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Multi-Sensory Branding through Sight and Taste: A Systematic Literature Review of Strategic Impacts on Consumer Behavior

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ABSTRACT

In present fragmented and hyper-competitive marketplace, brands compete not only for consumer attention but also for emotional resonance, memory encoding, and long-term loyalty. With increasing digital saturation and commodification of product features, traditional marketing strategies that rely solely on rational appeals have become inadequate. This review investigates the growing field of multi-sensory marketing with a particular focus on the synergy between visual and gustatory stimuli and how their integration shapes brand loyalty. Drawing on recent literature in consumer psychology, neuroscience, and marketing theory, the paper examines the independent and combined roles of sight and taste in forming consumer perceptions, emotional associations, and trust. The review synthesizes emerging empirical evidence and offers a strategic framework for aligning visual design and taste experience to enhance sensory congruity, customer satisfaction, and brand preference. Additionally, the review addresses conceptual limitations, ethical boundaries, and proposes future directions, emphasizing the need for more cross-modal, cross-cultural, and digitally immersive studies. The findings underscore the importance of designing multi-sensory brand experiences that go beyond aesthetics and flavor, establishing emotionally rich and coherent brand encounters that foster loyalty in both physical and digital realms.

Keywords: *Sensory marketing, brand loyalty, visual perception, taste perception, multi-sensory branding, consumer behavior, sensory congruence, emotional branding, cross-modal interaction, experiential marketing*

Introduction

The present world has highly fragmented and hyper competitive marketplace where in brands are no longer competing solely for attention rather they vie for emotion, memory, and trust. With rising digital saturation and nearly unlimited brand options, traditional marketing approaches which are centered on rational appeals, pricing, and functional messaging are getting increasingly insufficient for cultivating long term consumer loyalty (Ramdani & Belgiawan, 2023; Morrison & Crane, 2007). Consumers today seek immersive and emotionally resonant brand experiences, driving a shift toward multi sensory marketing strategies that are designed to engage multiple human senses to foster brand attachment and memorable consumption experiences (Aslan et al., 2023; Krishna, 2012). This review emerges in response to the growing academic and managerial interest in multi sensory branding, as companies move beyond transactional interactions to build experiential brand identities. While individual senses have been studied independently (Elder & Krishna, 2011), there remains a significant gap in the literature regarding their incremental and synergistic effects on brand loyalty (Oduguwa, 2015). The goal of this paper is to synthesize insights from marketing, consumer psychology, design studies, and behavioral neuroscience to understand how visual and gustatory stimuli independently influence consumers, and how in combination they reinforce brand associations and foster deeper loyalty. Moreover, this review aims to offer practical frameworks for brands to strategically leverage sensory synergy as a tool for sustainable competitive advantage.

Research Objectives

This review seeks to achieve the following key objectives:

- To explore the independent roles of sight and taste in shaping consumer perceptions, emotional responses, and brand loyalty across product categories.
- To examine cross modal interactions between visual and gustatory stimuli, focusing on how their integration enhances sensory congruity and reinforces brand memory.
- To synthesize empirical evidence from marketing, psychology, and design literature that explains the mechanisms of multi-sensory perception in branding contexts.

- To identify key challenges and opportunities for marketers in applying visual gustatory synergy to build stronger, more emotionally resonant brands.

Research Questions

Based on the above objectives, the following research questions (RQs) guide this review:

- RQ1: How do taste and sight individually contribute to consumer brand experience and loyalty?
- RQ2: What psychological and perceptual mechanisms explain the interaction between visual and gustatory stimuli?
- RQ3: How does sensory congruence between sight and taste affect emotional memory, trust, and brand preference?
- RQ4: In what ways can brands strategically integrate visual and taste elements to differentiate themselves and foster long term consumer engagement?
- RQ5: What are the existing gaps in cross modal sensory research, and how can future studies address them using interdisciplinary approaches?

By aligning the literature review with these focused research questions, this paper aims to not only summarize the existing knowledge base, but also to generate new theoretical insights and managerial implications that advance the field of sensory branding.

Literature review

The relevance of sensory marketing has grown significantly in recent years, driven by a growing recognition that conventional marketing strategies rooted primarily in rational information processing fail to fully capture the emotional and experiential dimensions of consumer behavior (Zha,2024).Within this expanding body of work, particular attention has been paid to how individual sensory modalities such as sight or taste influence brand experience, but the combined or synergistic effect of these modalities remains an underexplored frontier (Spence,2023;Kothari&Sharma,2019).This gap in the literature underscores the academic significance of the present review, which aims to consolidate findings across disciplines to examine how visual and gustatory cues jointly shape brand perception and loyalty (Zha et al., 2024).The review is especially timely given that multi sensory brand strategies are increasingly deployed in sectors like food, hospitality, and health, but there is limited theoretical guidance on how to synchronize sensory modalities at scale (Tandfonline, 2024).While existing studies have tended to isolate specific sensory impacts, recent empirical evidence suggests that cross modal interactions such as how visual design primes taste expectations are powerful but not yet systematically studied in consumer contexts (Spence et al., 2023). There are still several unexplored or underexplored areas in sensory synergy research, particularly with regard to sight and taste:

- Digital Taste Simulation: As e commerce and digital food delivery platforms grow, there is limited understanding of how visual cues in digital interfaces simulate or mislead taste expectations. Future studies should investigate the neuro psychological impacts of screen based sensory experiences.
- Neurosensory Validation: While behavioral data is abundant, there is a paucity of neuro- imaging or bio- metrics based evidence that can validate the neural mechanisms behind sensory synergy. Combining fMRI, EEG, or eye tracking with consumer studies could yield deeper insights into attention, emotion, and memory formation.
- Longitudinal Effects: Most studies assess short term responses to sensory stimuli (e.g., immediate preferences or taste ratings). Longitudinal research is needed to explore how multi sensory brand experiences influence brand loyalty over time, including habituation, sensory fatigue, and adaptation effects.
- Ethical Boundaries: There is a lack of research examining how far brands can or should go in influencing subconscious sensory processing without violating consumer autonomy, especially in marketing to children or vulnerable populations.

Why This Review Was Conducted

The review was undertaken in response to the following scholarly and practical needs:

1. A fragmented body of literature lacking integrated models of sight–taste synergy in branding (Tandfonline, 2024).
2. Rising academic consensus that sensory experiences, particularly in food and beverage marketing, are central to building emotional brand attachment (Zha et al., 2024).
3. Emerging managerial demands for evidence based frameworks that help brands move beyond aesthetics toward experiential cohesion (Kothari & Sharma, 2024).

Review Strategy and Methodology

To conduct this review, a narrative and integrative synthesis approach was used. First, relevant peer reviewed studies from 2018 to 2024 were identified through databases including Scopus, Web of Science, and Google Scholar, using keyword combinations such as “sensory marketing,” “multisensory branding,” “visual perception,” “taste perception,” and “cross modal integration.” Only studies with empirical or conceptual contributions to visual or gustatory marketing were included. Preference was given to high impact journals, systematic reviews, and studies using experimental design, especially those that evaluated consumer loyalty, brand memory, or affective response. Key theories cross modal congruence, affective forecasting, and embodied cognition guided the categorization of themes in the review (Spence et al., 2023).

The Role of Taste in Consumer Behavior and Loyalty

Taste, plays a vital role in shaping consumer attitudes, particularly within food, beverage, and personal care industries, but also increasingly in sectors where taste is invoked symbolically. The hedonic, emotional, and experiential dimensions of taste make it a powerful sensory modality in building consumer brand relationships, often at a subconscious or affective level (Krishna, 2012; Spence, 2015).

Taste as a Hedonic Experience

From a psychological standpoint, taste serves as a direct hedonic stimulus, producing either pleasurable or aversive responses almost instantly. Unlike cognitive evaluations, taste experiences are visceral, engaging limbic regions of the brain responsible for emotion and memory (Rolls, 2005). The affective pleasure derived from taste can produce positive reinforcement mechanisms, where repeated exposure to a pleasurable flavor leads to brand preference and habitual purchasing (Yeomans, 2006). In marketing contexts, taste satisfaction is often the single most important predictor of brand loyalty for consumable products. Elangovan and Padma (2017) found that perceived taste quality had a stronger influence on repeat purchase behavior than packaging, price, or health claims. Furthermore, hedonic adaptation where repeated exposure to the same sensory input reduces its impact can be mitigated through taste variety or seasonal flavor extensions, maintaining engagement without compromising brand consistency (Kahn, 1995).

Taste and Emotional Memory

Taste is deeply tied to emotional memory and nostalgia, making it one of the most emotionally loaded sensory experiences (Herz, 2004). This is due in part to its cross modal association with olfaction, but also because taste stimuli are often linked to autobiographical memory family meals, cultural rituals, or childhood snacks (Krishna & Elder, 2010). Marketers strategically leverage these associations by developing campaigns that evoke warmth, belonging, or comfort through taste driven storytelling. For example, brands like Coca Cola and Nestlé often reference nostalgia and heritage in their advertising, reinforcing the emotional connection through taste consistency across generations. In such cases, taste acts as both a sensory trigger and a mnemonic anchor, reinforcing brand identity and cultural familiarity (Schuldt, 2013).

Taste as a Signal of Quality and Authenticity

Perceived taste also functions as a proxy for product quality, particularly in categories where objective evaluation is difficult. Studies have shown that subjective flavor enjoyment often overrides health information, price, or even brand name in determining consumer satisfaction (Ragunathan, Naylor, & Hoyer, 2006). The taste of a product is not merely judged in isolation, but in conjunction with expectations shaped by branding, packaging, and even color (Spence, 2015). This suggests that taste perception is highly malleable and influenced by extrinsic cues. For instance, a low calorie dessert described as “guilt free” may taste better if paired with elegant visual presentation or premium packaging (Shiv & Nowlis, 2004). Hence, marketers must not only ensure taste quality but also shape expectations that align with the flavor experience.

Beyond Food: The Metaphorical Extension of Taste

While taste is most directly associated with consumables, it is increasingly invoked metaphorically in categories like cosmetics, fashion, and lifestyle branding. Terms such as “flavor,” “zest,” or “sweet” are commonly used in naming conventions, product descriptions, or even brand slogans to evoke sensory richness and hedonic appeal (Oduguwa, 2015). Beauty brands like Rhode or Fenty Beauty name lip products after desserts or fruits (“Cinnamon Roll,” “Berry Juice”), creating a synthetic bridge between visual design, product usage, and imagined taste (Krishna & Schwarz, 2014).

Taste Sampling and Trust Building

From a behavioral perspective, in store product sampling is one of the most effective mechanisms to translate taste into trust. Empirical research demonstrates that trial-based exposure through taste increases purchase likelihood, especially for unfamiliar brands or categories (Heilman, Lakishyk, & Radas, 2011). This is rooted in experiential marketing theory, which posits that direct engagement with a product fosters perceived authenticity and brand transparency (Schmitt, 1999). Retailers like Costco and Sam’s Club have institutionalized taste sampling as a strategic loyalty building tool, particularly for premium or new products. The key is that taste provides immediate, sensory feedback minimizing uncertainty and reinforcing credibility.

The Influence of Visual Perception on Brand Identity and Trust

Visual perception plays a central role in consumer decision making and brand positioning. As the dominant human sense, sight processes up to 80% of all sensory information (Lindstrom, 2005), making it the first and most frequent channel through which consumers interact with brands. Visual cues serve both aesthetic and symbolic functions, shaping consumer interpretations and eliciting affective responses well before any verbal information is processed (Henderson et al., 2003). Visual stimuli in branding do not simply communicate information; they operate as semiotic systems, conveying meaning, identity, quality, and emotional resonance (Underwood & Klein, 2002). This section explores how visual design contributes to consumer trust formation, brand recognition, emotional engagement, and purchase intentions, and how it interacts with other sensory modalities, particularly taste, in influencing overall brand loyalty.

Visual Design and Brand Identity Formation

Visual elements serve as a brand's most enduring and accessible identity markers. A consistent and distinctive visual identity facilitates rapid brand recognition, even in cluttered environments (Keller, 1993). For example, McDonald's golden arches or Apple's minimalist silver logo elicit instant recall and associative meanings. Research by Orth and Malkewitz (2008) emphasizes the impact of holistic package design on consumer brand impressions, showing that shape symmetry, color harmony, and design complexity significantly influence perceived brand personality (e.g., exciting vs. competent). These visual associations play a critical role in how consumers categorize and compare brands, especially in low involvement purchase contexts where heuristic processing dominates (Petty & Cacioppo, 1986), furthermore when visual identity aligns with product quality and emotional tone, it strengthens schema congruity, leading to better brand recall, message retention, and consumer preference (Hagtvedt & Brasel, 2016).

The Psychology of Color, Shape, and Imagery

Colors, shapes, and imagery activate affective and cognitive associations in consumers, many of which are culturally learned and biologically ingrained. For instance, red is often associated with excitement or urgency, while blue conveys trust and stability (Labrecque & Milne, 2013). Similarly, rounded shapes are perceived as softer and more comforting, whereas angular shapes may signal strength or harshness (Veryzer & Hutchinson, 1998). These design principles are frequently used in packaging and product form to signal product type, function, or emotional tone. In a retail context, packaging design can function as a "silent salesperson," especially when consumers lack access to product trials (Underwood & Klein, 2002). As a result, visual communication becomes a primary tool in shaping perceived quality, taste expectations, and brand legitimacy. Visual imagery also plays a role in imaginative engagement, allowing consumers to simulate product use or consumption. This is particularly important in online or indirect shopping environments, where visual cues must compensate for the absence of tactile or gustatory experiences (Schlosser, 2003).

Visual Consistency and Consumer Trust

Beyond aesthetics, visual consistency across touchpoints (e.g., website, packaging, advertising) is a critical driver of brand trust. Inconsistent visual identity can create cognitive dissonance,

reducing credibility and consumer confidence (de Chernatony & McDonald, 2003). In contrast, coherent visual branding signals professionalism, authenticity, and brand maturity key ingredients for fostering long term loyalty. According to Morrison and Crane (2007), the visual tone of marketing materials (e.g., luxury vs. minimalist vs. playful) also affects brand trustworthiness by aligning with consumer expectations. For instance, high end brands often use muted colors and serif fonts to signal sophistication, while youth oriented brands use vibrant colors and playful illustrations to evoke fun. Visual trust cues are especially important in digital commerce, where consumers rely on website design, interface aesthetics, and imagery to assess risk and authenticity in the absence of physical contact (Wells, Valacich, & Hess, 2011).

Visual Cues and Taste Expectation

Research from cross modal perception indicates that visual stimuli can significantly alter gustatory expectations and evaluations. Spence et al. (2010) demonstrated that the color of food or packaging can influence perceived sweetness, freshness, or intensity meaning that visuals effectively "prime" taste experiences before consumption occurs. For example, yogurt presented in blue containers was perceived as less sweet than the same product in red containers. This interaction is especially relevant for multi sensory marketing, where aligning visual cues with the intended flavor profile enhances congruency, leading to higher consumer satisfaction and stronger memory encoding (Reinoso Carvalho et al., 2016). In branding strategy, this implies that visual design must not only attract attention but also set accurate sensory expectations. Mismatches such as vibrant packaging for a bland flavor may result in expectation disconfirmation, lowering brand evaluations and reducing repeat purchases (Schifferstein & Desmet, 2008).

Cross Modal Integration: The Synergy Between Sight and Taste

Recent advancements in consumer psychology and neuroscience have highlighted the significance of cross modal perception the phenomenon where stimulation in one sensory modality (e.g., sight) influences perception in another (e.g., taste). In the context of marketing, understanding this interplay is crucial because consumers rarely engage with sensory inputs in isolation; rather, they experience brands through a multisensory interface that affects

attention, interpretation, and memory formation (Spence, 2015). This section explores how visual and gustatory stimuli interact, forming synergistic sensory experiences that amplify emotional impact, enhance brand coherence, and promote consumer loyalty.

Theoretical Foundations of Sensory Synergy

The synergy between sight and taste is grounded in theories of cross modal correspondence, which posits that certain features of one sensory modality systematically align with features of another. For instance, consumers often associate round shapes with sweet tastes and angular shapes with sour or bitter ones (Spence & Gallace, 2011). Similarly, warmer colors (like red or orange) are linked with stronger or sweeter flavors, whereas cooler tones (like blue) may reduce perceived intensity (Velasco et al., 2016). These associations are not arbitrary; they are shaped by cultural learning, perceptual expectations, and even neurological overlap in processing pathways. As such, marketing stimuli that exploit these correspondences can create more congruent brand experiences, thereby improving product evaluations and sensory satisfaction (Krishna & Schwarz, 2014).

Visual Influence on Taste Perception

Empirical studies have repeatedly shown that visual cues significantly affect how consumers evaluate taste. In a landmark experiment, Shankar et al. (2010) demonstrated that manipulating the color of beverages altered how participants rated sweetness, freshness, and flavor intensity—even though the liquid composition remained constant. Similarly, when identical yogurts were served in blue and pink containers, the latter was perceived as sweeter and more enjoyable (Wang & Spence, 2019). These findings highlight that taste is not just a biological reaction but a cognitive construction, influenced by expectations primed by visual input. Brands can use this insight to design packaging, advertisements, and retail environments that signal desirable flavor profiles before consumption, enhancing satisfaction through expectation confirmation (Deliza & MacFie, 1996).

Taste as a Reinforcer of Visual Memory

The relationship between sight and taste is not unidirectional. While visual cues shape flavor perception, taste can also reinforce visual memory, especially in cases where the sensory experience is emotionally charged or novel. Research in sensory branding suggests that multisensory congruency improves both episodic memory (recall of a specific experience) and semantic memory (general knowledge about a brand) (Schiffstein & Desmet, 2008; Elder & Krishna, 2011). For instance, when a food product's flavor matches the visual promise implied by its packaging (e.g., a tangy lemon snack in yellow wrapping), consumers exhibit higher brand recall and are more likely to engage in repeated purchases. This reinforcement loop—where the taste validates the visual and the visual reinforces the taste—creates a coherent sensory identity that becomes encoded in long term memory.

Enhancing Brand Loyalty through Multisensory Coherence

The ultimate marketing value of sensory synergy lies in its capacity to foster emotional bonding, cognitive ease, and trust, all of which are foundational to brand loyalty (Brakus, Schmitt, & Zarantonello, 2009). When the visual aesthetics and gustatory experience of a brand are aligned, consumers experience perceptual fluency, which facilitates positive evaluations due to reduced processing effort (Reber et al., 2004). This effect is particularly potent in hedonic product categories, where pleasure, indulgence, and memory associations are central to brand choice. Moreover, brands that consistently deliver multisensory coherence across packaging, advertising, and product performance signal professionalism and reliability, reinforcing trust and reducing decision fatigue (Hagtvedt & Brasel, 2016).

Successful examples of this approach include:

- Lindt Chocolate, which uses gold foil (visual luxury) and smooth textures (taste smoothness) to position itself as indulgent and refined.
- Tropicana, whose vibrant orange packaging aligns with freshness and citrus taste, maintaining congruity between sight and flavor.

Managerial Implications and Future Research

For marketers, leveraging the synergy between taste and sight requires more than aesthetics—it involves a deep understanding of perceptual psychology, semiotics, and brand storytelling. Practitioners should conduct sensory audits to evaluate whether visual and gustatory elements are coherent, congruent, and strategically aligned with consumer expectations. Moreover, there is a growing need for interdisciplinary collaboration between designers, flavor scientists, and marketers to craft integrated sensory strategies. As virtual and augmented reality technologies become more prevalent, future research must also explore how digitally simulated visuals influence real world taste perception, and vice versa.

Discussion

The findings synthesized throughout this review illustrate a compelling case for the strategic integration of sight and taste in building robust brand experiences. Drawing from marketing psychology, sensory neuroscience, and brand management literature, this section interprets the key themes from the reviewed studies and explores their theoretical significance and practical applications.

Theoretical Synthesis: Rethinking Sensory Loyalty

The literature highlights that brand loyalty is not merely a result of product satisfaction or rational evaluation. Instead, it is deeply intertwined with sensory emotional engagement, where consistent and pleasurable multi sensory experiences particularly involving sight and taste form the foundation of enduring consumer brand relationships (Krishna, 2012; Lindstrom, 2005). From a theoretical standpoint, the embodied cognition perspective (Barsalou, 2008) helps explain why sensory stimuli, particularly those involving taste and visual input, are so powerful: they engage the somatosensory and emotional systems of the consumer, creating associations that are felt, not just thought. Moreover, the affective conditioning framework (Stuart et al., 1987) supports the view that repeated exposure to sensory cues in emotionally rich contexts fosters positive brand attitudes, even in the absence of deliberate evaluation. Cross modal research further extends these theories, revealing that perception is multi sensory by default, and sensory congruence enhances perceptual fluency, brand coherence, and memory encoding (Spence, 2015; Schifferstein & Desmet, 2008). This challenges older linear models of consumer behavior and calls for a multi-sensory paradigm in branding theory.

Managerial Implications: Designing for Sensory Synergy

The evidence presented in this review underscores several managerial implications for leveraging sight and taste synergy in branding:

Brands should ensure that visual identity and gustatory experience are congruent in terms of emotional tone, symbolic meaning, and consumer expectations. For example, a premium chocolate brand using minimalist packaging and subtle flavor profiles creates a coherent identity, whereas a mismatch between loud visual design and bland flavor can trigger expectation disconfirmation and brand dilution (Deliza & MacFie, 1996). Marketers should conduct sensory audits across packaging, digital assets, and in store experiences to evaluate alignment and reinforce sensory trust. Consumers engage with brands not just for utility, but for the narratives and emotions they evoke. When taste experiences are supported by visual metaphors such as color palettes representing flavor intensity or imagery evoking cultural food rituals they create story rich interactions that enhance brand meaning and recall (Elder & Krishna, 2011; Hagtvedt & Brasel, 2016). Cross functional collaboration between designers, flavor developers, psychologists, and marketing teams is vital for multisensory innovation. Rather than adding sensory features as afterthoughts, brands should adopt co design frameworks where flavor, color, packaging shape, and visual style are developed simultaneously (Hultén, 2011). In physical retail, sampling strategies (taste trials) supported by ambient visual design (lighting, color schemes, merchandising) can strengthen brand immersion and purchase intent (Heilman et al., 2011). In digital spaces, interactive content (e.g., color themed recipes, AR flavor visualizations) can simulate the sensory experience and maintain brand consistency.

Ethical and Cultural Considerations

As sensory marketing increasingly targets subconscious processes, ethical concerns around consumer manipulation, health misconception, and cultural insensitivity emerge. For instance, designing products to “taste sweet” through visual cues (e.g., using red or pink) may lead consumers to overestimate nutritional value or over-consume (Schuldt, 2013). Marketers must therefore balance persuasion with transparency, ensuring that sensory cues do not mislead consumers, especially in sectors like health food, children’s products, or cross cultural markets where symbolic associations may vary widely.

Strategic Takeaways:

Table 1 Strategic Takeaways

Source (Author’s Own)

Strategy	Application	Impact
Sensory congruence	Align color, packaging, and flavor	Improves brand trust & recall
Multisensory storytelling	Use metaphorical taste cues in design & copy	Enhances emotional connection
Integrated design teams	Co-develop product, packaging & visuals	Reduces mismatch, increases innovation
Digital sensory simulation	Use color, animation, and imagery to convey flavor online	Maintains sensory branding in e commerce
Sensory ethics	Avoid deceptive visual taste cues	Preserves brand integrity

Conceptual Limitations of the Current Review

Firstly, the review has emphasized sight and taste as the primary sensory pair influencing brand loyalty. While this is deliberate given the review’s thematic focus, it limits the inclusion of other influential modalities such as smell, touch, and sound, which are known to interact with both sight and taste in real world brand experiences (Krishna, 2012; Spence, 2020). Secondly, the review is based on secondary data sources from scholarly articles, reports, and experimental studies, which may not fully capture real time market dynamics, cultural variability, or consumer subjectivity that evolve with

new technologies and trends. Moreover, most studies referenced are situated in Western markets, limiting the generalizability of the findings to diverse cultural or socio economic contexts. Lastly, although cross modal theories and experiments are discussed in depth, this paper does not include empirical data collection, such as consumer interviews, focus groups, or sensory experiments, which would offer richer contextual insights.

Future Research Directions

Given these gaps, the following directions are proposed for future research:

1. Cross cultural sensory congruence studies to assess how taste and visual expectations differ across markets and cultural contexts.
2. Multi-sensory branding in health conscious sectors, where ethical concerns about visual taste enhancement (e.g., artificially increasing perceived sweetness) are most relevant.
3. Development of sensory congruence measurement tools that quantify the degree of alignment between taste and visual elements in branding.
4. Experimental designs combining VR/AR with sensory feedback, to simulate realistic brand environments and analyze how multisensory inputs shape decision making in immersive contexts.
5. Consumer segmentation based on sensory sensitivity or preference, to personalize sensory marketing strategies and improve targeting effectiveness.

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