

Shaping digital luxury perception: The impact of curvature in website design

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ABSTRACT

Design-oriented studies play a pivotal role in shaping the future of hospitality, as they directly influence guest experience, operational efficiency, and even brand identity. This research pioneers the exploration of how font and corner curvature—two indispensable elements of website graphic design—affect the perception of luxury in digital branding through hedonic values and readability. Utilizing a mock-up luxury hotel website, we examined the effects of corner and font curvature through an experiment with 182 participants. The results show that: 1) both rounded corners and fonts increase the site's hedonic value, 2) rounded fonts improve readability, 3) hedonic value and readability significantly enhance luxury perception, and 4) sharp corners improve luxury perception. We recommend a combination of sharp corners and rounded fonts for luxury hotels, as sharp corners enhance luxury perception while rounded fonts improve readability and hedonic values. This approach balances brand identity with functionality and digital pleasure.

1. Introduction

Traditional luxury brands have historically hesitated to fully embrace digital platforms, fearing that broad accessibility and online experiences would erode the exclusivity and tactile engagement inherent in luxury consumption (Batat, 2019; Pantano, Pedeliento, & Christodoulides, 2022; Passavanti, Pantano, Priporas, & Verteramo, 2020). However, digital adoption has become inevitable, with every luxury brand now having an online presence. D'Arpizio and Levato (2021) predict that by 2025, digital channels will dominate the personal luxury goods market, accounting for 28%–30% of global sales. In the high-end hospitality sector, digital value is especially significant, with direct spending on hotel reservations estimated at US\$528 billion in 2017 and expected to grow substantially over the next decade (Digital, 2021). As Online Travel Agencies (OTAs) have become more expensive booking channels for luxury hotels—commission rates rising from 4% in 2010 to an average of 15% in 2018, and projected to reach 25% by 2025 (Stanley, 2016; Starkov, 2023)—a shift is occurring. Luxury hotels are increasingly driving bookings through their brand websites, challenging the OTA model (Digital, 2021). In this digital pivot, the importance of website design in enhancing direct consumer engagement within luxury hospitality becomes clear.

Websites are often the first point of contact between consumers and

service providers, with the visceral response—consumers' immediate emotional reaction upon visiting a hotel's website—playing a crucial role (Norman, 2013). This response significantly influences consumers' perception of the brand and their willingness to explore the site further. Website design is central to shaping the visceral reaction. Recent trends, such as Google's Material Design and Microsoft's Fluent Design, have marked a return to the use of rounded corners in graphic elements (Murtaza, 2023; Parmar, 2023). This shift aligns with the biophilia hypothesis, which suggests a human preference for organic forms, indicating that rounded designs may inherently provide a more pleasurable experience than sharp counterparts. Research supports this connection, linking rounded corners with femininity, pleasure, and enhanced readability (e.g., Garza Galarza, 2022; Medved, Podlesek, & Možina, 2023; Salgado-Montejo et al., 2015; Velasco, Hyndman, & Spence, 2018). While rounded designs typically evoke positive emotional responses due to their natural and comforting qualities, sharp designs can convey power and distinction (e.g., Anselmsson, Vestman Bondesson, & Johansson, 2014; Mugge, Massink, Hultink, & van den Berg-Weitzel, 2014; Van Ooijen, Fransen, Verlegh, & Smit, 2016).

Amidst this evolving digital landscape, our research zeroes in on a critical gap: the influence of corner curvature and font curvature on hotel websites, identifying these elements as crucial in the digital articulation of luxury. Building on the foundational work of scholars (e.

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g., Ko, Costello, & Taylor, 2019; Vickers & Renand, 2003; Vigneron & Johnson, 2004; Wiedmann, Hennigs, & Siebels, 2009), our investigation centers on the dual roles of hedonic (pleasure-related) and functional (usability-related) values in shaping perceptions of luxury. By integrating curvature into hotel website design, this study probes whether such an aesthetic choice can significantly elevate the brand's perceived luxury. Design is not merely about aesthetics; it's about functionality, emotion, and the way design elements interact with people. Focused design features such as curvature, though they may seem localized, can have profound effects on user experience and even the bottom line. In an era where personalization and unique experiences are increasingly sought after, design research is not just relevant – it's essential.

Focusing specifically on the impacts of a website's corner curvature (rounded vs. sharp corners) and font curvature (rounded vs. sharp fonts) on luxury perception, we aim to understand how these design elements collectively influence luxury perception through hedonic value and readability. This investigation seeks to quantify the impact of design on luxury appeal, venturing into relatively uncharted territory: while the effects of curvature have been explored in physical product design, its implications for a brand's digital presence are less understood. Our study seeks to fill this important gap, offering insights into how the thoughtful application of font and corner curvature can refine the online presentation of luxury hotels. In doing so, it underscores the pivotal role of website design in connecting luxury brands with their audience, suggesting that even subtle design nuances can significantly impact the overall perception of luxury. By providing empirical evidence on the positive correlation between design specificity and enhancement of luxury perception, our research lays the groundwork for future strategic design applications aimed at bolstering the digital representation of luxury in the hospitality industry and beyond.

2. Literature review

2.1. Online user experience in the luxury industry

Luxury, derived from the Latin word "luxus," signifies extravagance and exclusivity, setting it apart from other business categories (Kapferer & Bastien, 2017, pp. 65–84; Ko et al., 2019; Tynan, McKechnie, & Chhuon, 2010). Luxury goods exhibit unique economic behavior, including an inverted price-demand curve where higher prices enhance desirability, symbolizing prestige (Veblen, 2017). Traditionally, luxury brands have thrived on creating an exclusive, high-touch, in-store experience that emphasizes personalized service, opulent surroundings, and an aura of exclusivity. However, maintaining this exclusivity presents challenges in the digital era, where the accessibility of the Internet seems at odds with the exclusivity that luxury brands seek (Blasco-Arcas, Holmqvist, & Vignolles, 2016; Baker, Ashill, Amer, & Diab, 2018). Initially hesitant to embrace digital platforms (Batat, 2019; Pantano et al., 2022; Passavanti et al., 2020), luxury brands now recognize the need for digital engagement. Predictions indicate that online platforms will constitute the largest channel for luxury sales by 2025 (D'Arpizio & Levato, 2021). This transition presents both opportunities and challenges as luxury brands strive to replicate their prestigious in-store experiences on digital platforms.

In the study of online user experience (UX), understanding the balance between affective (hedonic) and cognitive (pragmatic) dimensions is crucial for luxury brands aiming to provide a well-rounded digital customer experience (Rose, Clark, Samouel, & Hair, 2012). The affective dimension of user experience refers to the emotional responses and feelings that users experience when interacting with a product or system. It encompasses a range of emotional reactions, including pleasure, excitement, frustration, and satisfaction. This dimension is crucial because emotions can greatly influence user behavior and perceptions, often determining whether they will continue using a product or recommend it to others. The affective dimension is grounded in theories of emotional design, which suggest that products should not only be

functional but also evoke positive emotions. According to Norman (2007), emotional design is about creating products that are not only useable but elicit positive emotional responses. This can involve aspects such as aesthetic appeal, engaging content, and interactive features that delight users. Additionally, Hassenzahl and Tractinsky (2006) emphasize the importance of hedonic qualities. Hedonic qualities refer to the aspects of a product that provide sensory pleasure and enjoyment, going beyond mere functionality to create a more immersive and engaging experience. These qualities are essential to foster an emotional connection with users, particularly in contexts such as e-commerce or multimedia entertainment, which can lead to greater attachment and long-term loyalty.

However, the emphasis on the affective dimension sometimes overshadows the cognitive aspects of UX, which are equally important. The cognitive dimension of UX refers to the mental processes involved in using a product or system. It focuses on how users perceive, understand, and interact with the interface to achieve their goals efficiently and effectively (Forlizzi & Ford, 2000; Hassenzahl, 2018, pp. 301–313). This dimension addresses the rational and pragmatic aspects of user interaction, ensuring that the system is functional and informative. The cognitive aspect is critical in environments where the accuracy and speed of task completion are paramount. For instance, on a luxury brand's e-Commerce website, ensuring that users can easily find products, understand product information, and complete purchases quickly and accurately is essential for a positive shopping experience.

In summary, while the affective dimension emphasizes emotional engagement and pleasure, the cognitive dimension ensures that systems are useable, functional, and informative. As luxury brands transition to digital platforms, understanding and balancing the affective and cognitive dimensions of UX becomes essential. In doing so, luxury brands can create digital experiences that are both emotionally engaging and practically effective, thereby maintaining their unique brand identity in the digital era.

2.2. Curvature of web design

In website design, the concept of curvature refers to the use of rounded edges and curves in both the structural elements and the textual components of a web page. This design choice impacts aesthetics, user perception, and usability. Corner curvature pertains to the rounded edges of buttons, containers, and other interface elements. It softens the visual feel of the site, which can make interfaces seem more friendly and approachable. Meanwhile, font curvature involves the selection and use of fonts that have rounded, soft edges as opposed to hard, sharp lines. This can affect readability and emotional response. Both types of curvature influence how users perceive and interact with the website.

2.2.1. Corner curvature and its impact on hedonic value

Corner curvature refers to the roundedness or sharpness of the corners of various design elements, such as buttons, images, and containers. The changes of corner curvature on website design can be viewed from the skeuomorphism era to flat design era to the current mixed era of skeuomorphism and flat design philosophies. Specifically, in skeuomorphism, interface elements closely mimic their real-world analogues, aiming to replicate the appearance of tangible objects within a digital environment (Spiliotopoulos, Rigou, & Sirmakessis, 2018), such as the Windows Aero design language employed in Windows Vista and Windows 7 (Holliday, 2023) (see examples in Fig. 1) where we can see corners on interfaces (e.g., corners of text boxes and images) are mostly rounded. However, skeuomorphism faced criticism for potentially causing visual overload, where the plethora of textures and details could overwhelm users, and for slower load times especially on mobile platforms (Advani, 2023). In response to these limitations, flat design shifted towards a minimal aesthetic and focused on functionality, which is characterized by its use of simple shapes, vibrant colors, and minimal textures (Page, 2014), such as Microsoft's Metro design language



Fig. 1. Early examples of windows aero design language.

employed by the Windows 8 operating system (see Fig. 2) where the edges on the interface become sharp and cut. However, flat design often misses the warmth and emotional connection that users find appealing (Page, 2014). Its elimination of affordances—characteristics that hint at an object's operation, such as a knob indicating it should be twisted (Norman, 1999)—has been shown to negatively impact website usability (Burmistrov, Zlokazova, Izmalkova, & Leonova, 2015; Schneidermeier, Hertlein, & Wolff, 2014). In response to criticisms of both skeuomorphism and flat design, Google's Material Design and Microsoft's Fluent Design System were introduced in the past decade. Material Design draws inspiration from the tangible aspects of the physical world to create digital interfaces that are both simplified and organic (Murtaza, 2023) (see an example in Fig. 3); Microsoft's Fluent Design System, aiming to create interfaces that are more natural while maintaining a clean and modern look (Parmar, 2023; Romano, 2023) (see an example in Fig. 4). Both modern design philosophies abandoned sharp corners on the interface, generously using rounded corners.

Several theoretical frameworks underpin the understanding of corner curvature in design. Rooted in the Gestalt principle of "closure," where the mind tends to fill in missing information to perceive a complete, rounded shapes are often perceived as more cohesive and harmonious. For example, Dondis (1974) indicated that rounded forms facilitate the perception of unity and completeness, which can enhance

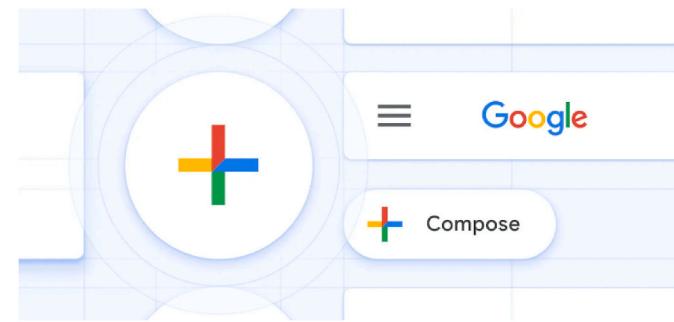


Fig. 3. Google's material design.

the aesthetic appeal of a design. Additionally, suggested by Affective Design Theories, rounded curvatures are generally associated with positive emotions such as comfort, friendliness, and approachability. These associations are due to the soft, continuous lines that mimic natural, organic forms, which humans tend to find pleasing and non-threatening. Furthermore, the Biophilia hypothesis posits that humans have an innate affinity for nature and natural forms. This theory supports the preference for rounded shapes that often mimic the curves

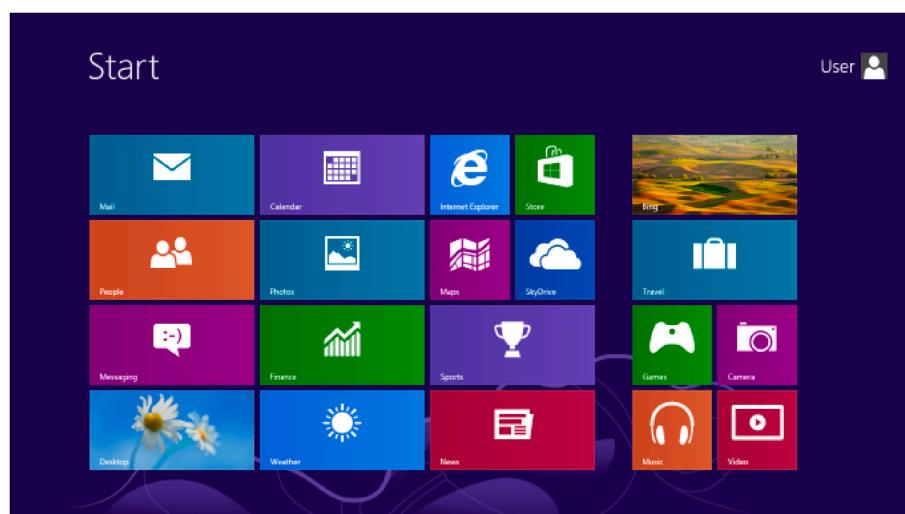


Fig. 2. Flat design: Windows 8 Start Screen.

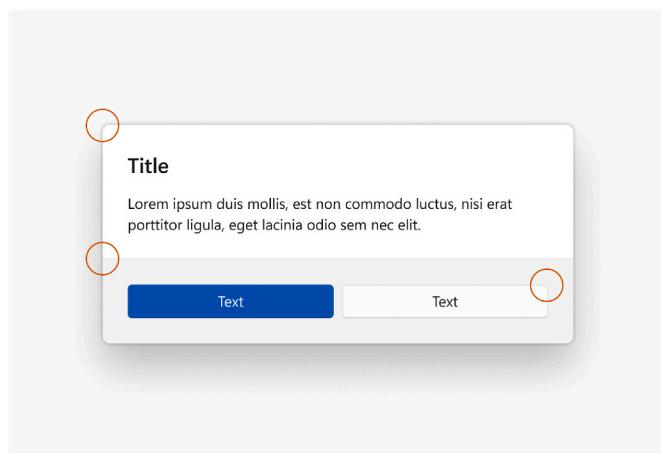


Fig. 4. Soft corners in Window 11.

found in natural environments. Kellert and Wilson (1993) propose that exposure to natural forms can enhance well-being and reduce stress, suggesting that rounded shapes in design can create a more relaxing and enjoyable user experience.

H1. Corner curvature impacts hedonic values, with rounded corners being perceived as more hedonic than sharp corners.

2.2.2. Corner curvature on perceived luxury

While rounded designs often elicit a positive affective experience due to their natural and comforting qualities, sharp designs convey a distinct sense of power and uniqueness (Anselmsson et al., 2014; Mugge et al., 2014; Van Ooijen et al., 2016). Sharp curvature introduces an element of visual tension and complexity. The principle of "continuity" in Gestalt theory suggests that the eye is drawn naturally along continuous edges. Sharp edges can disrupt this continuity, creating a sense of dynamism and contrast. This disruption can be both a strength and a weakness: it can make designs stand out and appear more sophisticated, while it can also create visual discomfort if overused. Although sharp objects can attract attention and appear more modern, they can also evoke feelings of unease and threat compared to their rounded counterparts (Bar & Neta, 2006). This duality is crucial in design, as it requires balance of sharpness to harness its positive attributes without overwhelming the user. According to the associative network theory (Collins & Loftus, 1975; Janiszewski & Wyer Jr, 2014; Lewis & Walker, 1989; Tan et al., 2001; Van Leeuwen, 2006; Walker, 2015), sharp shapes are often associated with control, power, and sophistication. The angular and precise lines of sharp curvature can convey a sense of authority and modernity, making them suitable for designs that aim to project professionalism and high status. Furthermore, the Biophilia hypothesis theory supports the preference for rounded shapes. However, it does not entirely discount the value of sharp curvature. In contexts where precision, modernity, and innovation are key, sharp curvature can convey these attributes effectively. The sharp lines and angles found in modern architecture and technology can evoke a sense of advancement and cutting-edge design.

H2. Corner curvature impacts perceived luxuriousness, with sharp corners being perceived as more luxury than rounded corners.

2.2.3. Font curvature and its impacts on hedonic values

Fonts are an essential aspect of visual communication, influencing how text is perceived and understood. The primary attributes of fonts, including typeface (or font family), weight, style, size, and spacing, play a crucial role in readability, aesthetics, and the emotional impact of text. For example, a slanted font suggests 'speed', while a condensed font

evokes the idea of 'slimness' (Choi & Kang, 2013). Bold fonts are frequently linked with automobiles and building materials, while italic fonts are preferred for jewelry and perfume (Doyle & Bottomley, 2004). Firms that use incomplete fonts are perceived as more innovative, while products with exotic fonts are often considered foreign (Celhay, Boysselle, & Cohen, 2015; Hagtvedt, 2011).

Serif fonts, characterized by small decorative strokes at the ends of letters, are traditionally used in print media for their readability and classic appearance, such as Times New Roman and Bodoni. Sans-serif fonts, lacking these decorative strokes, are favored in digital contexts for their clean and modern look, such as Arial and Varela. Among these attributes, font curvature—whether the shapes of the letters are rounded or sharp—promisingly influences the hedonic values associated with text. Rounded fonts are characterized by smooth, continuous curves without abrupt changes in direction. The transitions between strokes are gentle and flowing, creating a softer and more approachable appearance. Examples of rounded fonts include Varela Round, Comic Sans, and Arial Rounded MT Bold (see Fig. 5). They have a smooth, circular shape without sharp points or edges, creating a sense of warmth and friendliness. Rounded fonts are often associated with femininity and hedonic qualities such as indulgence, pleasure, softness, comfort, and even sweetness (Henderson, Giese, & Cote, 2004; Salgado-Montejo et al., 2015; Van Leeuwen, 2006; Velasco et al., 2018). In contrast, sharp fonts feature distinct angles and precise edges. The strokes terminate in points or sharp corners, giving the font a crisp and clean appearance. Examples of sharp fonts include Alike Angular, Bodoni, and Times New Roman (see Fig. 6). Their strokes meet at precise angles, forming clear, pointed apexes. The lines are straight and well-defined, contributing to a sense of modernity and professionalism.

H3. Font curvature impacts hedonic values, with rounded fonts being perceived as more hedonic than sharp fonts.

2.2.4. Font curvature on readability

Textual features influence readability, including the ease, speed, and comprehension of reading text (Woods, Davis, & Scharff, 2005; Mills & Weldon, 1987). In website design, it is paramount to ensure that content is easily legible, as it helps smooth the user experience, mitigates frustration, and increases overall satisfaction (Miniukovich, De Angeli, Sulpizio, & Venuti, 2017). However, the choice of the most suitable font for readability is a topic of ongoing debate. Conventional opinions suggest that serif fonts, with their characteristic decorative strokes, are preferable for printed media (Ali, Wahid, Samsudin, & Idris, 2013). Serif fonts such as Times New Roman or Bookman are commonly used in traditional print formats such as books, magazines, and newspapers (Bernard, Liao, & Mills, 2001). On the other hand, sans-serif fonts are often recommended for computer screens, purportedly because their simpler and cleaner lines make them easier and faster to read on digital displays (Erdogan, 2008; Ferrari & Short, 2002). Despite this general guidance, the research findings have been inconsistent. Some studies report no significant difference in readability between serif and sans-serif fonts in either context, while others suggest a preference for sans-serif on screens (Ali et al., 2013; Bernard et al., 2001; Boyarski, Neuwirth, Forlizzi, & Regli, 1998; Josephson, 2008; Shaikh & Chaparro, 2004; Solum, 2019; Tullis, Boynton, & Hersch, 1995; Vecino, Mehtali, de Andrés, Gonzalez-Rodriguez, & Fernandez-Lanvin, 2022).

More recently, attention has shifted to the shapes of the letters

Varela Round Can you read this?
 Comic Sans Or is this better?
 Arial Rounded MT Perhaps you like me?

Fig. 5. Examples of rounded fonts.

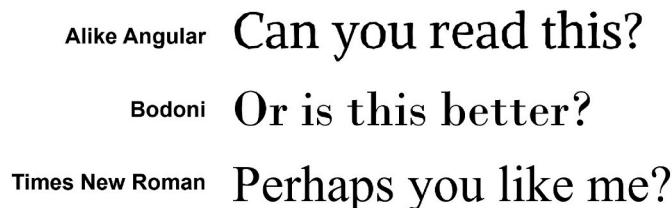


Fig. 6. Examples of sharp fonts.

themselves, specifically the distinction between rounded and sharp fonts. Regardless of whether a font is serif or sans-serif, its letters can be designed with either sharp or rounded edges. Recent research indicates that letters with round shapes improve readability and elicit more positive reactions from readers, compared to letters with sharp shapes. For example, curved fonts used in chatbot interactions increase customer trust, an effect attributed to improved readability (Garza Galarza, 2022). In addition, educational materials using rounded letters have been found to support faster reading speeds (Medved et al., 2023). However, unlike the traditional focus on serif and sans-serif fonts, the examination of font curves, specifically rounded versus sharp fonts, and their impact on readability in a digital context is not yet popular and is relatively underexplored in research. Despite limited research, the existing findings align with our assumptions. Therefore, we propose the following hypothesis.

H4. Font curvature impacts readability of hotel webpages, with rounded fonts being easier to read than sharp fonts.

2.3. Hedonic values on luxury

Hedonic value of online experience is rooted in its ability to provide an aesthetically pleasing and emotionally engaging experience (Jongmans, Jeannot, Liang, & Dampérat, 2022). This value extends beyond simple functionality, as it is deeply rooted in emotional experiences rather than in the simple acquisition of material items or the completion of tasks (Abdel-Khalek, 2006; De Wulf, Schillewaert, Muylle, & Rangarajan, 2006; Hur, Ko, & Valacich, 2007). It also plays an important role in shaping the perception of luxury brands, as consumers are drawn to luxury products not only for their practical attributes but also, and often more so, for the intangible hedonic qualities (Hirschman & Holbrook, 1982; Ko et al., 2019; Vickers & Renand, 2003; Vigneron & Johnson, 2004; Wiedmann et al., 2009). The enhancement of hedonic value can be achieved through the integration of visually appealing colors, images, and layouts, the incorporation of animations and hover effects, engaging multimedia content, customizable features, and gamification, to name a few (Hsu & Chen, 2018; Jongmans et al., 2022; Semerádová, Weinlich, Semerádová, & Weinlich, 2020).

H5. The hedonic value of a hotel website contributes to the webpages' perceived luxuriousness.

2.4. Readability on luxury

Readability is fundamental to the functional value of a website, especially for luxury brands. Readability refers to the ease with which a user can read and understand the text on a webpage. This includes not only the clarity of the text itself but also how well the text is presented within the overall design. High readability reduces cognitive strain, allowing users to focus more on content and less on deciphering the text. Poor readability, on the other hand, can lead to frustration and disengagement. Luxury consumers expect a seamless interaction with the brand, mirroring the high-quality service they receive in physical stores. When a website is easy to read, it creates a positive emotional response and keeps the user engaged, which is pivotal in building a luxury brand's image online. Moreover, readability communicates and reinforces brand

values. Luxury brands are synonymous with elegance and precision. Each element of the website, including the way text is integrated, must reflect these values to maintain brand integrity. Bleier, Harmeling, and Palmatier (2019) highlight the importance of well-designed product web pages in enhancing online customer experiences, emphasizing that design elements must be considered to optimize the informativeness of the webpage, which directly ties into readability in the luxury context.

H6. The readability of a hotel website significantly contributes to its perceived luxuriousness.

2.5. Mediation effect of hedonic value and readability between curvature and luxury

Hedonic value and readability will mediate the relationship between both corner curvature and font curvature and perceived luxuriousness. Font curvature is not assumed to directly affect perceived luxury, given the lack of supporting literature, yet a mediating effect can still occur without a direct effect (Memon, Jun, Ting, Francis et al., 2018). Contemporary research challenges the traditional Baron and Kenny's approach (Baron & Kenny, 1986) of testing direct effects, viewing it as unnecessary and even obstructive to theory development (Memon et al., 2018). This view argues that insisting on direct effects contradicts the principle of parsimony and leads to models that do not align with theoretical expectations (Aguinis, Edwards, & Bradley, 2017). Consequently, mediation analysis does not necessitate an association between variables X and Y (Preacher & Hayes, 2004; Rasoolimanesh, Wang, Roldan, & Kunasekaran, 2021; Rucker, Preacher, Tormala, & Petty, 2011; Rungtusanatham, Miller, & Boyer, 2014; Zhao, Lynch Jr, & Chen, 2010).

The stimulus-order-response model (S-O-R) supports the mediation effect of hedonic value and readability (Jacoby, 2002). This model emphasizes the importance of initial user interactions with an interface. Essentially, a webpage that effectively balances readability with hedonic elements not only creates a strong first impression but also significantly enhances the perception of luxury through the S-O-R mechanism. In support of this, Jongmans et al. (2022) asserts that visual design enhances user experience by sequentially improving usability (related to readability) and pleasure (related to hedonic value), demonstrating how both elements are integral to successful web design. In summary, the S-O-R model posits that environmental stimuli (S) – such as the corner curvature and font curvature of a webpage – affect the internal states (O) of users by improving readability and enhancing the hedonic value of a website. These positive changes lead users to perceive the webpage as more luxurious (R). Therefore, we hypothesize the following.

H7. Hedonic value mediates the relationship between corner curvature and the perceived luxuriousness.

H8. Hedonic value mediates the relationship between font curvature and the perceived luxuriousness.

H9. Readability mediates the relationship between font curvature and the perceived luxuriousness.

Fig. 7 demonstrates the relationships that will be examined in this study.

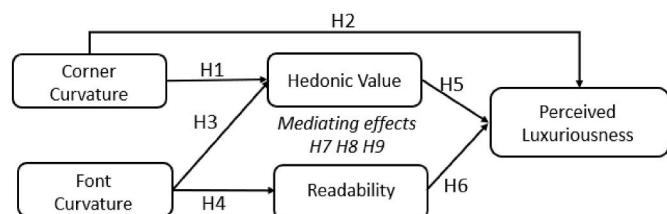


Fig. 7. Conceptual model of the research.

3. Methods

3.1. Participants

The study explored the effects of website curvature on hedonic values, readability, and perceived luxury. 240 individuals from the United States participated in the study in exchange for \$2.50 per participation. The study survey was programmed with Qualtrics software and distributed via Prolific Academic. Prolific Academic was chosen due to the high-fidelity participant pool it offers (Peer, Brandimarte, Samat, & Acquisti, 2017).

3.2. Materials

The researchers crafted four prototype luxury hotel web pages, using the official website of a recognized luxury hotel brand—St.Regis—as a template. These prototypes were developed with Figma, an online design tool commonly used to create digital interface prototypes. Each prototype embodied different combinations of two design elements: corner curvature and font curvature, with each element varying between rounded and sharp interventions. Specifically, the study developed four distinct prototypes: one featured both rounded corners and rounded fonts; another combined sharp corners with sharp fonts; a third presented rounded corners alongside sharp fonts; and the fourth displayed sharp corners paired with rounded fonts (see Fig. 8). Participants were invited to explore all four mock-up websites, which were displayed in a randomized sequence.

3.3. Design and procedure

A 2 x 2 within-subjects experimental design was conducted, considering two primary factors: corner curvature (rounded versus

sharp) and font curvature (rounded versus sharp). Unlike cross-sectional designs, which analyze participant response differences, within-subjects experiments enable each participant to experience all conditions, thus reducing participant-related variability when assessing responses (Meehan, Razzaque, Insko, Whitton, & Brooks, 2005).

After obtaining informed consent, participants were presented with four mock web pages sequentially. Following the review of each page, they were asked to assess the site's hedonic value, readability, and perceived luxury using scales. Upon completing the evaluation of the final mock page, participants were invited to provide open-ended feedback detailing their preferences for roundedness versus angularity. The survey concluded with demographic questions. Attention-check questions and manipulation checks were incorporated to ensure participant engagement and to verify whether experimental manipulations were perceived as intended (Cook, Campbell, & Shadish, 2002).

The study lasted between 8 and 15 min. Although it included four mock-up pages, participants reviewed static screenshots in Figma without having to interact with them. Figma was ideal for testing website prototypes, allowing participants to focus solely on the visual aspects of luxury.

3.4. Key measurements

Drawing from previous research, the hedonic value in the current study was measured using items of fun, excitement, delightfulness, thrill, and enjoyability (Voss, Spangenberg, & Grohmann, 2003). Each of these items was assessed using an 11-point semantic differential scale (not fun/fun, dull/exciting, not delightful/delightful, not thrilling/thrilling, unenjoyable/enjoyable). An 11-point scale was chosen for its capacity to capture a wider variance and reduce skewness (Dawes, 2008; Leung, 2011). Secondly, readability refers to the ease with which content can be read. Readability was evaluated by asking participants

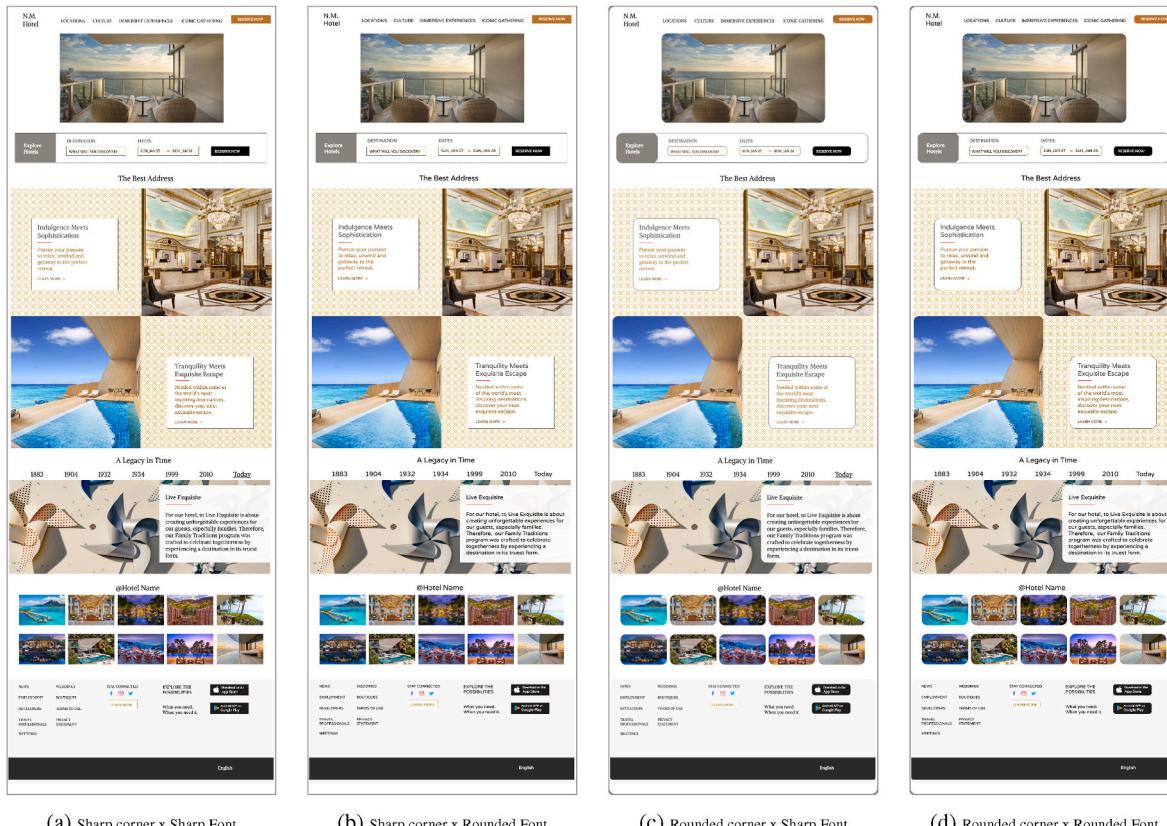


Fig. 8. Prototypes of Hotel Web Pages. (a) Sharp corner x Sharp Font. (b) Sharp corner x Rounded Font. (c) Rounded corner x Sharp Font. (d) Rounded corner x Rounded Font.

whether they agreed or disagreed with the statement: "The text on the hotel's website is easy to read," on an 11-point scale, where 0 represented Strongly Disagree and 10 represented Strongly Agree. Third, the perceived luxury of the hotel website is related to the extent to which a user believes that the website, and by extension the hotel it represents, demonstrates qualities of luxury and exclusivity (Ko et al., 2019; Okonkwo, 2016). To assess perceived luxury, participants were asked to answer if they agreed or disagreed with the statements that "The website is designed for a luxurious hotel", "The website is designed for a prestige hotel", and "The website is designed for a high-class hotel" (Hagtvedt & Patrick, 2008; Wang, Wang, Mu, & Sun, 2022) on an 11-point scale where 0 represented Strongly Disagree and 10 represented Strongly Agree.

3.5. Data analysis

Data analysis was performed using R Studio version 4.3.1. To evaluate the reliability of the hedonic value scale and the perceived luxury scale, we calculated Cronbach's Alpha coefficients. According to Taber (2018), a Cronbach's Alpha exceeding 0.8 suggests that the items within a scale consistently measure the same underlying construct. The items assessing hedonic value yielded an alpha coefficient of 0.95, and the items measuring perceived luxury had a coefficient of 0.97. These results indicate a high level of internal consistency and reliability for both scales.

To determine the impacts of corner curvature and font curvature on hedonic value (H1, H3), we performed a series of two-way repeated measures analysis of variance (RM-ANOVA) with corner curvature and font curvature as primary factors and each item on the hedonic scale as one outcome. To evaluate the effects of corner curvature on perceived luxury (H2) and the effects of font curvature on readability (H4), *t*-tests were employed.

To test the relationships between hedonic value and perceived luxury (H5) as well as between readability and perceived luxury (H6), a multiple linear regression was performed. The dependent variable was the single composite score averaged from the perceived luxury scale, while the independent variables were readability and the single composite score averaged from the hedonic value scale.

Additionally, to investigate the mediation roles of hedonic value and readability (H7, H8, H9), we conducted a mediation analysis, following the segmentation approach (Memon et al., 2018; Rungtusanatham et al., 2014) where three steps were involved which are testing 1) independent variable (X) effects mediator (M); 2) mediator (M) effects outcome variable (Y); and 3) mediation effect (i.e., the indirect effect of the predictor variable (X) on outcome variable (Y) through mediator (M)). We used the lavaan package in R, which goes beyond Baron and Kenny's original approach (Baron & Kenny, 1986). The lavaan package provides a more flexible and robust framework for estimating the paths and indirect effects in mediation models using structural equation modeling (SEM) techniques (Rosseel, 2012). For the mediation analysis, averaged scores from the hedonic value and luxury scales were used as hedonic value and perceived luxury, respectively.

Furthermore, we conducted a thematic analysis of the textual data from the open-ended questions. Through this meticulous exploration, we sought to uncover the underlying reasons for the participants' choices and to gain deeper insights into their perspectives on curvature's impact on website design.

4. Results

4.1. Manipulation check

Participants whose responses indicated inattention—those who failed the attention checks—were removed from the dataset. The refined dataset, comprising 238 observations, underwent a manipulation check to verify the effectiveness of the experimental conditions, which

included four distinct conditions: rounded corners with rounded fonts, sharp corners with sharp fonts, rounded corners with sharp fonts, and sharp corners with rounded fonts. Participants were presented with each condition and then asked to classify the appearance of the website's fonts and corners. They made their selections from options accompanied by representative images, as detailed in appendix A. Chi-square test for goodness of fit was performed to determine if participants' perceptions differed from chance level when identifying the manipulated variables. The test results indicated a significant difference from what would be expected by chance, $\chi^2(1, N = 238) = 66.71, p < 0.001$, where 182 (76.47%) participants correctly identified the manipulations, while 56 (23.53%) did not. This confirms that a majority were able to recognize the experimental manipulations as intended. Consequently, observations from participants who did not pass the manipulation check were removed to preserve the quality of the data set for further analysis. This left a final sample of 182 participants for the subsequent data analysis.

4.2. Demographics of respondents

Among the final sample of 182 participants, approximately 48% were female, ensuring a balanced sample in terms of gender. Over one-third of the sample held a bachelor's degree (36%). Each age group was well-represented, with the 25–34 age group being the largest (36%). The demographic profile of the respondents can be found in Table 1.

4.3. Descriptive statistics for each experimental condition

Table 2 presents descriptive statistics for each experimental condition across all scale items. Within the hedonic dimension for the 'Fun' item, rounded corners combined with a rounded font yielded the highest mean rating ($M = 7.55, SD = 1.91$), suggesting that this combination was perceived as the most fun. Conversely, the lowest mean score was observed when both corner curvature and font curvature were sharp ($M = 6.74, SD = 1.95$), indicating that such a design might be perceived as the least fun. For the 'Readability' item, rounded corners combined with a rounded font yielded the highest mean rating ($M = 8.08, SD = 1.85$), followed by sharp corners combined with a rounded font ($M = 7.94, SD = 1.90$). For the 'High-class' item, which is from the luxury scale, sharp corners combined with a sharp font yielded the highest mean rating ($M = 7.63, SD = 2.05$), suggesting that this combination of design was perceived as the most high-class. Conversely, the lowest mean score was

Table 1
Demographics of respondents ($n = 182$).

Demographics	n	%	Demographics	n	%
Gender			Age		
Female	85	46.70%	18–24	29	15.93%
Male	91	50.00%	25–34	67	36.81%
Other	6	3.30%	35–44	35	19.23%
			45–54	25	13.74%
Education			55–64	21	11.54%
High school degree	23	12.64%	65 or older	5	2.75%
Associate degree	20	10.99%	Ethnicity		
Some college, no degree	47	25.82%	African American	17	9.34%
Bachelor's degree	66	36.26%	Asian	18	9.89%
Master's degree	19	10.44%	Hispanic	13	7.14%
Ph.D.	6	3.30%	White	125	68.68%
Other	1	0.55%	Native American	3	1.65%
			Other	6	3.30%
Employment			Annual Income		
Employed full time	79	43.41%	Less than \$10,000	34	18.68%
Employed part time	23	12.64%	\$10,000–\$24,999	26	14.29%
Self-employed	29	15.93%	\$25,000–\$49,999	48	26.37%
Unemployed	29	15.93%	\$50,000–\$74,999	39	21.43%
Student	13	7.14%	\$75,000–\$99,999	14	7.69%
Retired	6	3.30%	\$100,000– \$149,999	15	8.24%
Unable to work	3	1.65%	\$150,000 or more	6	3.30%

Table 2

Descriptive results for each experimental condition across all scale items.

	Dependent Variables	Rounded corner x Rounded font	Rounded corner x Sharp font	Sharp corner x Rounded font	Sharp corner x sharp font
Readability Indicator	Readability	Mean SD	8.08 1.85	7.30 2.07	7.94 1.90
Hedonic Value Indicators	Fun	Mean SD	7.55 1.91	7.26 1.98	7.11 1.95
	Excitement	Mean SD	7.32 1.91	7.13 1.98	7.08 1.95
	Delightfulness	Mean SD	7.81 2.11	7.50 2.02	7.48 2.06
	Thrill	Mean SD	6.90 2.18	6.66 2.02	6.70 1.89
	Enjoyability	Mean SD	8.13 2.11	7.74 2.08	7.73 1.92
Perceived Luxuriousness Indicators	Luxurious	Mean SD	7.32 2.02	7.30 2.18	7.52 2.13
	Prestigious	Mean SD	7.15 2.09	7.12 2.07	7.34 2.05
	High-class	Mean SD	7.27 2.04	7.30 2.02	7.41 2.00

observed when both corner curvature and font curvature were rounded ($M = 7.27$, $SD = 2.04$).

4.4. Role of corner curvature and font curvature on hedonic value (H1, H3)

We performed a 2x2 repeated measures ANOVA to examine the effects of corner curvature (rounded, sharp) and font curvature (rounded, sharp) on each item measuring the hedonic value. The results revealed that both corner curvature and font curvature have significant main effects on every item. Specifically, as shown in Table 3, corner curvature has a significant main effect on whether the website is perceived as fun ($F(1, 181) = 26.93$, $p < 0.001$, $\eta_p^2 = 0.13$). This effect size, approaching the threshold for a large effect, suggests that approximately 13% of the variance in the fun ratings can be attributed to the difference in corner curvature, with rounded corners ($M = 7.41$, $SD = 1.95$) leading to higher fun ratings than sharp corners ($M = 6.93$, $SD = 1.96$) as seen in Table 4. Meanwhile, font curvature also has a significant main effect on whether the website is perceived as fun ($F(1, 181) = 14.42$, $p < 0.001$, $\eta_p^2 = 0.07$), with rounded fonts ($M = 7.33$, $SD = 1.94$) perceived as more fun compared to sharp fonts ($M = 7.00$, $SD = 1.98$). No significant interaction was found between corner curvature and font curvature in fun

Table 3

ANOVA results of corner curvature and font curvature on hedonic values (H1, H3).

Dependent Variable	Source	df	F	Sig.	η_p^2
Fun	Corner curvature	1, 181	26.93	<0.001**	0.130
	Font curvature	1, 181	13.42	<0.001**	0.069
	Corner * Font	1, 181	0.23	0.632	
Excitement	Corner curvature	1, 181	9.20	0.003**	0.048
	Font curvature	1, 181	6.91	0.009**	0.037
	Corner * Font	1, 181	0.20	0.655	
Delightfulness	Corner curvature	1, 181	7.89	0.006**	0.042
	Font curvature	1, 181	8.92	0.003**	0.047
	Corner * Font	1, 181	0.33	0.565	
Thrill	Corner curvature	1, 181	6.00	0.015*	0.032
	Font curvature	1, 181	8.38	0.004**	0.044
	Corner * Font	1, 181	0.20	0.656	
Enjoyability	Corner curvature	1, 181	7.55	0.007**	0.040
	Font curvature	1, 181	9.08	0.003**	0.048
	Corner * Font	1, 181	1.85	0.176	

Note: ** $p < 0.01$, * $p < 0.05$, df: degree of freedom, η_p^2 : partial eta squared.

Table 4

Descriptive results of corner curvature and font curvature on hedonic values.

		Rounded corner	Sharp corner	Rounded font	Sharp font
Fun	Mean	7.41	6.93	7.33	7.00
	SD	1.95	1.96	1.94	1.98
Excitement	Mean	7.23	6.95	7.20	6.97
	SD	2.06	2.02	2.08	2.01
Delightfulness	Mean	7.66	7.37	7.65	7.38
	SD	2.07	2.09	2.09	2.07
Thrill	Mean	6.78	6.55	6.80	6.54
	SD	1.98	1.94	2.04	2.00
Enjoyability	Mean	7.93	7.63	7.93	7.64
	SD	2.10	2.05	2.02	2.03

ratings ($F(1, 181) = 0.29$, $p = 0.63$), indicating that the fun ratings for rounded over sharp fonts did not vary significantly with the curvature of corners. This suggests that the impact of font curvature on fun perception operates independently of corner curvature. The same trend is observed in the ratings of other hedonic items, as depicted in Table 3. Thus, H1 and H3 are supported.

4.5. Role of corner curvature on perceived luxury (H2)

A series of *t*-tests were conducted to evaluate how the corner curvature influences the perceived luxury of a luxury website. The findings reveal that the curvature of the corners significantly affects the

Table 5*t*-test of corner curvature on perceived luxury (H2).

		Rounded corner	Sharp corner
Luxurious	Mean	7.31	7.61
	SE	0.154	0.146
	<i>t</i> -score		-2.889
	<i>p</i> -value		0.0043**
Prestigious	Mean	7.14	7.46
	SE	0.161	0.153
	<i>t</i> -score		-2.894
	<i>p</i> -value		0.0043**
High-class	Mean	7.28	7.52
	SE	0.16	0.155
	<i>t</i> -score		-2.075
	<i>p</i> -value		0.0394*

Note: ** $p < 0.01$, * $p < 0.05$, SE: standard error.

perception of a website's luxury. As detailed in **Table 5**, participants perceived websites with sharp corners as more luxurious, prestigious, and high-class compared to those with rounded corners. These results imply that luxury hotel websites could enhance their luxury image more effectively by incorporating sharp corners into their graphic design. The effectiveness of sharp corners in conveying luxury perceptions could potentially be explained by the principles proposed in the Biophilia hypothesis, as discussed earlier in the literature review. **H2** is supported.

4.6. Role of font curvature on readability (**H4**)

A t-test was conducted to assess the impact of font curvature on readability. The results demonstrate that the font on a luxury website—be it rounded or sharp—significantly influences the website's readability. As detailed in **Table 6**, participants found rounded fonts are easier to read. This finding suggests that the use of a rounded font could enhance the readability of a website in the context of digital luxury, which is consistent with previous research in which rounded letters improve readability (Garza Galarza, 2022; Medved et al., 2023). **H4** is supported.

4.7. Hedonic value and readability on perceived luxury (**H5, H6**)

To examine the impact of hedonic value and readability on the perceived luxury of a website, a multiple linear regression was performed, with the dependent variable being the single composite score derived from the perceived luxury scale and the independent variables being readability and the single composite score derived from the hedonic value scale. As detailed in **Table 7**, both hedonic value and readability positively influenced the perceived luxury of a website, supporting hypotheses **H5** and **H6**. Together, these predictors accounted for a significant portion of the variance (adjusted $R^2 = 41.27\%$). This suggests that it would be impactful to enhance the hedonic value and readability of a website if the website aims to brand itself as luxurious.

4.8. Mediation analysis (**H7, H8, H9**)

We conducted a mediation analysis to examine the relationships between corner curvature, font curvature, hedonic value, readability, and perceived luxury. As shown in **Table 8**, for Hypothesis **H7**, corner curvature significantly influenced the hedonic value ($\beta = 0.32, p = 0.021$), which in turn significantly impacted perceived luxury ($\beta = 0.75, p < 0.001$), with a significant indirect effect ($\beta = 0.237, p = 0.022$). Hypothesis **H8** showed that font curvature significantly affected hedonic value ($\beta = 0.28, p = 0.045$), which also significantly influenced perceived luxury ($\beta = 0.68, p < 0.001$), with a significant indirect effect ($\beta = 0.186, p = 0.046$). For Hypothesis **H9**, font curvature significantly impacted readability ($\beta = 0.64, p < 0.001$), which significantly influenced perceived luxury ($\beta = 0.18, p < 0.001$), with a significant indirect effect ($\beta = 0.116, p = 0.001$). These results indicate that both corner and font curvature indirectly enhance perceived luxury through hedonic value and readability, respectively.

4.9. Beyond quantitative analysis: insights from the open-ended responses

In this section, we analyzed the open-ended feedback from the 182

Table 6
t-test of font curvature on readability (**H4**).

	Rounded font	Sharp font	
Mean	8.01	7.37	
SE	0.129	0.154	
t-score			4.978
p-value			<0.01**

Note: **p < 0.01, *p < 0.05, SE: standard error.

Table 7

Hedonic value and readability on perceived luxury (**H5, H6**).

Predictors	Coefficients	SE	t-score	p-value	VIF
Hedonic value	0.672	0.036	18.908	<0.01 **	1.12954
Readability	0.166	0.031	5.322	<0.01 **	1.12954
Constant	1.241	0.293	4.234	<0.01**	
Adjusted R ²	0.4127				

Note: **p < 0.01, SE: standard error, VIF: Variance Inflation Factor.

participants to gain a more nuanced understanding of their perceptions concerning the curvature of fonts and corners in web design, while also taking other design factors into consideration.

4.9.1. Rounded designs: warmth and readability

4.9.1.1. Positive sentiment. In the textual analysis, rounded designs were consistently associated with attributes such as friendliness, modernity, relaxation, comfort, warmth, and approachability. Participants felt that rounded corners and fonts, in particular, brought forward a sense of modern aesthetics while remaining inviting and aesthetically pleasing. One participant remarked: "*Rounded corners and fonts look more appealing, less harsh. They have a more welcoming look to them ...*" Echoing this sentiment, another participant shared: "*Rounded corners on photos give a more relaxed fun feel ...*" This association between rounded designs and friendliness was further exemplified by yet another comment: "*I like rounded corners and fonts as well. Just seems like a friendlier, more welcoming style.*"

4.9.1.2. Readability and visual comfort. Aligning with the results from our quantitative analysis, a significant proportion of participants noted the readability and visual comfort associated with rounded fonts. Many felt these fonts reduced eye strain and presented a more modern aesthetic. One participant elucidated: "*I prefer the rounded fonts because they're easier to read and it's more aesthetically pleasing and visually smooth.*" This sentiment regarding readability was further echoed by another participant who mentioned: "*I prefer the rounded font because it was easier to read and feels more modern.*" Furthermore, the perceived boldness of the rounded font was highlighted, with a comment noting: "*rounded font looked bolder and easier to read.*"

4.9.2. Sharp designs: sophistication and clarity

4.9.2.1. Professionalism and luxury. Participants consistently associated sharp corners and fonts with the concept of professionalism. One participant expressed that "*Sharp corners and fonts give a design a more 'put together' look.*" This sentiment was echoed by another who felt that "*there's something about sharper shapes that feels more 'professional' to me.*" Beyond professionalism, the sharp aesthetic was deemed to offer websites a "*classy, timeless appearance*" which, in turn, enhanced their visual appeal. While some participants noted that rounded designs sometimes felt "*tacky or reminiscent of high school projects*", the sharp designs, as one participant insightfully put it: "*exude sophistication and maturity.*" There was a general consensus that the "*sharpness feels more high-class,*" especially when juxtaposed against rounded elements that "*appear more casual and less prestigious.*" A participant detailed this further, saying: "*Sharp elements convey seriousness and a more luxurious vibe, whereas rounded ones often feel less realistic or serious.*" This sentiment was reinforced by another observation that "*sharp corners look so much better. Rounded corners make the photos look more like stock photos and less realistic.*" Lastly, the classiness associated with sharp corners was neatly pointed out by two participants as, "*The elegance and propriety of sharp corners appeal to me,*" and "*To me, sharp corners signify flair.*"

4.9.2.2. Clean and streamlined. Several participants highlighted the role

Table 8

Mediation relationships (H7, H8, H9).

Mediation relationship ($X \rightarrow Y \rightarrow Z$)	Effect of $X \rightarrow M$	p-value	Effect of $M \rightarrow Y$	p-value	Indirect effect of $X \rightarrow Y \rightarrow Z$	p-value
H7: Corner Curvature → Hedonic Value → Perceived Luxury	0.32	0.021*	0.75	<0.001**	0.237	0.022*
H8: Font Curvature → Hedonic Value → Perceived Luxury	0.28	0.045*	0.68	<0.001**	0.186	0.046*
H9: Font Curvature → Readability → Perceived Luxury	0.64	<0.001**	0.18	<0.001**	0.116	0.001**

Notes: **p < 0.01, *p < 0.05.

of sharp corners in enhancing the perceived cleanliness and neatness of websites. As one participant mentioned: "*I prefer sharp corners for images because I believe it gives the website a cleaner look.*" This viewpoint was mirrored by another who stated: "*I like sharp corners the best, I think everything fits together better with them and the page looks neater.*" Adding to this, another remarked: "*I preferred the sharp corner, sharp letter look. To me, it just looks cleaner and crisper.*"

4.9.3. Mixed preferences

In our study, some participants preferred a mix of both rounded and sharp design elements. This group expressed a liking for combining different styles, such as pairing sharp corners with rounded fonts. They believed this combination provided a balanced aesthetic, with the contrast enhancing the design's appeal. For instance, one participant said: "*rounded text and sharp pictures ... presents the information in a less 'in your face' way.*" Another shared: "*sharp corners for images ... give the website a cleaner look,*" but added that a "*rounded font adds a nice contrast to the sharp images.*" One respondent highlighted usability, noting the "*luxury of sharp corners and sharp font*" while also recognizing the readability advantage of rounded fonts. Collectively, this feedback suggests a middle-ground preference, indicating that elements from both design styles can work together to create a balanced visual experience. This area requires further research.

4.9.4. Additional design insights

4.9.4.1. Influence of external elements. While this study mainly focused on the curvature of fonts and corners, participants extended their feedback to other aspects such as image-to-text balance, color choices, and content layout. Comments such as "*The website is good but has more images and lacks information about the hotel*" and "*I think showing the locations closer to the top of the search bar instead of at the bottom would be better*" highlight that design is a multifaceted process and emphasize the necessity for a holistic approach when designing a web page.

4.9.4.2. Association with familiar brands and past experience. Participants' perceptions were frequently intertwined with existing brand aesthetics and their past experiences. A few participants emphasized a personal fondness for rounded corners and fonts, going so far as to describe sharp designs as "*unfriendly and too Microsoft-like.*" Some participants felt certain design choices harkened back to earlier times, such as the age of typewriters and academic essays. For example, one participant pointed out the contrast between the professional, essay-like aura of Times New Roman and the more playful nature of rounded fonts, noting "*The rounded was a nice use for the font as it looked more fun than Times New Roman which only reminds me of writing essays ...*" Another drew a distinction between the typewriter feel of sharp fonts and the aesthetic quality of rounded ones, observing, "*To me, sharp fonts resemble a typewriter, whereas rounded ones feel more aesthetic.*" Collectively, these reflections underscore how design elements, far from being mere visuals, can resonate deeply with users, invoking personal experiences and broader cultural imprints.

5. Conclusions and discussion

Anchored in digital luxury, our research aimed to explore the impact of design elements—font curvature and corner curvature—on

customers' browsing experiences on a luxury hotel website and their effects on the perception of luxury. The experimental data revealed that both rounded corners and fonts significantly boost the hedonic value of the website browsing experience. Moreover, rounded fonts were linked to improved readability. Our mediation analysis further revealed that hedonic value and readability mediate the relationship between design elements and perceived luxury. Specifically, rounded corners and fonts indirectly enhance luxury perception by improving hedonic value and readability. Additionally, we found that sharp corners directly contribute to the perception of luxury. The thematic analysis of participant feedback further underscored a clear dichotomy in design preferences: rounded design elements were consistently associated with approachability and pleasure, while sharp designs were perceived as more professional and sophisticated. These qualitative insights suggest that the curvature of design elements significantly influences both user experience and brand perception, where rounded elements are favored for creating a positive, affective experience, and sharp elements are preferred for signaling luxury.

Based on these insights, we propose a strategic design approach for luxury hotel websites—integrating sharp corners with rounded fonts. This design approach captures the essence of luxury through the sophistication and prestige that angularity brings, while also ensuring an enjoyable and accessible user experience through the warmth and comfort of roundedness, balancing the unique advantages of both design types. This balanced design strategy aligns with current trends in digital luxury branding. For instance, Shangri-La, known for its luxury branding image, employs sharp corners in image boxes and call-to-action buttons such as 'Adventure Seekers' on its website (see Fig. 9). This corroborates our finding that sharp corners convey a sense of luxury and exclusivity. Moreover, while Shangri-La uses sharp fonts in their headlines such as 'Shangri-La The Marina, Cairns' to maintain a sense of elegance and formality, the main text in rounded fonts benefits from the readability and approachable nature of rounded fonts. Conversely, Airbnb, renowned for its warm branding image, uses rounded corners in text boxes and image boxes in its website design (see Fig. 10), aligning with our finding that rounded corners enhance the feeling of friendliness and approachability. Airbnb's website also uses rounded fonts for its main text, which, again, supports our finding that rounded fonts are linked with a more readable and hedonic user experience. These examples from Shangri-La and Airbnb provide practical, real-world evidence that supports our study's conclusion: sharp corners convey luxury, while rounded corners and fonts contribute to hedonic values and a more readable user experience. These findings offer a practical framework for enhancing the digital presence of hotel brands.

5.1. Theoretical contribution

Our study positions digital design, specifically the curvature of graphic elements, as a theoretical lens that offers deeper insights into consumer psychology and behavior in the context of digital luxury experiences. While previous research has explored the effects of curvature in tangible contexts (e.g., food packaging) and found that curvature had a minimal impact on the perception of luxury (Pombo & Velasco, 2021; Romeo-Arroyo, Jensen, Hunneman, & Velasco, 2023), our study diverges by examining how these principles operate in digital environments, where physical interaction is absent. We argue that curvature serves as more than just a visual preference—it is a significant

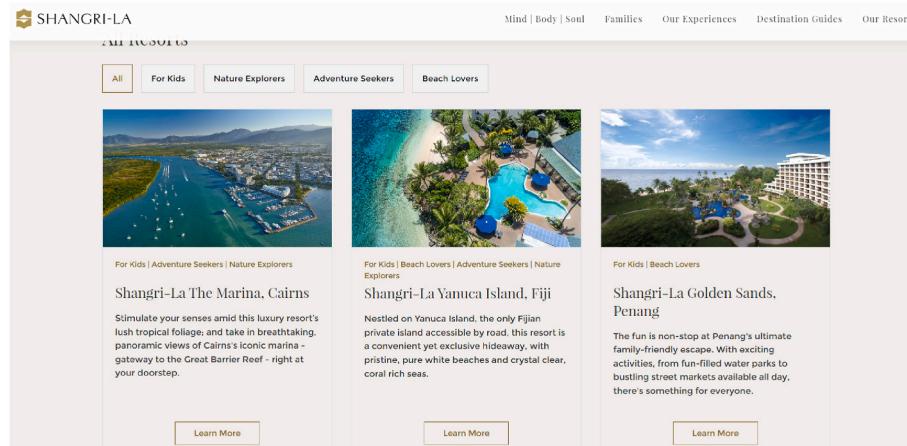


Fig. 9. Screenshot of the Shangri-La official website.

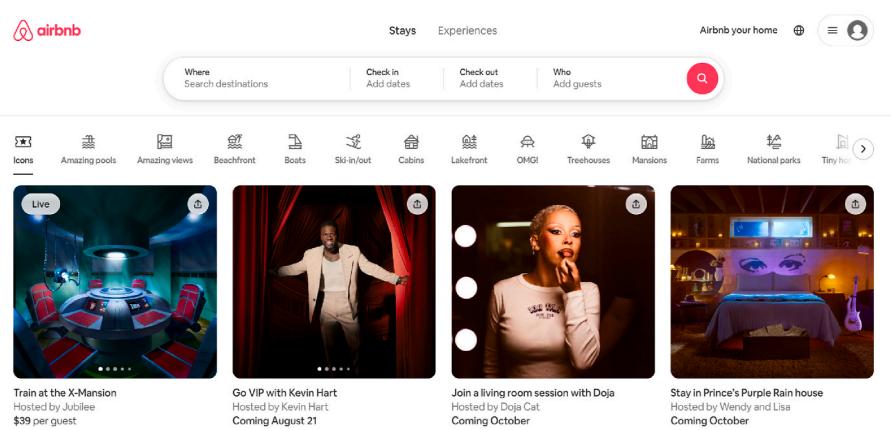


Fig. 10. Screenshot of the Airbnb official website.

theoretical construct that can explain how consumers perceive luxury online, a domain where visual and interactive elements are paramount.

Curvature, whether sharp or rounded, influences user experience by engaging cognitive and affective processing mechanisms. Our findings demonstrate that sharp corners are perceived as more luxurious in digital environments, aligning with theories of cognitive fluency and embodiment that suggest how design elements can either ease or complicate cognitive processing and affect emotional responses (Reber, Schwarz, & Winkielman, 2004). Sharp corners, which are often associated with precision, exclusivity, and control, activate a cognitive schema that aligns with luxury, sophistication, and premium positioning, as suggested by spreading activation theory (Collins & Loftus, 1975). In contrast, rounded elements evoke comfort and approachability, appealing to consumers' subconscious desire for relaxation and engagement, in line with the biophilia hypothesis (Wilson, 1986), which posits an innate human preference for natural, organic forms.

By introducing curvature as a mediating construct between design aesthetics and consumer perceptions, our study offers a novel theoretical framework for understanding how digital design shapes luxury perception. This framework provides a foundation for future research to explore how various design elements—beyond curvature—affect consumer behavior and brand perception in digital contexts. Moreover, our study bridges a gap in the literature by demonstrating that digital environments necessitate distinct theoretical considerations from physical ones, challenging traditional theories that have predominantly focused on tangible attributes.

Our study contributes to the existing body of literature on hotel website design by examining the impacts of corner curvature and font

curvature on hedonic values and readability, and the subsequent effects of these factors on perceived luxury. Considering the growing popularity of hotel websites and their critical role in competitiveness, extensive research has explored various aspects, including usability, perceived quality, evaluation models, marketing roles, and design effects (Bai, Law, & Wen, 2008; Kaplanidou & Vogt, 2006; Park, Gretzel, & Sirakaya-Turk, 2007; Perdue, 2002; Tang, Jang, & Morrison, 2012; Chung & Law, 2003; Ip, Law, & Lee, 2011; Law, 2019; Leung, Law, & Lee, 2016; Bai, Hu, & Jang, 2007; Baloglu & Pekcan, 2006; Schmidt, Cantalops, & dos Santos, 2008; Ting, Kuo, & Li, 2012; Jeon & Jeong, 2017; Loureiro, 2015). Our findings extend the understanding of hedonic and cognitive dimensions in online user experience within the luxury hotel context, showing that rounded fonts and corners improve hedonic values, with rounded fonts also enhancing readability, while sharp corners contribute to the perception of luxury. Both hedonic values and readability positively influence perceived luxury. Ultimately, this study underscores the importance of integrating both aesthetic and functional design elements to create a holistic and compelling online user experience, providing further insights for enhancing the design and effectiveness of hotel websites.

Our study also expands upon the framework proposed by Chan, Law, Fong, and Zhong (2021) by emphasizing the interdependence of sensory and cognitive dimensions in crafting effective digital experiences for luxury brands. While previous studies have conceptualized sensory and hedonic design as key features of hospitality websites, our study shows that specific visual elements, such as font and corner curvature, can evoke emotional responses and affect user engagement more profoundly than previously understood. This integration underscores the necessity

of balancing affective (emotional engagement through sensory and hedonic design) and cognitive (usability and readability) dimensions to craft compelling digital experiences for luxury brands, thereby providing a new lens for understanding the effectiveness of luxury website design.

In advancing the theoretical discourse on digital luxury, our study presents a conceptual bridge between digital and physical luxury experiences, connecting virtual design domains with tangible brand manifestations. We propose that digital design elements like curvature function not only as visual signals but also as semiotic resources that convey cultural meanings of luxury, exclusivity, and sophistication. This challenges and expands upon traditional notions of luxury, which have often been confined to physical environments and service excellence (Batat, 2019; Hyun, Park, Hawkins, & Kim, 2022). By highlighting how abstract branding concepts translate into specific digital design choices, we offer a new theoretical perspective on the evolving nature of luxury in the digital age.

Our research also introduces the concept of a design-led strategy as an essential component of digital luxury branding. This perspective is crucial in a digital-first landscape where consumer engagement often begins online. We argue that the anticipatory phase of luxury experiences is increasingly shaped by digital interactions, making design not just a practical consideration but a theoretical framework that can inform how brands craft their identities and influence consumer expectations. This approach suggests that digital design elements are integral to luxury branding strategies and opens new avenues for interdisciplinary research integrating Human-Computer Interaction (HCI), cognitive psychology, and luxury marketing.

Contributing to the conversation on user interface (UI) design, our study provides empirical support for a revitalized form of skeuomorphism that marries aesthetic appeal with functionality (Bakki, 2023; Bollini et al., 2016). Examining the implications of modern design trends like Google's Material Design and Microsoft's Fluent Design for luxury branding, this research underscores the adaptability of UI design philosophies to luxury consumers' evolving expectations in the digital era. By intersecting Human-Computer Interaction (HCI) insights with luxury branding strategies, our study highlights its interdisciplinary scope and paves the path for future research into how principles of digital graphic design can innovatively influence product representation within the hospitality business sector. Additionally, the influence of Mac-driven design cannot be overstated in this context. Apple's design philosophy, with its early adoption of skeuomorphism in iOS, the transition to a flat design aesthetic with iOS 7, and its current eumorphism approach blends flat design with subtle depth and layering to create a semi-flat design (Deakin, 2023), has profoundly shaped industry standards. As Mac-driven software and hardware are central to the design industry, often setting benchmarks for visual appeal and user experience, future research should explore how specific design principles, such as the use of depth, layering, and clean aesthetics, can be further integrated into luxury branding strategies.

Overall, our study provides a foundational step towards theorizing digital design as a critical element in shaping luxury perception. By positioning curvature in website design as a theoretical construct, we call for a rethinking of how digital environments influence consumer behavior and brand perception, urging future scholars to further explore the implications of design choices on luxury experiences.

5.2. Practical and design implications

This research outlines a practical framework for luxury hotels aiming to project a high-class yet approachable online identity. This strategic recommendation not only has implications for luxury hotel's digital presentation but also suggests broader applications for digital presentation across various luxury sectors. For practitioners, especially digital marketers and website designers working with luxury brands, this research underscores the importance of incorporating specific design

elements to enhance the luxury appeal of their online presence. The strategic combination of sharp corners and rounded fonts offers a concrete guideline for creating websites that project luxury while ensuring an engaging user experience. Moreover, the association of rounded design elements with approachability and enjoyment, and sharp elements with professionalism and sophistication, offers a guide for tailoring website design to match the brand's messaging. For instance, a luxury brand aiming to appear more accessible and user-friendly might emphasize rounded fonts in its content, while a brand aiming to underscore its exclusivity and premium status might favor sharp corners in its layout.

Given that rounded font curvature is linked to higher readability, luxury brands could strategically use rounded fonts for crucial information and calls to action. Brands could utilize rounded fonts for crucial website content such as product details and service offerings to make this information easier to comprehend. The inherent readability of rounded fonts helps ensure that messages are clearly communicated, reducing the cognitive load on visitors and enhancing their ability to absorb and retain information. Moreover, calls to action are pivotal in guiding user behavior and facilitating conversions (Reddy, 2023). Applying rounded fonts to CTAs such as "Discover More," "Book Now," or "Sign Up" could make these buttons not only more noticeable but also more inviting, as the friendliness of rounded fonts contributes to a more welcoming user interface that likely encourages interaction and engagement.

Moreover, employing rounded fonts may enhance website navigation. As rounded fonts are linked to improved readability, applying them to essential navigational elements—such as menu options and dropdown lists—can possibly facilitate users in navigating the site more effortlessly. This leads to a smoother and more intuitive browsing experience, which is particularly beneficial on complex luxury brand websites where delivering a seamless navigation experience is crucial to upholding the brand's premium image. The personality of these rounded fonts, characterized by their friendly and approachable appearance, contributes to a smoother and more intuitive browsing experience. This is particularly beneficial on complex luxury brand websites where delivering a seamless navigation experience is crucial to upholding the brand's premium image. Furthermore, the composition of fonts plays a significant role in their effectiveness. Rounded fonts typically have a more uniform stroke width and open counters, which make them easier to read quickly and from a distance. This clarity can reduce cognitive load, allowing users to find what they need without unnecessary effort. Additionally, the design of graphic elements such as picture boxes and icons could interact with the impacts of fonts on navigation. For example, using rounded corners on picture boxes and icons can create a cohesive visual theme that complements the rounded fonts. This consistency in design elements may help users quickly identify navigational cues and understand the structure of the website, further simplifying navigation and reinforcing the brand's luxury image. Future research is needed to explore these aspects, uncovering the nuances of how rounded fonts improve readability and navigation.

To capitalize on the hedonic value associated with rounded corners and fonts, brands could integrate these design elements in areas of the website aimed at storytelling or conveying the brand's heritage and values. For example, a brand could utilize rounded design elements within narrative sections of the website, such as the brand's history, artisanal craftsmanship stories, or the journey of specific products. The softness of rounded corners can make these stories feel more engaging and relatable, inviting users to immerse themselves in the brand's world. Moreover, a brand could also incorporate roundness in visual storytelling elements, such as photo galleries, videos, and interactive timelines.

Lastly, while hotel websites are a primary focus in the current study, the results have broader applications across various luxury brand contexts, such as fashion brands and editorials. For instance, Luxury fashion brands could use rounded fonts in their online and print advertisements

to evoke warmth and approachability, enhancing emotional connections with their audience. Conversely, angular design elements can maintain a sense of high-end professionalism and exclusivity. In high-end magazines like Vogue or Harper's Bazaar, combining rounded fonts for body text with sharp elements for headlines and section dividers may create a visually appealing and engaging experience that balances approachability with sophistication. These principles could also potentially be applied to other luxury sectors, such as jewelry, automotive, and high-end real estate websites. By leveraging insights on font and corner curvature, these sectors can enhance their online presence to better align with their luxury status. Overall, integrating aesthetic and functional design elements based on our findings helps luxury brands create a compelling and effective user experience.

5.3. Limitations and future research

This study opens avenues for future research to explore the nuances of curvature in design elements. A key question arises: is there a threshold at which curvature's positive effects on hedonic value and readability peak and then diminish? Identifying this optimal degree of curvature could significantly enhance website user experience design. Future research is suggested investigating whether the impact of curvature on user perception follows a non-linear pattern, perhaps an inverted U-shaped curve, where benefits increase to a point before declining.

Cross-cultural considerations are an important aspect of hotel website design (Lehto, Shi, Anaya, Lehto, & Cai, 2018). The current study did not capture this aspect. Different cultural backgrounds may interpret visual design cues in distinct ways. For example, in cultures where harmony and roundedness are esteemed, such as in traditional Chinese aesthetics, might the interpretation of prestige and luxury in web design diverge from our findings? On other words, such cultural values may necessitate a different approach to integrating curvature in luxury design so as to resonate with local sensibilities. Investigating cultural dimensions can reveal important insights into global web design practices.

As the digital luxury domain continues to expand, we encourage future research to delve deeper into areas such as the effects of other graphic design elements like layout and color, the mechanisms behind the impacts of graphic designs on branding strategies, the possible differing impacts on different luxury hotel sub-segments, and the roles of graphic design in multi-interactions within the digital realm (Holmqvist, Wirtz, & Fritze, 2020). Our study explored the impacts of font and corner curvature on user experience and perception of luxury. However, each of the various components on a digital page, such as headline typography, body text, images, picture box shapes, and graphic elements, contributes to the overall aesthetic and functional effectiveness of a webpage (Bringhurst, 2004). Future research should investigate further as to how these individual elements interact to influence user experience comprehensively. For example, the choice of headline typography can set the tone for the entire page, significantly affecting how users perceive the content and engage with it. Similarly, the arrangement of text and images, the shapes of picture boxes, and the use of graphic elements can all enhance or detract from readability and visual appeal. Understanding these interactions could offer valuable insights into optimizing web design for improved user satisfaction and engagement. By examining the interplay between these components, future studies can provide a more holistic perspective on their collective impact on user experience, ultimately guiding the creation of more effective and aesthetically pleasing digital interfaces.

Future research can expand on our findings by investigating how additional design elements, such as size, weight, color, and screen dimensions, impact readability and user experience. For instance, the size and weight of fonts can significantly influence how easily users read and comprehend text on different screens, while color choices affect both aesthetic appeal and legibility. Screen dimensions play a crucial role in

how information is organized and presented, which in turn affects user engagement and satisfaction. Additionally, examining how layouts adapt to multiple device formats and proportions is essential for ensuring consistent and high-quality user experiences across different platforms. Responsive design techniques that adjust layout elements to fit various screen sizes and orientations are crucial for maintaining usability and visual appeal. Understanding the effectiveness of these techniques can guide designers in creating interfaces that are both flexible and consistent. Moreover, future studies can provide deeper insights into optimizing digital content for diverse audiences across different age groups. Future research could investigate how various age demographics interact with digital interfaces, identifying specific preferences and challenges faced by each group. For example, older adults might benefit from larger font sizes and higher contrast colors to improve readability, while younger users might prefer more dynamic and colorful designs. Understanding these differences can help tailor design elements to meet the unique needs of each age group.

The trend of reverting to rounded designs, as observed in both user preferences and the practices of leading tech companies, underscores a significant shift in design philosophy that prioritizes user experience. Our study corroborates this trend by demonstrating that rounded designs not only enhance hedonic values but also improve readability. However, the question of whether this trend will persist is pertinent and warrants further investigation. Future research should explore the long-term sustainability of rounded design preferences by examining evolving user behaviors, technological advancement, and market trends. For instance, a longitudinal study could track user interactions with rounded and sharp designs across various digital platforms over years. This research could measure user satisfaction, engagement levels, and emotional responses, providing data on how preferences may shift over time. Additionally, investigating how new technologies, such as augmented reality (AR) and virtual reality (VR), influence design aesthetics could offer insights into future trends. For example, the integration of rounded design elements in AR and VR environments might enhance user immersion and comfort, suggesting a potential area for sustained preference. Furthermore, analyzing market feedback from users, such as the adoption rates of rounded designs by leading tech companies and their impact on competitive advantage, could reveal whether these design choices translate into long-term market success. By continuously monitoring and analyzing these factors, researchers can better predict the longevity of the rounded design trend and its implications for UX and UI design practices.

Impact statement

This research stands at the forefront of luxury brand digital presentations. It represents the first application of the Biophilia Hypothesis to hotel website design with a focus on using design cues and textual presentation to influence brand perceptions.

This research pioneers the exploration of how edge curvature and typeface—two indispensable elements of website graphic design—interact to shape the perception of luxury in digital brand presentations.

The results suggest that hoteliers should strategically tailor their websites to evoke a hedonic experience, enhance functionality, and reinforce brand perception.

It notes that curved corners and fonts make a website feel enjoyable, while sharp corners and fonts convey sophistication. This nuanced insight opens the door to subtle but powerful web design tweaks that can transform user experience and enhance brand perception.

For luxury hotels, we propose a design formula that includes a strategic mix of sharp corners and rounded fonts.

CRediT authorship contribution statement

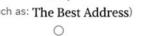
Jun Chen: Writing – review & editing, Writing – original draft,

Visualization, Validation, Software, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Xinran Lehto:** Writing – review & editing, Supervision, Resources, Project administration, Investigation, Conceptualization.

Declaration of competing interest

We declare no conflicts of interest in this work.

A Appendix.

<p>Q1-1</p> <p>1.1 The fonts on the hotel's website look:</p> <div style="display: flex; justify-content: space-around; align-items: center;"> Rounded (such as:  Sharp (such as:  Hard to tell the difference </div>	★
<p>Q1-2</p> <p>1.2 The corners of any shapes on the hotel's website look:</p> <div style="display: flex; justify-content: space-around; align-items: center;"> Rounded (such as:  Sharp (such as:  Hard to tell the difference </div>	★

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