumer-driven demand and pressing environmental concerns. In terms of consumer demand, distinct variances in consumer preferences are observable across different geographical locales: participants from China emphasize natural components and eco-efficient production process, whereas Western consumers allocate significant importance to cruelty-free production and the adoption of sustainable packaging alternatives, encompassing recyclable, plastic-free, and materials sourced from recycling processes (McKinsey & Co., 2023).

Moreover, consumers belonging to the Millennial and Generation Z demographics are more willing to increase their spending on beauty products sourced from brands that prioritize sustainability. Notably, Generation Z prioritizes products that not only yield superior results but also emanate from brands that engender trust and prioritize sustainability, a trend that is distinctly more pronounced than in older generational group (McKinsey & Co., 2023).

From the company perspective, the pursuit of differentiation within a competitive market has led companies in the beauty industry to seize opportunities for innovation, particularly within the market for eco-friendly beauty products. This trend has led to innovation in product packaging, thus enabling companies to tap into new market segments and customers demographics.

A notable example of PCR packaging innovation is seen in the collaboration between Clarins and Albéa Tubes to produce the packaging for Clarins Multi-Active cream. This partnership led to the creation of a tube that integrates 45% recycled material, showcasing a significant step towards sustainability in the luxury beauty sector. Moreover, the design of the tube achieves a 47% reduction in weight by eliminating one component of the packaging, further enhancing its environmental benefits by reducing the material required and potentially lowering transportation emissions (Groupe Clarins, 2024).

Figure 2 - Example of PCR packaging: Clarins Multi-Active cream (Group Clarins, 2024)

Figure 3 - Example of PCR packaging: Abeille Royale cream (Guerlain, n.d.)

Guerlain, a prestigious skincare and cosmetics brand under the LVMH group, has taken a significant step towards sustainability with its Abeille Royale cream packaging. This product is encased in jars made from 90% recycled glass, of which 25% originates from post-consumer recycled (PCR) materials. This initiative is part of a collaborative effort with Verescence, a leading glass manufacturing company known for its eco-innovative solutions. The product utilizes Verescence's Infinite Glass® NEO, a material specifically designed to reduce environmental impact without compromising on quality or aesthetics.

Light-weighting packaging is an innovative approach aimed at minimizing the environmental footprint of product packaging. This process involves reducing both the weight and volume of the packaging by using fewer materials or substituting the primary material with a lighter alternative. A noteworthy implementation of this strategy is Chanel's launch of the No.1 de Chanel low-packaging range in 2022. In this initiative, Chanel aimed to significantly reduce

the environmental impact of their packaging, specifically targeting the revitalizing cream's glass jar within this range. The brand succeeded in reducing the weight of the jar by up to 50%, a substantial achievement that underscores the potential benefits of light-weighting in the luxury cosmetics sector.

Figure 4 - Example of light-weighting packaging: No.1 de Chanel cream (Chanel, n.d.)

Figure 5 - Example of refillable packaging: La Prairie The Gold collection (Cleary, 2022)

La Prairie, a Swiss luxury skincare brand renowned for its commitment to innovation and excellence, has taken a significant step towards sustainability with the launch of The Gold Collection in collaboration with artist Carla Chan. This initiative introduces refillable

packaging to the brand's product lineup, reflecting a growing trend in the beauty industry towards more environmentally responsible practices. The outer casing and cap of the products are crafted with the intention that they be kept indefinitely, embodying a shift away from the disposable culture that dominates much of the packaging industry. Instead of discarding the entire package once the product is finished, consumers can retain the elegantly designed exterior and simply replace the glass vials containing the skincare formulas.

Switching packaging materials from plastic to glass represents a strategic move for companies aiming to align with environmental sustainability while maintaining the premium quality associated with luxury brands. Glass, as a packaging material, offers several advantages, including recyclability, durability, and a perception of higher quality, which can enhance the luxury feel of a product. In 2021, the Estée Lauder brand exemplified this approach by transitioning its Advanced Night Repair Serum bottles from plastic to glass. By opting for glass, Estée Lauder aimed to avoid the use of millions of plastic bottles per year, directly addressing the global issue of plastic pollution.

Figure 6 - Example of glass packaging: Advanced Night Repair Serum (Estée Lauder, 2024)

Furthermore, L'Oréal, in collaboration with Quantis, a consultancy specializing in sustainability, has established the Sustainable Packaging Initiative for CosmEtics (SPICE).

This initiative brings together leading organizations in the packaging industry, including Albéa and Bormioli Luigi, among others. It also integrates renowned cosmetic brands like Chanel, Estée Lauder, and Clarins. The initiative's primary aim is to develop and publish methodologies and data that are oriented towards businesses, with the objective of enhancing the environmental sustainability across the entire packaging value chain, as delineated on the SPICE website.

In conclusion, the beauty industry has been progressively investing in sustainable innovations for their products, particularly in packaging, driven by the escalating consumer demand for environmentally friendly options and the urgent need to address environmental challenges. This commitment to sustainability is pivotal in steering the industry towards a more sustainable transformation.

2. Consumer perceptions regarding sustainable packaging

2.1 Consumer perceptions of sustainable packaging

From the perspective of consumers, sustainable packaging is characterized by design features that signal environmental friendliness (Magnier & Crié, 2015). Magnier and Schoormans (2015) suggest that consumers utilize visible design elements such as material and color to assess the sustainability of a package. In situations where these visual cues are ambiguous, consumers tend to rely on sustainability claims on the packaging. These verbal claims are particularly significant when the packaging design is conventional, as they underscore the sustainable aspects suggested by visual elements (Magnier & Schoormans, 2015).

Further expanding on this framework, Magnier and Crié (2015) incorporated structural cues alongside graphical/iconic and informational cues to explore consumer perceptions of eco-designed packaging. They define eco-designed packaging from the consumer's viewpoint as a design that either explicitly or implicitly conveys the eco-friendliness of the packaging through its structure—such as material choices, reduction or elimination of excess material, recyclability, biodegradability, or reusability—as well as through graphical/iconographic cues

like colors, images, and logos, and informational cues like sustainability claims or carbon footprint data.

On the structural front, Korhonen (2012) identified the five most critical attributes of environmentally friendly packaging as perceived by Finnish consumers: recyclability, minimal waste, biodegradability, energy recoverability, and minimal use of packaging material. In the context of food packaging, specific concerns such as the quantity of material used, package size, and the ease with which the package can be opened and resealed are the foremost environmental considerations for consumers (Arboretti et al., 2016; Lindh et al., 2016; Martinho et al., 2015; Waheed et al., 2018; Zekiri, 2015). Additionally, the use of recyclable materials is often perceived by consumers as an indicator of environmental friendliness (Hoek et al., 2017; Lindh et al., 2016; Young, 2008). For instance, Lindh et al. (2016) report that twenty-five percent of Swedish consumers believe that materials capable of being recycled have the least environmental impact.

Regarding the materials used for packaging, there is a significant divergence between consumer perceptions and scientific assessments concerning their environmental sustainability. Otto et al. (2021) observed that materials such as paper/cardboard and metal align closely with scientific evaluations in terms of environmental impact. However, plastics are often underestimated by consumers regarding their ecological detriment, whereas glass and biodegradable plastics are substantially overestimated in terms of sustainability. This observation is corroborated by Steenis et al. (2017), whose research indicates that the materials perceived by consumers as most sustainable—namely bioplastic and glass—are ranked fifth and last, respectively, in life-cycle analyses. These findings underscore a considerable gap in consumer intuition about sustainable packaging materials. Moreover, Fernqvist et al. (2015) highlight that consumer preferences often favor paper/cardboard over plastics, associating the latter with negative emotions and attitudes such as being unnecessary, strange, costly, or environmentally harmful.

In the realm of packaging design, graphical cues such as colors (e.g., brown, green, white), imagery (e.g., trees, leaves, meadows), terms or symbols related to environmental protection, handmade drawings, and specific logos (e.g., FSC, recyclable) significantly influence consumer perceptions of sustainability (Magnier & Crié, 2015). Green is frequently used because of its strong associations with environmental friendliness (Lim et al., 2020). Research

by Seo & Scammon (2017) supports this, finding that green-colored food packages often convey a brand's commitment to lower environmental impacts. Additionally, other studies suggest that blue may also evoke sustainability perceptions (Sundar & Kellaris, 2015). Hallez et al. (2023) further corroborate these findings by indicating that cool colors can make snack packaging appear more sustainable.

Regarding eco-labels, they play a pivotal role in helping consumers identify sustainable packaging, especially when it is not immediately obvious (Rettie & Brewer, 2000; Magnier & Crié, 2015). Despite their importance, consumer trust in eco-labels can be variable. Thøgersen and Nielsen (2016) noted that eco-labels that utilize a traffic light system and provide objective numerical information tend to improve understanding and acceptance among consumers.

Finally, regarding informational cues, Hallez et al. (2023) found that packaging featuring the ecological claim "bio" is perceived by consumers as more sustainable. This study also revealed that there is no significant interaction between informational cues and color, suggesting that the perceived sustainability of packaging is not influenced by the color in which these cues are presented. This finding contrasts with the results of Seo and Scammon (2017), who demonstrated that ecological claims are more effective in conveying a brand's sustainability when framed in green, as opposed to red. This discrepancy highlights the complex nature of how visual and textual elements interact to influence consumer perceptions of sustainability and suggests that the effectiveness of these cues can vary depending on the context and presentation. Further research may be needed to fully understand these dynamics and guide more effective packaging design strategies that align consumer perceptions with actual environmental impacts.

2.2 How the perception of sustainability influences consumer perception towards a brand

Brand attitude, as defined by Kotler et al. (1999), refers to a consumer's favorable or unfavorable evaluation, emotional response, and behavioral inclination towards a brand. Giannelloni (1998) provides evidence that ecological cues in packaging positively influence various aspects of consumer behavior, including trust, brand and product evaluations, purchase intentions, long-term brand loyalty, and advocacy behaviors. Studies across different types of products and services similarly report a positive shift in brand attitudes when associated with

environmental sustainability cues. Behre and Cauberghe (2024) document such a shift among fashion items featuring sustainability attributes. Kumagai and Nagasawa (2020), using a moderated mediation analysis of 440 online survey responses from Japan, demonstrate that introducing sustainable plastic apparel not only directly enhances brand attitude but also indirectly boosts purchase intentions.

Jeong et al. (2014) highlight that green practices can significantly improve a restaurant's environmental image, positively impacting customer attitudes towards these businesses. This perspective is corroborated by Chen (2009) and Myers (1968), who found that consumers' perceptions of a restaurant's commitment to environmental concerns substantially shape their attitudes towards such establishments. Line et al. (2016) also confirm that sustainability messages that resonate with consumers' perceptions of sustainability lead to more favorable attitudes towards restaurants. Ríos et al. (2006) report a direct positive relationship between consumers' beliefs about a washing powder brand's ecological performance and their attitudes towards the brand. Sogari et al. (2015) explore attitudes towards sustainable-labelled wine, finding that these attitudes are influenced by environmental and quality beliefs about the wine, but not by its economic sustainability.

Beyond specific products, studies like that of Khan and Fatma (2023) examine brands offering sustainable products in general, presenting empirical evidence of perceived sustainability's direct effect on customer loyalty and trust, as well as an indirect effect on trust via customer engagement. Using a three-stage least squares model to analyze new product introductions from 75 brands over four years (2009-2012), Olsen et al. (2014) conclude that green product launches significantly enhance brand attitudes, influenced both by the brand's and the category's positioning.

Magnier and Crié (2015) utilize a cost-benefit analysis to examine consumer perceptions of ecological cues in packaging, distinguishing between perceived benefits and perceived costs. Thøgersen (2011) and further explored by Magnier and Crié (2015), categorize perceived benefits as private or pro-social/altruistic. Private benefits encompass positive assessments of eco-designed packaging, which consumers believe indicate health benefits and reduced environmental pollution, an effect first noted by Thorndike in 1920. These benefits also include practical advantages such as decreased packaging volume and improved disposability or transformability (e.g., compostability), enhancing consumer convenience and potentially

reducing costs. Pro-social benefits are linked to the perception that ecological cues contribute positively to societal well-being, enhancing the consumer's self-image as an environmental steward.

In contrast, implementing ecological cues in products can also lead to negative consumer attitude towards a brand. In the same study by Magnier and Crié (2015), perceived costs are explained to include compromises in aesthetic appeal and product enjoyment due to eco-friendly packaging, which is often viewed as less attractive due to its simplicity and minimalist design. There is a widespread perception that eco-design, such as reduced packaging, might diminish product quality, with concerns about insufficient product protection potentially degrading its attributes. Additionally, environmentally cued products and packaging are frequently perceived as more expensive, and although some consumers are willing to pay a premium, others find the additional cost unwarranted.

The complexity and variability of environmental claims can also lead to consumer skepticism, particularly among those who feel unqualified to judge the ecological validity of such claims (Magnier & Crié, 2015). Steenis et al. (2017) show that while convenience and sustainability are influential, they are secondary to traditional benefits like quality and taste, indicating a consumer tendency to prioritize conventional benefits over eco-friendly features.

Achabou & Dekhili (2013) highlight a specific bias in the luxury sector, where recycled materials in luxury T-shirt compositions are disfavored, though recycled packaging tends to be more acceptable. Jagani et al. (2024) indicate that while sustainability initiatives generally negatively affect customer attitudes in service industries, this effect is offset among highly brand-loyal customers, leading to a positive brand attitude.

3. Consumer perceptions regarding sustainable packaging in the beauty industry

Prior research has explored the influence of sustainable practices by beauty brands on variables such as purchase intention (De Sousa De Macedo, 2022; Bara et al., 2021; Sudirja et al., 2023), purchase motivation (Cervellon & Carey, 2011), and dimensions of brand affinity such as brand love and loyalty (De Sousa De Macedo, 2022). However, a comprehensive review of the literature reveals a noticeable scarcity of studies specifically addressing consumer perceptions

of sustainable packaging within the beauty industry. This gap is particularly pronounced in the context of luxury beauty products, where there is a lack of empirical evidence on how the perception of sustainability influences consumer attitudes.

Moreover, while there is substantial research focusing on luxury consumption within sectors like apparel and fashion, the beauty industry has received comparatively less attention despite the increasing prevalence and variety of sustainability claims in this sector (Sharma et al., 2022). This oversight underscores the significance of this study, which aims to address these research gaps by focusing on luxury skincare products and examining consumer perceptions of sustainability in relation to consumer attitudes regarding these products. Therefore, this research not only contributes to the existing body of knowledge by expanding into underexplored domains but also highlights the need for further scholarly attention towards the interplay between luxury beauty products and sustainable consumer perception.

4. Does luxury and sustainability fit in consumers' mind?

In the context of luxury products, the integration and communication of sustainability claims present a complex challenge, reflecting varied perspectives within the industry. The luxury beauty sector, as noted by Alevizou (2022), has been notably slower in adopting sustainability compared to other segments within the broader beauty industry. This reluctance is underscored by findings from Davies et al. (2012) and Griskevicius et al. (2010), which indicate that many luxury consumers do not prioritize environmental protection as a significant factor in their purchasing decisions.

This apparent disconnection between luxury and sustainability can be attributed to the fundamental contradictions between the two concepts. Kapferer and Michaut (2015) discuss how luxury, characterized by indulgence and opulence, conflicts with the principles of sustainability, which emphasize fairness, social harmony, and environmental stewardship. This dichotomy is further elaborated by Widloecher (2010), who contrasts luxury's associations with excess and ostentation against sustainability's connotations of altruism and moderation.

The role of consumers in this dynamic adds another layer of complexity. Research by Henninger et al. (2017) and Marthur et al. (2019) reveals a consumer propensity to overlook

ethical considerations in favor of luxury attributes, suggesting that sustainability features might even diminish a brand's perceived luxury and desirability (Beckham & Voyer, 2014), as well as perceived quality (Dekhili et al., 2019). This aversion is particularly evident in the context of material choices, where recycled materials in products are often viewed unfavorably, though recycled packaging finds greater acceptance (Achabou & Dekhili, 2013).

On a more positive note, Steinhart et al. (2013) identify a favorable consumer response to environmental claims when these claims are framed in terms of status-related benefits. This suggests that effective communication strategies could potentially reconcile the seemingly disparate values of luxury and sustainability. Additionally, Aybaly et al. (2017) highlight that while the integration of sustainability into the luxury sector presents significant challenges for established brands, smaller, specialized luxury brands are demonstrating that innovation and risk-taking can indeed align these two concepts successfully. However, the overarching narrative remains that consumers generally perceive sustainability and luxury as incompatible, a sentiment that dominates despite varying insights from different studies.

Part 2: Empirical analysis

1. Research and hypotheses

As discussed previously, consumer perceptions of sustainable packaging generally have a positive influence on brand attitude across various sectors, including fashion, restaurants, and fast-moving consumer goods (FMCG), etc. Based on these observations, it is reasonable to posit that a similar positive link exists within the beauty product category. The first hypothesis is formulated as follows:

H1: There is a positive link between sustainability perception and brand attitude.

However, the relationship between sustainability and luxury presents a notable contradiction, as evidenced in studies by Davies et al. (2012), Griskevicius et al. (2010), and Kapferer and Michaut (2015). Additionally, Achabou and Dekhili (2013) have demonstrated that the integration of recycled materials into luxury products is often perceived negatively by consumers. This suggests that the positive link between sustainability perception and brand attitude may be stronger for non-luxury brands than for luxury brands. Thus, the second hypothesis is defined as:

H2: The positive link between sustainability perception and brand attitude is stronger for non-luxury brands than for luxury brands.

In addition, consumers tend not to prioritize (Davies et al., 2012; Griskevicius et al., 2010) or even overlook environmental considerations when purchasing luxury products (Henninger et al., 2017; Mathur et al., 2019). This suggests that the concepts of luxury and sustainability may not be compatible in the minds of consumers. Therefore, the third hypothesis is:

H3: Luxury and sustainability concepts do not fit well together in consumers' minds.

Environmental concerns and brand trust significantly influence the concept of eco-luxury (Romeo, 2013). The diversity and occasional ambiguity of environmental cues can lead to trust

issues among consumers, particularly those who feel they lack the expertise to evaluate the ecological claims of packaging (Magnier & Crié, 2015). This issue is exacerbated when sustainability is perceived as contradictory to luxury values. Therefore, the fourth hypothesis addresses these considerations:

H4: Perceptions of trust regarding sustainable positioning are lower for luxury brands than for non-luxury brands.

2. Methodology and data collection

2.1 Research methodology

This research utilizes a 2 x 2 mixed experimental design to analyze the effects of sustainability and luxury levels on consumer perceptions and brand attitudes. The independent variables manipulated in this study are:

Level of Sustainability: This variable is altered through two conditions:

- Lower Level of Sustainability: Product packaging consists of 30% recycled material.
- Higher Level of Sustainability: Product packaging consists of 70% recycled material.

Luxury Level: This variable is distinguished by two price points, representing non-luxury and luxury segments:

- Non-Luxury Brands: Priced at €15.
- Luxury Brands: Priced at €115.

This design allows for the examination of the interaction effects between the level of sustainability and the luxury level on consumer perceptions and subsequent attitudes toward the brands. This methodological approach aims to provide insights into how environmental considerations and perceptions of luxury impact consumer behavior in distinct market segments.

These manipulations are detailed in the following table to provide a clear, structured overview of the experimental matrix:

Table 1 - Experimental design matrix

		Luxury Level	
		Non-luxury brand (Priced at €15)	Luxury brand (Price at €115)
Level of Sustainability	Lower sustainability (30% of recycled material)	1 product	1 product
	Higher sustainability (70% of recycled material)	1 product	1 product

2.2 Stimuli

To create a realistic experimental setting, four distinct moisturizer products were created, each corresponding to a combination of the manipulated variables. The products were assigned fictional brand names to eliminate any potential bias stemming from participants' prior associations with existing brands. A preliminary test involving 12 participants evaluated 10 potential brand names by asking, "Which of the following brand names give you a sense of luxury?" This helped to select two names that conveyed luxury and two that did not, ensuring a balanced representation for the experimental conditions.

Each product was given a unique name to prevent participants from feeling compelled to provide consistent responses across the different products, thereby reducing response bias. The packaging design for each moisturizer jar was crafted to reflect typical market standards, tailored according to the assigned brand name, product type, and a brief description of the product's benefits. This approach aimed to enhance the authenticity of the product presentation.

The packaging also displayed critical information on the right-hand side, such as the price and the percentage of recycled material included. This placement was chosen to ensure that participants could easily access this information while evaluating the products. Example of stimuli is presented as below:

Figure 7 - Example of stimuli

This experimental setup aims to closely mimic real-world shopping scenarios, thereby enabling a more accurate assessment of consumer reactions to variations in product sustainability and luxury level.

2.3 Questionnaire

I conducted an online survey using Google Forms to evaluate four different stimuli, each representing a distinct product. Given the platform's limitations, it was not feasible to present four stimuli in random order to respondents. To address this challenge, I created two versions of the questionnaire, each containing the same questions but with different orders of presentation. This approach helps mitigate the carryover effect, which can occur when participants are exposed to multiple stimuli in succession. This is particularly important in studies where participants assess multiple versions of a product, as it helps ensure that their reactions are more likely to be influenced by the product itself rather than the sequence in which they encountered them.

Participants were introduced to a scenario: “Imagine you're shopping for a facial cream product. I would like to know your impressions of four different products from different fictional brands.” Responses for each product were collected through the survey.

Variables were assessed using a seven-point Likert scale (ranging from 1 - strongly disagree to 7 - strongly agree), except for brand attitude, which was evaluated using a seven-point semantic differential scale.

Sustainability Perception: Adapted from Krah, S., Todorovic, T., & Magnier, L. (2019), I assessed sustainability perception using three items: "This packaging is environmental friendly"; "This packaging isn't a good example of an environmental friendly packaging"; "This packaging is made with environmental responsible materials".

Brand Attitude: Participants expressed their feelings towards the four fictional brands using a semantic differential scale sourced from Spears, N., & Singh, S. (2004), including pairs such as "pleasant/unpleasant"; "likable/unlikable"; "appealing/unappealing"; "favourable/ unfavourable"; "good/bad".

Trust regarding the sustainable positioning: Defined by Chen (2009) as a reliance on a product, service, or brand based on its environmental performance credibility, benevolence, and ability. I assessed this through four items: "I feel that this brand's environmental commitments are generally reliable"; "I feel that this brand's environmental performance is generally dependable"; "I feel that this brand's environmental claim is generally trustworthy"; "This brand's environmental concern meets my expectations".

Perceived contradiction between luxury and sustainability: After collecting responses on previously mentioned measures for each product, I further examined participants' perceptions of the contradiction between luxury and sustainability using items adapted from Kapferer, J., & Michaut-Denizeau, A. (2013), such as "When I buy luxury products, I don't care about sustainability"; "Given their price, it would be shocking to hear that luxury brands are not compliant"; "Luxury and sustainability are contradictory".

Demographic information concerning participants' age and gender was also collected, ensuring confidentiality. Reverse-coded items were included to check the consistency and attention of participants. A comprehensive overview of all survey items is available in Appendix 1.

To achieve a representative sample size, I aimed for at least 100 participants and distributed the survey across multiple social media platforms, including Facebook, Instagram, and

LinkedIn. I also utilized Survey Circle, which facilitated participant recruitment through a mutual exchange of survey participation. Ultimately, 132 responses were gathered over a period of 10 days.

2.4 Sample description

The results of this study are based on data collected through a survey conducted in 2024, involving 132 participants. This sample size allows for the quantitative testing of the proposed hypotheses.

The study employed a random sampling method, which is critical for experimental research designs. This approach meant that participants were selected without any specific filters related to demographics such as geographic location, gender, or age. Each participant joined the survey randomly, ensuring a diverse and representative sample that helps to generalize the findings more effectively. The demographic breakdown of respondents included both men and women, with women comprising 67% of the sample and men 33%. Most respondents fell within the age group of 20-27 years, accounting for 88% of the total sample. Other age groups represented in the survey included 28-43 years (8%), 44-59 years (3%), and those under 20 years (1%).

Table 2 - Descriptive statistics about the sample

Frequencies		**N**	**%**
Age	Below 20	1	0.8%
	20-27	116	87.9%
	28-43	11	8.3%
	44-59	4	3.0%
Gender	Male	44	33.3%
	Female	88	66.7%

3. Results

3.1 Scales' reliability

All scales used in this thesis were derived from existing literature. However, since the scales were adapted from their original research papers, it is crucial to analyze their reliability to ensure accurate results. A descriptive scale reliability analysis was performed to calculate Cronbach's alpha, which measures the internal consistency of a scale. Internal consistency refers to the extent to which all items in a scale measure the same concept, reflecting the inter-relatedness of the items within the scale (Tavakol & Dennick, 2011).

The Cronbach's alpha values for the variables analyzed are presented in Table 3. According to George and Mallery (2003), Cronbach's alpha values above 0.9 are considered excellent, values above 0.8 are considered good, and values above 0.7 are considered acceptable.

Table 3 - Variables scales (Cronbach's Alpha)

	Initial number of items	**Cronbach's alpha**	**Cronbach's alpha if deleted**	**Item deleted**	**Final number of items**
Sustainability perception	3	0.77	0.87	2	1
Brand Attitude	5	0.90	0.90	-	-
Trust regarding sustainability positioning	4	0.92	0.92	-	-
Perceived contradiction between luxury and sustainability	3	0.3	0.3	-	-

The first variable, Sustainability Perception, initially had an acceptable alpha of 0.77. Two items with alphas lower than 0.7 (0.55 and 0.62) were removed, resulting in a revised alpha of 0.87. Both Brand Attitude and Trust Regarding Sustainability Positioning had excellent alphas above 0.7, with values of 0.90 and 0.92, respectively.

For the variable Perceived Contradiction Between Luxury and Sustainability, the alpha value was very low at 0.3. The three items used were selected from a scale by Kapferer and Michaut-Denizeau (2013), which originally contained nine items. These three items were chosen for their high relevance to this study's topic. A low alpha value can be due to a small number of items (Tavakol & Dennick, 2011). Consequently, for the third hypothesis, which analyzes this variable, the mean of this variable was not calculated. Instead, the hypothesis was tested based on each item separately.

After assessing the reliability of the scales, new variables were created by averaging the items in each scale. These variables were used to test the hypotheses.

3.2 Manipulation check results

A manipulation check is essential in experimental design studies to ensure that participants perceive, comprehend, and respond as expected to the manipulation embedded within the independent variable (Hoewe, 2017). In this study, the manipulation check focused on participants' sustainability perception for two types of packaging: low sustainability containing 30% recycled material and high sustainability containing 70% recycled material.

To test this, a paired sample t-test was conducted, comparing the means of the two conditions. The paired sample t-test was chosen over the independent samples t-test because the same group of participants evaluated both stimuli. This approach ensures that if participants perceived the two types of packaging differently, the means would reflect a significant difference. The manipulation aimed to determine whether packaging containing 70% recycled material is perceived as more sustainable than packaging with 30% recycled material.

Table 4 - Manipulation check "Sustainability perception" (Paired t-test)

	Mean	**SD**	**t-test**
Sustainability perception of low sustainability packaging	3.78	1.51	-8.03
Sustainability perception of high sustainability packaging	4.80	1.52	

The results of the paired sample t-test regarding the sustainability perception of low sustainability packaging versus high sustainability packaging indicate that participants correctly perceived the intended differences in the level of sustainability. There is a significant difference between the sustainability perception of low sustainability packaging ($M = 3.78$, $SD = 1.51$) and high sustainability packaging ($M = 4.80$, $SD = 1.52$), $t(263) = -8.03$, $p < .001$. This significant result confirms that participants distinguished between the two levels of sustainability as expected.

3.3 Main results

3.3.1 The link between sustainability perception and brand attitude

H1: There is a positive link between sustainability perception and brand attitude.

To comprehensively analyze the relationship between sustainability perception and brand attitude, a Pearson correlation coefficient was calculated. The analysis revealed a significant moderate positive relationship between sustainability perception and brand attitude, $r(526) = .332$, $p < .001$.

To further investigate this relationship, a paired sample t-test was conducted to compare the brand attitudes associated with low sustainability packaging and high sustainability packaging. This test aimed to determine whether the percentage of recycled material used in packaging influences consumers' attitudes towards a brand.

Table 5 - Link between sustainability perception and brand attitude (Paired t-test)

	Mean	**SD**	**t-test**
Brand attitude of low sustainability packaging	4.05	1.11	-8.49
Brand attitude of high sustainability packaging	4.78	0.99	

The results of the paired sample t-test indicate that brand attitude is significantly more positive for high sustainability packaging (M = 4.78, SD = 0.99) compared to low sustainability packaging (M = 4.05, SD = 1.11), [$t(263)$ = -8.49, $p < .001$]. This significant result confirms that there is indeed a link between sustainability perception and brand attitude. Furthermore, it demonstrates that a higher percentage of recycled material in packaging leads to a more positive consumer attitude towards the brand.

3.3.2 The link between sustainability perception and brand attitude for non-luxury brands and luxury brands

H2: The positive link between sustainability perception and brand attitude is stronger for non-luxury brands than for luxury brands.

To compare the relationship between sustainability perception and brand attitude for non-luxury and luxury brands, a two-way repeated measures ANOVA was conducted. This test was chosen due to the presence of two independent variables—sustainability level and luxury level—each with two levels, resulting in a 2x2 repeated-measures design. The same group of participants evaluated four different stimuli encompassing the two independent variables, making the two-way repeated measures ANOVA suitable for testing this hypothesis.

The results of the two-way repeated measures ANOVA revealed a significant main effect of sustainability level on brand attitude, $F(1, 131) = 78.18$, $p < .001$, $\eta p^2 = .37$. Brand attitude was slightly more positive when the packaging contained 70% recycled material (M = 4.78, SD = 0.07) compared to when it contained 30% recycled material (M = 4.05, SD = 0.08).

Additionally, the ANOVA revealed a significant difference in brand attitude between non-luxury and luxury brands, $F(1, 131) = 16.81$, $p < .001$, $\eta p^2 = .11$. Descriptive statistics indicated that participants' mean brand attitude was slightly more positive for non-luxury brands ($M = 4.59$, $SD = 0.06$) compared to luxury brands ($M = 4.25$, $SD = 0.08$).

Finally, there was a significant interaction between sustainability level and luxury level, $F(1, 131) = 7.49$, $p = .007$, $\eta p^2 = .05$. The brand attitude was most positive when non-luxury brands used a higher percentage of recycled material (70%) in their product packaging, suggesting a strong positive link between sustainability perception and brand attitude. In addition, increasing the percentage of recycled material did noticeably improve consumers' attitudes toward luxury brands. However, the link between sustainability perception and brand attitude was not as strong for luxury brands as it was for non-luxury brands (see Table 6 below).

Table 6 - Link between sustainability perception and brand attitude for non-luxury and luxury brands (Descriptive statistics)

	Mean	**SD**	**N**
Low sustainability, non-luxury brand	4.31	.97	132
Low sustainability, luxury brand	3.80	1.18	132
High sustainability, non-luxury brand	4.88	.93	132
High sustainability, luxury brand	4.69	1.04	132

From the results obtained from the two-way repeated measures ANOVA, it is evident that the luxury level might influence the relationship between sustainability perception and brand attitude. Therefore, a complementary moderation analysis was conducted using Model 4 of Hayes' (2013, 2015) PROCESS macro for SPSS. In this analysis, sustainability perception was set as the independent variable, brand attitude as the dependent variable, and luxury level as a moderator.

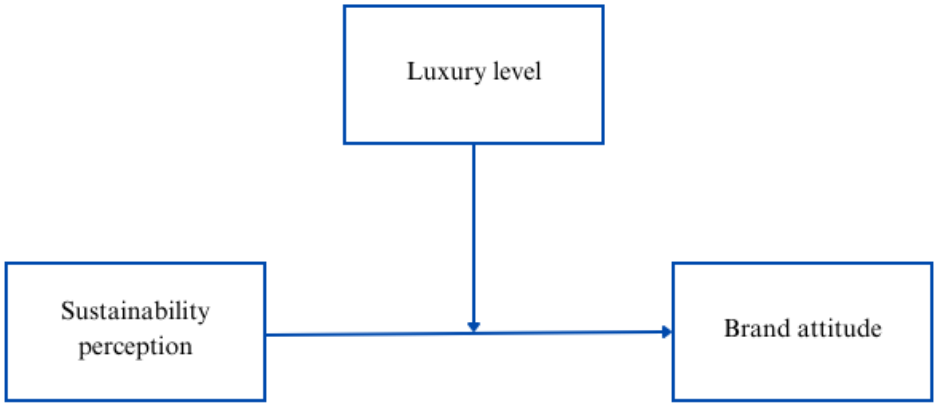

Figure 8 - Explanatory diagram of the analysis on the moderation model

The overall model is significant, $F(3, 524) = 29.31$, $p < .001$, $R^2 = .14$. The main effect of sustainability perception is non-significant, $b = .03$, $t(524) = .29$, $p = .77$. There is a significant main effect of luxury level, $b = -.92$, $t(524) = -3.57$, $p = .0004$, showing that as the luxury level increases, the brand attitude decreases. Additionally, there is a significant interaction effect between sustainability perception and luxury level, $b = .13$, $t(524) = 2.56$, $p = .01$.

For non-luxury brands, the relationship between sustainability perception and brand attitude is significant, $b = .16$, $t(524) = 4.00$, $p < .001$. Similarly, for luxury brands, this relationship is also significant, $b = .29$, $t(524) = 7.59$, $p < .001$. These findings suggest that while sustainability perception positively influences brand attitude for both non-luxury and luxury brands, the impact is more pronounced for luxury brands.9

In summary, the results of the moderation analysis are consistent with the conclusions drawn from the two-way repeated measures ANOVA. While brand attitude is generally more positive for non-luxury brands when perceived as sustainable, an improvement in consumers' sustainability perception leads to a more significant improvement in their attitude towards luxury brands. The relationship between sustainability perception and brand attitude for non-luxury and luxury brands is illustrated in Figure 9.

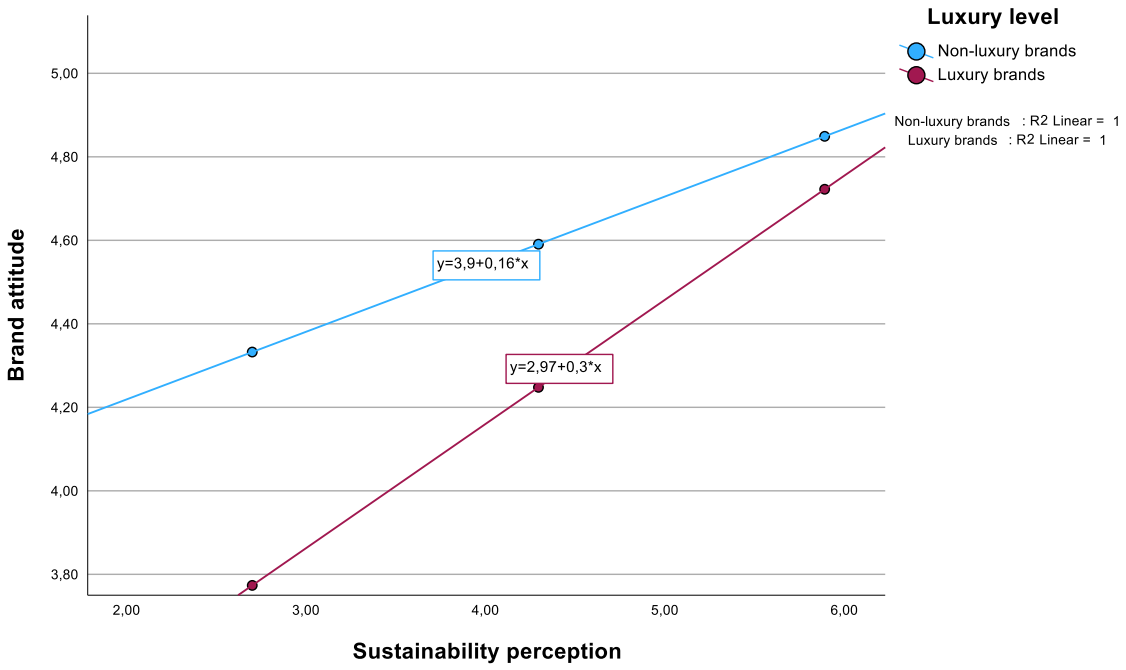

Figure 9 - Luxury level as a moderator on the relationship between sustainability perception and brand attitude

3.3.3 Perceived contradiction between sustainability and luxury

H3: Luxury and sustainability concepts do not fit well together in consumers' minds.

As explained in the section about Cronbach's alpha, due to the very low alpha value (0.3) for the perceived contradiction between sustainability and luxury, it is not appropriate to group the three items of the scale into one variable. Therefore, a one-sample t-test was chosen to evaluate whether there were differences between the mean scores of each item and the average score of 4, since all variables in this study are measured with a seven-point Likert scale (ranging from 1 - strongly disagree to 7 - strongly agree). The goal is to gain insights from the participants on how they perceive the contradiction between sustainability and luxury as found in research papers.

For the first item, "When I buy luxury products, I don't care about sustainability," the mean (M = 3.46, SD = 1.52) was slightly lower than the mean score of 4, $t(131) = -4.05$, $p < .001$. This indicates that participants do care about sustainability when purchasing luxury goods.

Regarding the second item, “Given their price, it would be shocking to hear that luxury brands are not compliant,” the mean (M = 5.36, SD = 1.35) was significantly higher than the mean score of 4, $t(131) = 11.61$, $p < .001$. This suggests that participants expect luxury brands to be sustainable given the high price of their products.

As for the final item, “Luxury and sustainability are contradictory,” the mean (M = 3.11, SD = 1.75) was significantly lower than the mean score of 4, $t(131) = -5.83$, $p < .001$. This signifies that participants disagree with the statement that luxury and sustainability are contradictory.

With the insights drawn from the three items, it can be concluded that participants consider sustainability when purchasing luxury products. Additionally, they expect luxury brands to comply with sustainability standards, given the significant investment in purchasing luxury products. Therefore, for this study, the two concepts of sustainability and luxury appear to fit well together in consumers' minds.

3.3.4 Perceptions of trust regarding sustainable positioning for non-luxury brands and luxury brands.

H4: Perceptions of trust regarding sustainable positioning are lower for luxury brands than for non-luxury brands.

To test this hypothesis, a paired sample t-test was utilized to evaluate whether the perceived trust regarding the sustainability perception of luxury brands is lower than that of non-luxury brands. The results of the paired sample t-test indicate that perceived trust was similar for luxury brands (M = 4.24, SD = 1.32) and for non-luxury brands (M = 4.18, SD = 1.24), $t(263) = -0.48$, $p = .63$. This non-significant result suggests that the perception of trust for luxury brands is not significantly different from that for non-luxury brands, indicating that consumers' trust in the sustainability of luxury brands is comparable to their trust in non-luxury brands.

Table 7 - Perception of trust for non-luxury brands and luxury brands (Paired t-test)

	Mean	SD	t-test
Perception of trust for non-luxury brands	4.18	1.24	-.48
Perception of trust for luxury brands	4.24	1.32	

4. Discussion

4.1 Summary of findings

This research has yielded four major findings. First, consistent with conclusions drawn from studies on other types of products and services, such as fashion items (Behre & Cauberghe, 2024; Kumagai & Nagasawa, 2020), restaurants (Jeong et al., 2014; Chen, 2009; Myers, 1968; Line et al., 2016), wine (Sogari et al., 2015), and washing powder (Ríos et al., 2006), there is a positive link between sustainability perception and consumer perception of a brand. Additionally, the higher the percentage of recycled material incorporated into the packaging of a brand's skincare product, the more positive the consumer attitude towards that brand. This finding aligns with the study by Achabou & Dekhili (2013), which suggests that perceptions of recycling are more favorable at a 70% rate of recycled material compared to a 30% rate.

Second, the positive relationship between sustainability perception and brand attitude is found to be stronger for non-luxury brands than for luxury brands. Brand attitude was slightly more positive for non-luxury brands with sustainable packaging for their skincare products. Regarding luxury brands, the positive relationship between sustainability perception and brand attitude is consistent with Achabou & Dekhili (2013), indicating that incorporating recycled material in the packaging of luxury products is acceptable to consumers. In addition, the packaging perceived most positively by consumers was from non-luxury brands incorporating a high rate (70%) of recycled material. For luxury brands, it is recommended to implement a higher rate of recycled material, as sustainable packaging with only 30% recycled content was perceived most negatively. Consumers may expect luxury brands to use entirely recycled packaging.

Third, contrary to initial expectations, the concepts of luxury and sustainability are not perceived as contradictory by consumers. This finding aligns with several studies that also support the compatibility of sustainability and luxury (Steinhart et al., 2013; Aybaly et al., 2017). Consumers not only consider sustainability in their luxury purchases but also find it shocking when luxury brands do not comply with sustainability standards. One possible explanation is the demographic of the study sample, which predominantly consists of younger individuals, with 88% aged 20-27 and 8% aged 28-43. These age ranges belong to Gen Z and Millennials, who are strong supporters of sustainable beauty brands and are willing to pay more for products from such brands (McKinsey & Co., 2023).

Finally, the perception of trust regarding the sustainable positioning of a brand does not differ significantly between non-luxury and luxury brands. This indicates that consumers trust the sustainable claims of both types of brands equally. This contrasts with the expectation, as greenwashing is a common issue among luxury brands. One possible explanation is that trust issues among consumers typically arise when environmental cues are ambiguous and when consumers lack the expertise to evaluate ecological claims (Magnier & Crié, 2015). In this study, the information about the sustainable claims of the skincare packaging was clearly stated, and consumers were familiar with the concept of recycled material. Consequently, trust issues did not arise.

4.2 Theorical implications

This study contributes to the literature on the influence of sustainability perception on brand attitude (Ríos et al., 2006; Chen, 2009; Olsen et al., 2014; Jeong et al., 2014; Magnier & Crié, 2015; Sogari et al., 2015; Line et al., 2016; Kumagai and Nagasawa, 2020; Behre and Cauberghe, 2024) and sustainability in the luxury sector (Widloecher, 2010; Griskevicius et al., 2010; Davies et al., 2012; Achabou & Dekhili, 2013; Steinhart et al., 2013; Beckham & Voyer, 2014; Kapferer & Michaut, 2015; Henninger et al., 2017; Aybaly et al., 2017; Marthur et al., 2019; Dekhili et al., 2019; Alevizou, 2022).

This comprehensive review of the literature reveals a noticeable scarcity of studies specifically addressing consumer perceptions of sustainable packaging within the beauty industry. This gap is particularly pronounced in the context of luxury beauty products, where there is a lack of

empirical evidence on how the perception of sustainability influences consumer attitudes toward a luxury brand. This study aims to address these research gaps by focusing on luxury skincare products and examining consumer perceptions of sustainability in relation to consumer attitudes regarding these products.
The results confirm the positive relationship between sustainability perception and brand attitude (Line et al., 2016; Sogari et al., 2015). The findings indicate that the more a brand is viewed as sustainable by consumers, the more positive their attitude towards that brand.

Secondly, this study extends the work of Achabou and Dekhili (2013) by examining the impact of the percentage of recycled material incorporated into the skincare packaging of both non-luxury and luxury brands. Consistent with the results of Achabou and Dekhili (2013), a higher percentage of recycled material (70%) is preferred over a lower rate (30%) for both luxury and non-luxury brands. However, brand attitude is most positive for the packaging of non-luxury products with a high rate of recycled material, suggesting a stronger link between sustainability perception and brand attitude in the case of non-luxury brands. Additionally, consumers prefer luxury brands to incorporate a higher percentage of recycled material in their product packaging, as an increase in such a rate leads to a significantly better brand attitude. This thesis also extends the previous literature by examining the moderating effect of luxury level on the relationship between sustainability perception and brand attitude. The results show that luxury level moderates the relationship between these two concepts.

Regarding the common contradiction between luxury and sustainability found in previous studies (Davies et al., 2012; Achabou & Dekhili, 2013; Beckham & Voyer, 2014), this study found that there is a fit between the two concepts, aligning with the findings of Steinhart et al. (2013) and Aybaly et al. (2017).

Finally, contrary to the study by Magnier & Crié (2015), which suggests that ambiguity of environmental cues can lead to trust issues among consumers, this study found that including environmental claims on product packaging does not lead to trust issues. Additionally, consumers trust the sustainability claims of non-luxury brands as much as those of luxury brands.

4.3 Managerial implications

This study provides important implications regarding the benefits of luxury brands undertaking sustainable packaging initiatives for their skincare/beauty products. The study reveals several interesting insights from consumers. Millennials and Gen Z, who will become the biggest buyers of luxury (D'Arpizio et al., 2024), do take sustainability into consideration when purchasing luxury products. They also find it shocking when luxury brands do not comply with sustainable practices. In addition, whether consumers find the brand sustainable was proven to have a positive impact on their attitude towards that brand. Therefore, it is important for luxury brands to consider the demand for sustainable initiatives from their main future consumer group.

In addition, the study found that the luxury level, or the extent to which the brand is considered 'luxury,' influences the relationship between sustainability perception and brand attitude. It is recommended that luxury brands implement a high percentage of recycled material—in this case, 70%—in the packaging of their skincare products, as it was observed that an increase in such a percentage, from 30% to 70%, significantly leads to a more positive brand attitude.

Finally, the study also proved the importance of clear communication from luxury brands regarding their sustainable initiatives. According to the results of this study, when information about the percentage of recycled material used in the skincare jars and how these jars were recycled was clearly stated for consumers, the perception of trust in luxury brands does not differ from that in non-luxury brands. Since the visual aesthetic of the packaging is a crucial factor for luxury brands (Velasco & Spence, 2018), displaying this information directly on the jar is not a practical solution. Luxury brands can therefore communicate sustainable initiatives of their new product launches or product innovation through campaigns on other channels (social media, in-store experiences, etc.).

In conclusion, this study provides valuable insights into consumer perceptions of sustainability in the context of luxury, highlighting the importance of clear communication and the potential for integrating sustainable practices into brand strategies to enhance consumer attitudes.

5. Conclusion

Although this study reveals interesting theoretical and managerial insights into the impact of the perception of sustainable packaging on consumer attitudes toward a luxury brand in the context of luxury skincare, there are still limitations that need to be considered.

The first limitation is the reliance on an online survey as the research instrument. This method offers no control over the involvement of participants and the reliability of their answers. Additionally, all questions are pre-defined, which results in a lack of insight into the motivations behind participants' responses. This limitation could potentially skew the results and reduce the depth of understanding of consumer attitudes.

Secondly, due to the restriction of access to other software for creating and distributing the survey, it was difficult to manipulate the order of stimuli shown to participants or to show only one of four stimuli to them. This causes a risk of bias in their answers due to the carryover effect from one product to another. Although an attempt was made to tackle this problem by creating two different surveys with different product orders, this is not an alternative to other survey tools. Future studies could benefit from utilizing more advanced survey tools that allow for better control and randomization of stimuli presentation.

Thirdly, the sample of this study consisted of a more general audience without specific filtering of their characteristics to ensure the random factor of an experimental design. Future studies can focus on people who belong to the target audience group of luxury skincare brands. For example, individuals with high income, executive positions, who are in their prime of life, and living in capital cities (Dubois & Laurent, 1993). Furthermore, considering the geographical aspect of the sample, which mainly consisted of participants from Belgium and the Netherlands with some from Asian countries, it would be interesting to conduct a cross-cultural study comparing the differences in brand attitudes between Western and Eastern countries.

In addition, although an experimental design was chosen for this study, resulting in many interesting, quantified insights from consumers, such as their preference for packaging including a high percentage of recycled material for luxury skincare products, an additional qualitative study can be conducted to explore the reasons behind this preference.

Lastly, it is observed that there are not many studies focusing on the luxury beauty product sector regarding sustainability. Future studies can extend to other sustainability initiatives that have been implemented by beauty brands, such as ethical sourcing, ingredient innovation, and communication concerning sustainability, and the perception of these initiatives on consumer brand attitudes. This expansion would provide a more comprehensive understanding of how various sustainable practices influence consumer perceptions and attitudes in the luxury beauty market.

To conclude, by addressing these limitations, future research can provide more robust and generalizable findings, thereby offering deeper insights into consumer behavior in the context of sustainable luxury skincare products.

Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the author used ChatGPT in order to check grammar and spelling, and to adopt a more academic writing style. After using this tool, the author reviewed and edited the content as needed and takes full responsibility for the content of the publication.

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Appendices

Appendix 1 – Survey

Introduction to the survey

Hello,

My name is Mai, Tran Vu Ngoc, and I'm a final year master's student in Management at the Louvain School of Management (Université Catholique de Louvain).

I'm working on my thesis, and I'd love to hear your thoughts on skincare products. This quick survey (about 5 minutes) will help me understand your preferences better.

Your responses are highly appreciated. Everything you share will be kept completely confidential, and the information will only be used for research purposes.

Thank you for your time and support.

Section 1: About your thoughts on skincare products

Product 1:

70% of the material used to make this jar comes from the recycling of collected empty jars from consumers.

€15

Sustainability perception

Please select the answer that best reflects your level of agreement with the following statements.

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
This packaging is environmental friendly	○	○	○	○	○	○	○
This packaging isn't a good example of an environmental friendly packaging	○	○	○	○	○	○	○
This packaging is made with environmental responsible materials	○	○	○	○	○	○	○

Trust regarding sustainable positioning

Please select the answer that best reflects your level of agreement with the following statements.

I feel that this brand's environmental commitments are generally reliable	○	○	○	○	○	○	○
I feel that this brand's environmental performance is generally dependable	○	○	○	○	○	○	○
I feel that this brand's environmental claim is generally trustworthy	○	○	○	○	○	○	○
This brand's environmental concern meets my expectations	○	○	○	○	○	○	○

Brand attitude

How do you feel about the brand AYLA?

	1	2	3	4	5	6	7	
Unp	○	○	○	○	○	○	○	Pleasant

	1	2	3	4	5	6	7	
Unl	○	○	○	○	○	○	○	Likable

	1	2	3	4	5	6	7	
App	○	○	○	○	○	○	○	Unappealing

	1	2	3	4	5	6	7	
Unf	○	○	○	○	○	○	○	Favorable

	1	2	3	4	5	6	7	
Bac	○	○	○	○	○	○	○	Good

Product 2:

30% of the material used to make this jar comes from the recycling of collected empty jars from consumers.

€115

Sustainability perception

Please select the answer that best reflects your level of agreement with the following statements.

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
This packaging is environmental friendly	○	○	○	○	○	○	○
This packaging isn't a good example of an environmental friendly packaging	○	○	○	○	○	○	○
This packaging is made with environmental responsible materials	○	○	○	○	○	○	○

Trust regarding sustainable positioning

Please select the answer that best reflects your level of agreement with the following statements.

I feel that this brand's environmental commitments are generally reliable	○	○	○	○	○	○	○
I feel that this brand's environmental performance is generally dependable	○	○	○	○	○	○	○
I feel that this brand's environmental claim is generally trustworthy	○	○	○	○	○	○	○
This brand's environmental concern meets my expectations	○	○	○	○	○	○	○

Brand attitude

How do you feel about the brand GLOW & CO.?

	1	2	3	4	5	6	7	
Unp	○	○	○	○	○	○	○	Pleasant
Unl	○	○	○	○	○	○	○	Likable
App	○	○	○	○	○	○	○	Unappealing
Unf	○	○	○	○	○	○	○	Favorable
Bac	○	○	○	○	○	○	○	Good

Product 3:

30% of the material used to make this jar comes from the recycling of collected empty jars from consumers.

€15

Sustainability perception

Please select the answer that best reflects your level of agreement with the following statements.

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
This packaging is environmental friendly	○	○	○	○	○	○	○
This packaging isn't a good example of an environmental friendly packaging	○	○	○	○	○	○	○
This packaging is made with environmental responsible materials	○	○	○	○	○	○	○

Trust regarding sustainable positioning

Please select the answer that best reflects your level of agreement with the following statements.

I feel that this brand's environmental commitments are generally reliable	○	○	○	○	○	○	○
I feel that this brand's environmental performance is generally dependable	○	○	○	○	○	○	○
I feel that this brand's environmental claim is generally trustworthy	○	○	○	○	○	○	○
This brand's environmental concern meets my expectations	○	○	○	○	○	○	○

Brand attitude

How do you feel about the brand PURE?

	1	2	3	4	5	6	7	
Unp	○	○	○	○	○	○	○	Pleasant

	1	2	3	4	5	6	7	
Unl	○	○	○	○	○	○	○	Likable

	1	2	3	4	5	6	7	
App	○	○	○	○	○	○	○	Unappealing

	1	2	3	4	5	6	7	
Unf	○	○	○	○	○	○	○	Favorable

	1	2	3	4	5	6	7	
Bac	○	○	○	○	○	○	○	Good

Product 4:

70% of the material used to make this jar comes from the recycling of collected empty jars from consumers.

€115

Sustainability perception

Please select the answer that best reflects your level of agreement with the following statements.

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
This packaging is environmental friendly	○	○	○	○	○	○	○
This packaging isn't a good example of an environmental friendly packaging	○	○	○	○	○	○	○
This packaging is made with environmental responsible materials	○	○	○	○	○	○	○

Trust regarding sustainable positioning

Please select the answer that best reflects your level of agreement with the following statements.

I feel that this brand's environmental commitments are generally reliable	○	○	○	○	○	○	○
I feel that this brand's environmental performance is generally dependable	○	○	○	○	○	○	○
I feel that this brand's environmental claim is generally trustworthy	○	○	○	○	○	○	○
This brand's environmental concern meets my expectations	○	○	○	○	○	○	○

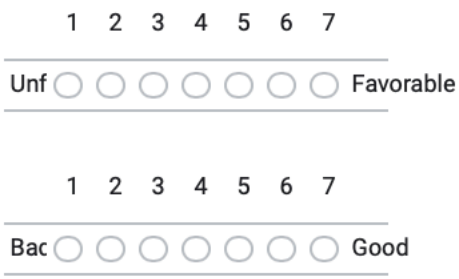
Brand attitude

How do you feel about the brand ÉLAN?

	1	2	3	4	5	6	7	
Unp	○	○	○	○	○	○	○	Pleasant

	1	2	3	4	5	6	7	
Unl	○	○	○	○	○	○	○	Likable

	1	2	3	4	5	6	7	
App	○	○	○	○	○	○	○	Unappealing



Section 2: About your thoughts on Luxury and Sustainability

Perceived contradiction between Luxury and Sustainability

Please select the answer that best reflects your level of agreement with the following statements.

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
When I buy luxury products, I don't care about sustainability	◯	◯	◯	◯	◯	◯	◯
Given their price, it would be shocking to hear that luxury brands are not compliant	◯	◯	◯	◯	◯	◯	◯
Luxury and sustainability are contradictory	◯	◯	◯	◯	◯	◯	◯

Section 3: About you

Age

What is your age?

- ◯ Below 20
- ◯ 20-27
- ◯ 28-43
- ◯ 44-59
- ◯ Above 59

Gender

What gender do you identify the most with?

- ◯ Female
- ◯ Male

End of survey

Your responses have been recorded.

Thank you for your participation!

Appendix 2 – Cronbach's alpha

Sustainability perception

Reliability Statistics

Cronbach's Alpha	N of Items
,769	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Sustainabilityperception1	8,63	6,671	,728	,545
Sustainabilityperception2	8,83	8,277	,439	,867
Sustainabilityperception3	8,78	7,136	,665	,620

Brand attitude

Reliability Statistics

Cronbach's Alpha	N of Items
,898	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Brandattitude1	17,63	19,513	,852	,853
Brandattitude2	17,63	19,282	,877	,847

Brandattitude3	17,75	23,113	,420	,950
Brandattitude4	17,75	19,676	,829	,858
Brandattitude5	17,62	20,065	,832	,859

Trust regarding sustainable positioning

Reliability Statistics

Cronbach's Alpha	N of Items
,920	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Trust1	12,60	14,878	,854	,883
Trust2	12,63	15,726	,770	,912
Trust3	12,54	15,023	,856	,883
Trust4	12,77	15,269	,786	,907

Perceived contradiction between luxury and sustainability

Cronbach's Alpha	N of Items
,303	3

Appendix 3 – Manipulation check "Sustainability perception" (Paired t-test)

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Sustainability perception of low sustainability packaging	3,78	264	1,507	,093
	Sustainability perception of high sustainability packaging	4,80	264	1,518	,093

Paired Samples Test

		Paired Differences 95% Confidence Interval of the Difference Upper	t	df	Significance One-Sided p
Pair 1	Sustainability perception of low sustainability packaging - Sustainability perception of high sustainability packaging	-,769	-8,034	263	<,001

Paired Samples Test

		Significance Two-Sided p
Pair 1	Sustainability perception of low sustainability packaging -	<,001

	Sustainability perception of high sustainability packaging	

Appendix 4 – Correlation between sustainability perception and brand attitude (Pearson correlation coefficient)

Correlations

		Sustainability perception	Brand attitude
Sustainability perception	Pearson Correlation	1	,332**
	Sig. (2-tailed)		<,001
	N	528	528
Brand attitude	Pearson Correlation	,332**	1
	Sig. (2-tailed)	<,001	
	N	528	528

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix 5 – Link between sustainability perception and brand attitude (Paired t-test)

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Brand attitude of low sustainability packaging	4,05	264	1,111	,068
	Brand attitude of high sustainability packaging	4,78	264	,990	,061

Paired Samples Test

		Paired Differences 95% Confidence Interval of the Difference Upper	t	df	Significance One-Sided p
Pair 1	Brand attitude of low sustainability packaging - Brand attitude of high sustainability packaging	-,560	-8,487	263	<,001

Paired Samples Test

		Significance Two-Sided p
Pair 1	Brand attitude of low sustainability packaging - Brand attitude of high sustainability packaging	<,001

Appendix 6 – Link between sustainability perception and brand attitude for non-luxury and luxury brands (Two-way repeated measures ANOVA)

Descriptive Statistics

	Mean	Std. Deviation	N
Low sustainability, non-luxury brand	4,31	,974	132
Low sustainability, luxury brand	3,80	1,185	132

High sustainability, non-luxury brand	4,88	,934	132
High sustainability, luxury brand	4,69	1,039	132

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.
SusLev	Pillai's Trace	,374	78,184[b]	1,000	131,000	<,001
	Wilks' Lambda	,626	78,184[b]	1,000	131,000	<,001
	Hotelling's Trace	,597	78,184[b]	1,000	131,000	<,001
	Roy's Largest Root	,597	78,184[b]	1,000	131,000	<,001
LuxLev	Pillai's Trace	,114	16,806[b]	1,000	131,000	<,001
	Wilks' Lambda	,886	16,806[b]	1,000	131,000	<,001
	Hotelling's Trace	,128	16,806[b]	1,000	131,000	<,001
	Roy's Largest Root	,128	16,806[b]	1,000	131,000	<,001
SusLev * LuxLev	Pillai's Trace	,054	7,493[b]	1,000	131,000	,007
	Wilks' Lambda	,946	7,493[b]	1,000	131,000	,007
	Hotelling's Trace	,057	7,493[b]	1,000	131,000	,007
	Roy's Largest Root	,057	7,493[b]	1,000	131,000	,007

Multivariate Tests[a]

Effect		Partial Eta Squared
SusLev	Pillai's Trace	,374
	Wilks' Lambda	,374
	Hotelling's Trace	,374

	Roy's Largest Root	,374
LuxLev	Pillai's Trace	,114
	Wilks' Lambda	,114
	Hotelling's Trace	,114
	Roy's Largest Root	,114
SusLev * LuxLev	Pillai's Trace	,054
	Wilks' Lambda	,054
	Hotelling's Trace	,054
	Roy's Largest Root	,054

a. Design: Intercept
Within Subjects Design: SusLev + LuxLev + SusLev * LuxLev

Appendix 7 – Luxury level as a moderator on the relationship between sustainability perception and brand attitude (Moderation analysis)

```
Model: 1
    Y: BraAtt
    X: SusPer
    W: LuxLev

Sample
Size:  528

*************************************************************
OUTCOME VARIABLE:
```

BraAtt

Model Summary

R	R-sq	MSE	F	df1	df2	p
,3791	,1437	1,0671	29,3153	3,0000	524,0000	,0000

Model

	coeff	se	t	p	LLCI	ULCI
constant.	4,8197	,4118	11,7034	,0000	4,0106	5,6287
SusPer	,0266	,0900	,2950	,7681	-,1503	,2034
LuxLev	-,9238	,2583	-3,5764	,0004	-1,4313	-,4164
Int_1	,1354	,0564	2,3992	,0168	,0245	,2463

Product terms key:

Int_1: SusPer x LuxLev

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	,0094	5,7564	1,0000	524,0000	,0168

Focal predict: SusPer (X)

Mod var: LuxLev (W)

Conditional effects of the focal predictor at values of the moderator(s):

LuxLev	Effect	se	t	p	LLCI	ULCI
1,0000	,1620	,0405	4,0010	,0001	,0825	,2415
2,0000	,2974	,0393	7,5615	,0000	,2202	,3747

Data for visualizing the conditional effect of the focal predictor:

Paste text below into a SPSS syntax window and execute to produce plot.

```
DATA LIST FREE/
     SusPer     LuxLev     BraAtt     .
BEGIN DATA.
     2,6948     1,0000     4,3324
     4,2898     1,0000     4,5907
     5,8848     1,0000     4,8491
     2,6948     2,0000     3,7735
     4,2898     2,0000     4,2479
     5,8848     2,0000     4,7223
END DATA.
GRAPH/SCATTERPLOT=
 SusPer    WITH     BraAtt    BY       LuxLev    .

************************ ANALYSIS NOTES AND ERRORS
************************

Level of confidence for all confidence intervals in output:
  95,0000

------ END MATRIX -----
```

Appendix 8 – Perceived contradiction between luxury and sustainability (One-way sample t-test)

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Perceived contradiction between luxury and sustainability_item 1	132	3,46	1,525	,133
Perceived contradiction between luxury and sustainability_item 2	132	5,36	1,349	,117

Perceived contradiction between luxury and sustainability_item 3	132	3,11	1,746	,152

One-Sample Test

	Test Value = 4				
			Significance		
	t	df	One-Sided p	Two-Sided p	Mean Difference
Perceived contradiction between luxury and sustainability_item 1	-4,051	131	<,001	<,001	-,538
Perceived contradiction between luxury and sustainability_item 2	11,610	131	<,001	<,001	1,364
Perceived contradiction between luxury and sustainability_item 3	-5,833	131	<,001	<,001	-,886

Appendix 9 – Perception of trust for non-luxury and luxury brands (Paired t-test)

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Perception of trust for non-luxury brands	4,18	264	1,243	,076
	Perception of trust for luxury brands	4,24	264	1,325	,082

Paired Samples Test

		Paired Differences 95% Confidence Interval of the Difference Upper	t	df	Significance One-Sided p
Pair 1	Perception of trust for non-luxury brands - Perception of trust for luxury brands	,164	-,475	263	,318

Paired Samples Test

		Significance Two-Sided p
Pair 1	Perception of trust for non-luxury brands - Perception of trust for luxury brands	,635

UNIVERSITÉ CATHOLIQUE DE LOUVAIN
Louvain School of Management

Place des Doyens, 1 bte L2.01.01, 1348 Louvain-la-Neuve
Boulevard Emile Devreux 6, 6000 Charleroi, Belgique
Chaussée de Binche 151, 7000 Mons, Belgique

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