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The Impact Of Sensory Marketing On The Purchase Decision Of Environmentally Sustainable Products At Retail Stores: The Case Of The Food Sector In Vietnam

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ABSTRACT

Abstract: Sensory marketing plays a pivotal role in promoting sustainable consumer behavior due to its ability to influence perception and shape the shopping experience. In the context of economic downturn and increasing societal awareness of health and environmental issues, this strategy is considered a promising tool to enhance communication effectiveness and encourage responsible consumption. This study aims to identify and examine the impact of sensory marketing elements on the decision to purchase sustainable food products in Vietnam, employing a two-phase approach: an initial qualitative exploration followed by a quantitative survey involving a sample of 400 observations. The results indicate that 89.8% of participants are aware of sustainable consumption; all five senses have a measurable influence, with auditory stimuli demonstrating the strongest effect. The study contributes to clarifying the individual roles of sensory elements in shaping sustainable purchasing behavior, while also providing practical implications for businesses to effectively integrate sensory marketing into retail environments to enhance customer experience and promote environmentally friendly consumption.

Keywords: Sensory marketing, purchase decision, sustainable products.

THEORETICAL FRAMEWORK, RESEARCH HYPOTHESES, AND RESEARCH MODEL

Theoretical Framework

Sensory marketing

Sensory marketing is defined as “communicating with consumers through the senses of sight, hearing, smell, touch, and taste” (Tek & Engin, 2008). Focusing on consumers' sensory perception is considered one of the key approaches to reaching them and delivering an immersive experience. In practice, stimuli generated by marketing activities are initially received by the sensory organs, and perception is achieved through the interpretation of these sensations (Odabaşı & Barış, 2012). In marketing research, the once scattered investigations into the roles of individual senses in consumer behavior have been unified under the term “sensory marketing”, which refers to a marketing strategy that targets consumers' senses to influence their perception, evaluation, and behavior (Krishna, 2012).

Sensory components

Auditory

Auditory stimuli are processed when sound waves are received and transmitted to the brain, where they are interpreted and stored in memory. Hearing is one of the most fundamental and involuntary senses across species, and it is highly sensitive (M. L. Lowe, 2019). Humans perceive sound effortlessly, which makes auditory input capable of influencing both conscious and subconscious emotional and attitudinal states. Studies have shown that appropriate in-store music can increase customers' dwell time and spending (Praharaj, 2016), highlighting hearing as a powerful tool to enhance customer experience by modulating mood and shopping pace.

Vision

When light strikes the retina, photoreceptor cells convert it into electrical signals that are transmitted through the optic nerve to the brain, where the signals are interpreted as images. Among all senses, vision is considered the most dominant in shaping consumer attention and perception. Elements such as color, lighting, spatial layout, and product imagery generate strong first impressions that directly influence purchase decisions (Lindstrom, 2006). According to Valberg (2005), approximately 82% of information we process is derived through visual input, emphasizing the critical role of visual perception in all marketing strategies. Therefore, visual cues must be carefully considered to attract attention and foster consumer trust.

Taste

Taste is the sensory system that detects chemical stimuli through specialized receptors known as taste buds located on the tongue. Each taste bud contains specialized receptor cells capable of distinguishing specific chemical compounds. When taste is engaged, other senses act as filters: first, vision evaluates appearance (color, shape); next, olfaction identifies aroma to influence acceptance or rejection; then, Auditory registers sounds such as chewing; and touch assesses texture when food enters the mouth. Finally, signals from the tongue are sent to the brain, making taste a complex sensory experience and part of an integrated multisensory perception (Gómez & Mejía, 2013). Taste experience strengthens brand trust, enhances satisfaction, and encourages repeat purchase behavior-deepening emotional connection with customers and driving perceived value and sustainable competitive advantage for brands.

Haptics

Haptics is the sense that perceives physical stimuli through direct contact with surfaces, materials, and textures. According to Peck & Childers (2003), touch provides essential sensory information about physical attributes such as hardness, weight, temperature, and surface properties. These tactile signals are transmitted via receptors in the skin, muscles, tendons, and joints, and processed by the central nervous system, forming a direct link between the hands and the brain (Rodrigues, Silva & Duarte, 2017). Contemporary sensory psychology research shows that physical contact does more than convey sensory data, it fosters a powerful emotional bond between consumer and product. Hutmacher (2019) highlights that touch is the earliest formed sense in utero and one of the least degraded by aging, playing a critical role in building familiarity and trust. Marketing studies find that tactile interaction with product packaging or the product itself significantly enhances perceived value and positively influences purchase decisions (Murphy, 2018).

Olfaction

Smell is a chemical sense that detects and distinguishes odors through interaction between airborne molecules and receptors in the nasal epithelium. Activated olfactory receptors send neural signals to the brain, where specific smells are identified. As the first sense to develop post-birth, smell enables newborns to recognize their mothers within hours (Porter & Winberg, 1999; Kaitz *et al.*, 1987). Although adult olfactory sensitivity declines compared to animals, smell remains pivotal in triggering emotion through the limbic system (Bordegoni *et al.*, 2019). Hirsch (2007) emphasizes that in-store fragrance can activate the limbic system, evoking strong emotion and better recall of product names and imagery. Olson & Dover (2018) demonstrate that scents like freshly ground coffee or baked bread prolong store visits and boost customer spending.

Purchase decision

Consumer purchase decision-making is a complex, multi-stage process influenced by internal and external factors, typically passing through: (1) Need recognition, (2) Information search, (3) Evaluation of alternatives, (4) Purchase intention, and (5) Post-purchase behavior. Particularly, multisensory marketing creates memorable sensory experiences that inform and influence consumer evaluations and perceived product value by stimulating emotions and fostering an affective bond. Emotions can positively influence attitudes, thereby driving purchase decisions (Bian & Forsythe, 2012). According to the Elaboration Likelihood Model (Petty & Cacioppo, 1986), when consumers develop strong emotional ties with a brand, they are more likely to process information deeply, enhancing the cognitive impact on purchase decision-making.

Sustainable product

In the 1987 report *Our Common Future*, Brundtland first defined sustainable development as: “meeting the needs of the present without compromising the ability of future generations to meet their own needs”, balancing economic growth, social equity, and environmental protection. Félix Neto (2023) expands on this by noting that sustainable products go beyond “green” or “eco-friendly”; they minimize negative impacts and maximize positive contributions across economic and social dimensions throughout their life cycles.

Discussion On The Influence Of Sensory Marketing On Sustainable Food Purchase Decisions

Isacsson and Alakoski (2009) argue that human sensory systems are capable of accurately eliciting and identifying emotions. By understanding how consumers perceive products through each sense, businesses can craft highly personalized experiences. According to Dijrovik (2008), such personalization strengthens consumer-brand attachment and enhances brand distinctiveness. In an era where firms compete to win consumers’ affection and business performance, sensory marketing has emerged as a powerful tool enabling marketers and managers to realize these goals.

Research in sensory marketing has highlighted the impact of sensory stimuli on consumer behavior in various ways. These approaches can be classified into three categories: (1) research focusing on the individual impact of each sense on consumer behavior; (2) research investigating the combined effects of multiple senses within a single environment to create a cohesive and enhanced experience; (3) studies that aim to quantify and compare the relative influence of each sensory factor. The first research stream emphasizes the independent influence of each sense on perception and purchase decision-making. Raghurir and Krishna (1996, 1999) demonstrated that visual elements such as packaging color and shape strongly influence consumers’ perceptions of product size, quality, and value. Similarly, Wansink and Van Ittersum (2003) found that the size of serving utensils primarily a visual cue can affect food consumption volume through visual perception. Regarding olfaction, Krishna (2012) and Herz (2004) showed that scent not only evokes emotions but also forges strong memory associations with brands, thereby shaping purchasing behavior. Furthermore, Krishna, Lwin, and Morrin (2010), along with Peck and Childers (2003), confirmed the importance of

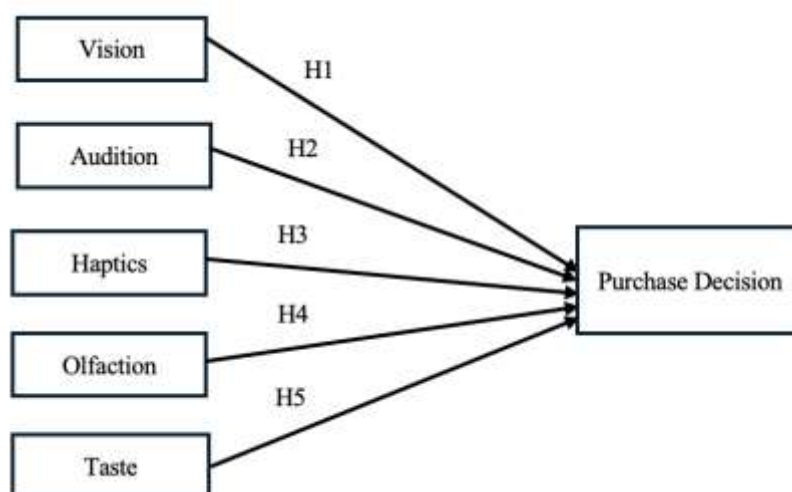
taste and touch, noting that natural flavors and tactile interactions with sustainable packaging significantly influence consumer trust and satisfaction.

The integrated approach in sensory marketing research centers on investigating the synergistic effect of simultaneous sensory stimuli within a retail environment to produce a more consistent and immersive customer experience. Spence, Puccinelli, and Krishna (2014) synthesized evidence suggesting that the coordination of lighting, scent, music, and tactile cues not only enhances relaxation but also increases the duration of in-store visits, indirectly encouraging purchasing behavior. Krishna (2012) further argued that the harmonious combination of visual and olfactory cues can reinforce the perceived sustainability of products, thereby enriching the overall shopping experience. A third group of studies focuses on determining and validating the extent to which each sense influences sustainable purchasing behavior. These studies not only measure the independent effects of each stimulus but also enable comparison between them. Aydinoglu and Krishna (2011), through a field study, measured the influence of sensory cues on brand perception and sales performance, revealing that visual and olfactory factors play critical roles in promoting the purchase of sustainable products, especially within the food sector. Additionally, Krishna, Lwin, and Morrin (2010) examined the relationship between taste and memory recall, concluding that olfactory stimuli significantly influence consumer perception in sustainable marketing contexts.

The body of literature, ranging from single sense analysis to multisensory integration and comparative assessments, contributes to a more comprehensive understanding of how sensory inputs shape consumer decision-making. These findings provide not only a robust theoretical foundation but also practical guidance for designing effective marketing strategies, particularly in the sustainable food market in Vietnam. However, focusing solely on individual senses often limits the ability to compare their relative importance, creating challenges for firms attempting to identify which sensory elements should be prioritized for resource allocation. As Krishna (2012) noted, quantitative research isolating the contribution of each sense within the broader sensory marketing framework remains limited. Even integrated models of multisensory experience, while offering a holistic view of consumer behavior, often lack clarity in distinguishing the varying roles of individual senses in the decision-making process (Hultén, 2015). Schmitt (1999), in his multisensory brand experience model, emphasized that the influence of each sensory input differs across product categories and experiential contexts, thereby rejecting the assumption of equal contribution. This complexity presents a challenge for businesses with limited resources that must make strategic choices about where to invest for maximum marketing effectiveness.

Against the backdrop of rising consumer awareness regarding health, food safety and sustainability coupled with governmental policies promoting sustainable development in Vietnam campaigns encouraging sustainable consumption have created a dynamic yet competitive market environment. This context requires marketing strategies grounded in deep consumer insight. By focusing on identifying and evaluating the influence of each sensory stimulus on sustainable purchasing behavior using quantitative methods, this research aligns with current market needs and provides data-driven insights to support the development of optimal, evidence-based sensory marketing strategies.

To accurately understand how sensory modalities function and influence consumer behavior, Nguyen Hong Quan proposed a conceptual model illustrating the impact of sensory marketing on purchase decision-making:



Source: Nguyen Hong Quan

Figure 1: The impact model of sensory marketing on purchase decision

In the current context, where customer expectations for products and services are rapidly increasing, particularly in the Food and Beverage (F&B) sector, creating emotionally engaging experiences through multisensory marketing has become a strategic imperative for attracting and retaining customers. Nguyen Hong Quan's (2021) study confirmed that in an increasingly competitive market landscape marked by evolving consumer behavior, sensory stimuli namely visual, olfactory, auditory, taste,

and tactile cues play a pivotal role in shaping purchase decisions at F&B service points. His research specifically focused on examining the individual effects of each sensory factor on consumer decisions, with the aim of formulating strategic recommendations for businesses to optimize the shopping experience and foster customer loyalty.

Moreover, in light of intensified sustainable development policies in Vietnam, consumer perceptions have undergone notable shifts. Today's customers no longer seek only product quality; they also demand shopping experiences that are safe, environmentally friendly, and sustainability-oriented. The research team observed that sensory-driven marketing can effectively activate both emotional and cognitive mechanisms, thereby fostering deeper consumer-brand connections.

Both Nguyen Hong Quan's study and the current research share a common objective: to assess the impact of sensory stimuli on consumer purchase decisions within the context of sustainable consumption in Vietnam's F&B sector. Both studies emphasize the strategic significance of transitioning from traditional, functional shopping experiences to emotionally rich, multisensory interactions, aimed at enhancing marketing effectiveness and building long-term competitive advantage.

Given the methodological and contextual alignment between the two studies, the research team decided to adopt and extend Nguyen Hong Quan's model. This model has been empirically validated with a high degree of reliability in measuring the influence of sensory factors, and it provides a robust quantitative framework to guide marketing investments aligned with current sustainable consumption trends. By applying this refined model, the study seeks to quantitatively determine the relative impact of each sensory stimulus on purchase decisions, thus enabling the formulation of concrete strategic recommendations to optimize consumer experience in the F&B industry.

Research hypotheses and conceptual model

Sensory marketing is a strategic marketing approach that employs sensory elements, including visual, auditory, olfactory, taste, and tactile stimuli to activate consumer emotions and perceptions, thereby influencing behavior and purchase decision-making (Krishna, 2012; Hultén *et al.*, 2009).

Previous studies such as Krishna (2012), Chen & Lin (2018), and Hultén *et al.* (2009) have demonstrated that sensory stimulation can elicit positive emotional responses, enhance brand memory, and increase purchase intention or behavior. In the Vietnamese context, research conducted by Nguyen Hong Quan *et al.* (2022) within the Food and Beverage (F&B) sector also confirmed the significant influence of sensory cues particularly visual and auditory on customers' purchase decisions. However, these studies primarily examined general consumer behavior and did not sufficiently address the context of sustainable product consumption, particularly in the food industry where environmental considerations are central to consumer evaluation.

Building on this gap, the present study focuses specifically on the influence of in-store sensory stimuli on consumer purchase decisions related to environmentally sustainable food products. The research adopts and extends the model proposed by Nguyen Hong Quan (2022), with an emphasis on empirically measuring the direct relationship between each individual sensory dimension and purchase decision-making within the context of sustainable food consumption in Vietnam's retail environment.

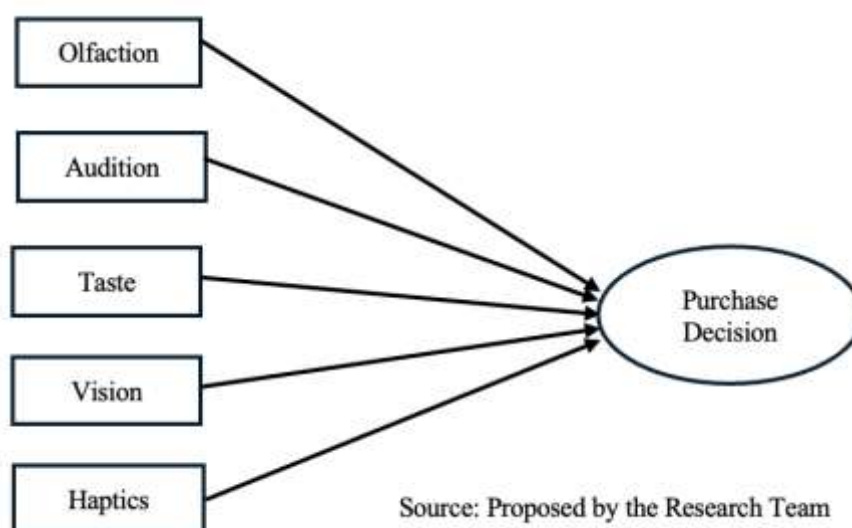


Figure 2: Purchasing model applying sensory marketing

Olfaction is a powerful sensory modality that can evoke emotions, trigger memories, and influence consumer behavior. The scent of sustainable food products may stimulate the olfactory system and affect consumers' purchase decisions. Morrin and Ratneshwar (2003) found that ambient scent can influence consumers' emotional states and moods, leading to longer in-store dwell times and increased purchasing behavior. Therefore, the proposed research hypothesis is:

H1: Olfactory stimuli have a positive effect on consumers' purchase decisions of sustainable food products.

Environmental sounds such as background music or product-related audio cues can influence consumer perception and emotional responses. North, Hargreaves, and McKendrick (1999) demonstrated that upbeat music can lead to increased product purchases, while slower music encourages consumers to spend more time in-store. Additionally, Spence and Shankar (2003) showed that auditory input can affect consumers' perception of flavor and product quality. Hence, the following hypothesis is proposed:

H2: Auditory stimuli have a positive effect on consumers' purchase decisions of sustainable food products.

Taste perception plays a critical role in the evaluation of food product quality. According to Cardello and Schutz (2003), consumers' expectations about taste can influence their quality assessments. Consumers are more likely to purchase sustainable food products that taste natural and appealing than those perceived as less flavorful (Plassmann, O'Doherty & Shiv, 2008). Sensory marketing activities that target taste such as offering product sampling or utilizing vivid imagery and video to describe appealing flavors can increase consumers' purchase intention toward sustainable food products (Krishna & Elder, 2004). Accordingly, the proposed hypothesis is:

H3: Taste stimuli have a positive effect on consumers' purchase decisions of sustainable food products.

Vision is the most dominant sense in gathering product-related information. Pieters and Wedel (2004) found that consumers spend substantial time visually engaging with product packaging, and these visual elements can significantly influence purchase decisions. Sensory marketing activities aimed at enhancing visual appeal such as attractive packaging design, high-quality visuals and videos, and in-store product displays which can improve consumers' decision-making regarding sustainable food purchases. Thus, the proposed hypothesis is:

H4: Visual stimuli have a positive effect on consumers' purchase decisions of sustainable food products.

Haptics enables consumers to physically evaluate product quality. According to Krishna and Elder (2004), sensations of freshness and firmness in sustainable food products can generate positive impressions and motivate purchase. This hypothesis supports the idea that sensory marketing strategies involving tactile experiences such as allowing consumers to touch products, using eco-friendly packaging materials, or facilitating hands-on product trials enhancing purchase intention. Therefore, the proposed hypothesis is:

H5: Haptics stimuli have a positive effect on consumers' purchase decisions of sustainable food products.

Measuring scale

Table 1: Summary of observed variables for the factors

Variable name	Scale indicator	Summary of observed/measurement items	Source
Olfaction (KHUU)	KHUU1	Product scent	Morrin, Ratneshwar (2003)
	KHUU2	Scent softness	The authors suggest
	KHUU3	Scent naturalness	The authors suggest
	KHUU4	Scent message	The authors suggest
	KHUU5	Atmosphere	Klaus-Peter Wiedmann (2017)
Audition (THINH)	THINH1	Store music	Klaus-Peter Wiedmann (2017)
	THINH2	Background sound	Klaus-Peter Wiedmann (2017)
	THINH3	Natural sound	The authors suggest
	THINH4	Staff voice	Alex Mari (2019)
	THINH5	Message conveyed through music	The authors suggest
Taste (VI)	VI1	Product taste	The authors suggest
	VI2	Taste association	Klosse (2004)
	VI3	Taste diversity	Klosse (2004)
	VI4	Seasonal taste	Klosse (2004)
	VI5	Taste of ingredients	Bertil (2011)
Vision (THI)	THI1	Product image	Herz, Engen (1996)
	THI2	Product color	Pancer, McShane (2014)
	THI3	Display design	Herz, Engen (1996)
	THI4	Staff uniform	The authors suggest

	THI5	In-store materials	Herz, Engen (1996)
Haptics (XUC)	XUC1	Ease of physical interaction	The authors suggest
	XUC2	Skin safety	Ananthasai (2023)
	XUC3	Touch comfort	Khirodhur Latasha (2016)
	XUC4	Freshness when touched	Krishna, Elder (2004)
	XUC5	Store temperature	Hultén, Bertil (2011)
Purchase decision (MUA)	MUA1	Sensory experience	Pranav Kulkarni, Harish Kolh (2022)
	MUA2	Price	Albari (2020)
	MUA3	Information provided	Norsiah Ahmad, Mohamad Fariz Abdullah (2020)
	MUA4	In-store activities	The authors suggest
	MUA5	Trust	Pranav Kulkarni, Harish Kolh (2022)

RESEARCH METHODOLOGY

Research Process

The research team employed a mixed-methods approach, combining both qualitative and quantitative research methods. Specifically, the study was conducted in two main phases: a preliminary study and a main study. The preliminary phase included both qualitative research (based on focus group discussions and in-depth interviews) and pilot quantitative research (with a limited sample size). The main phase consisted of a formal quantitative study, conducted through a structured survey using a sample of 400 valid observation.

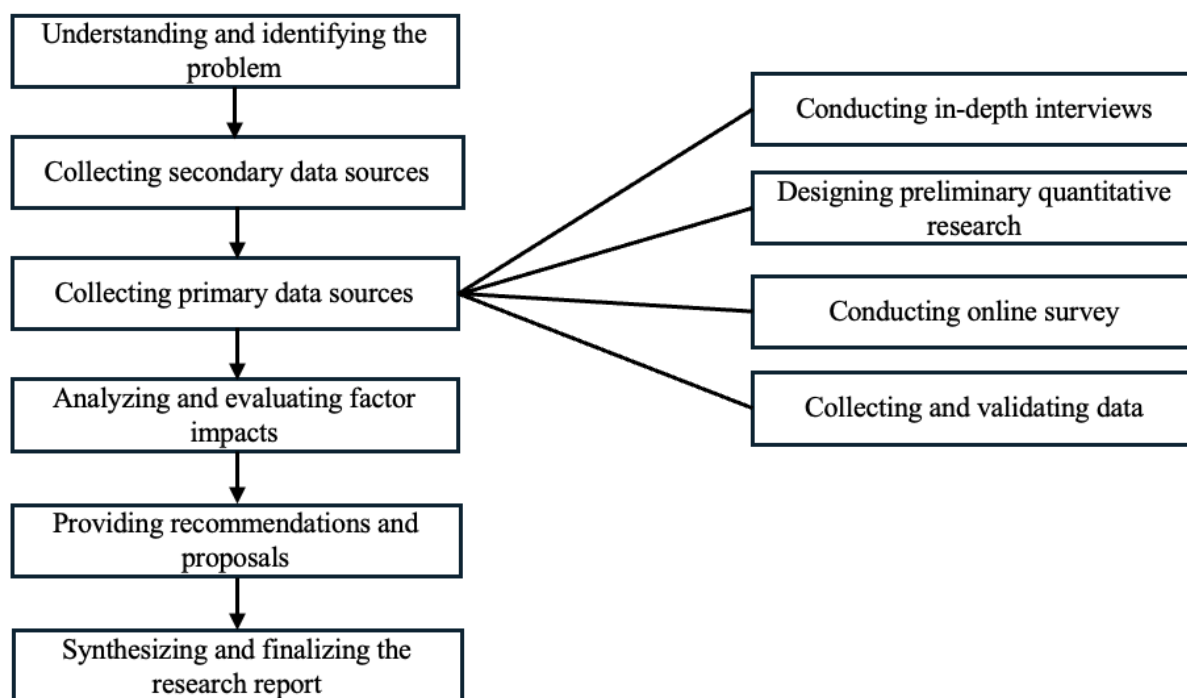


Figure 3: Research process

Qualitative Research

Sample characteristics: The research team conducted in-depth qualitative interviews with 15 participants. The sample included 5 individuals aged 15 to under 18, 5 individuals aged 18 to under 25, and 5 individuals aged 25 and above.

Sampling criteria: Participants were selected based on their prior experience purchasing environmentally sustainable food products from various retail channels such as supermarkets, organic markets, clean food stores, or e-commerce platforms.

Data collection method: In-depth individual interviews were conducted. The proposed conceptual model served as the basis for designing open-ended questions that allowed participants to share their perspectives, thoughts, and personal views on the issues addressed. During interviews where respondents offered limited information, the research team used detailed measurement scales to probe further with more specific questions.

Interview content: The interviews focused on participants' perceptions of in-store sensory stimuli, including evaluations of the impact of lighting, color schemes, spatial layout, and product imagery; the role of background music and surrounding sounds; aromas and air quality; and tactile sensations such as the feel of packaging materials. The interviews also explored consumer trust, emotional and behavioral responses to sensory experiences, and participants' personal definitions and criteria for what constitutes an "environmentally sustainable" food product. Additionally, the interviews investigated the influence of sensory experiences on consumers' emotions and purchase decisions.

Data analysis: The results of the qualitative phase were used to refine the measurement scales for the subsequent quantitative survey. Adjustments were made to ensure cultural and contextual relevance in Vietnam. Some initial measurement items were found to be overly wordy, ambiguous, or unclear based on interview feedback. These items were revised accordingly before the pilot survey was conducted with 25 participants. This process ensured that the finalized questionnaire used in the main quantitative study was more accurate, concise, and aligned with consumer understanding and expectations.

Preliminary Quantitative Research

Sample size: 25 respondents

Sampling method: A convenience sampling method was used to recruit 25 participants with prior awareness of sustainable food consumption. These participants were approached online and selected to reflect a range of ages and backgrounds aligned with the study's target consumer group.

Data collection method: Structured questionnaire.

Data processing: This phase focused on evaluating key aspects of the questionnaire, including the clarity of question wording, the appropriateness of measurement scales, and the respondents' level of cooperation and demographic characteristics.

The findings from this preliminary study provided the foundation for refining and restructuring the questionnaire used in the formal quantitative phase.

Formal Quantitative Research

Sample size: 403 observations (of which 400 were valid)

Sampling method: A non-probability convenience sampling method was employed, the sample included a diverse demographic distribution, spanning from age 15 to above 45. This sampling method is appropriate for studies targeting perception-based behaviors within specific consumer segments. Since the research focused on individuals familiar with sustainable food products, this approach allowed effective access to a relevant and information-rich sample, aligning with the study's behavioral orientation and contextual specificity.

Data collection method: Online questionnaire distributed via Google Form

- Section 1: Demographic information of respondents, including age, gender, and income level, was collected to evaluate the representativeness of the sample.
- Section 2: Consumer behavior regarding the purchase of sustainable food products was assessed, including purchase frequency, timing, and reasons for choosing environmentally sustainable food at retail outlets.
- Section 3: The five independent variables: Vision, Auditory, Haptics, Olfaction, and Taste were measured using items derived from established literature, including Morrin & Ratneshwar (2003), Klosse (2004), Klaus-Peter Wiedmann (2017), Krishna & Elder (2004), Alex Mari (2019), and Bertil (2011), as well as Khirodhur Latasha (2016). The dependent variable: Purchase Decision for Sustainable Food Products was measured based on scales developed by Pranav Kulkarni & Harish Kolh (2022), Albari (2020), and Norsiah Ahmad & Mohamad Fariz Abdullah (2020). All statements were assessed using a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

Data processing method: The research team coded and entered the data for statistical analysis using SPSS 20.0. The statistical methods applied included: reliability testing, Exploratory Factor Analysis (EFA), Pearson correlation analysis, and multiple regression analysis.

Research Model

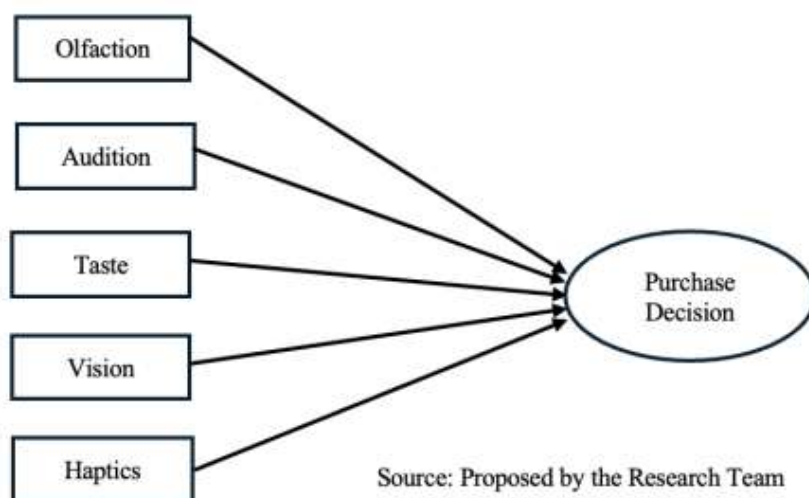


Figure 4: Purchasing model applying sensory marketing

Measurement Scale and Research Hypotheses

H1: Olfaction has a positive impact on consumers' purchase decision of sustainable food products.

H2: Auditory has a positive impact on consumers' purchase decision of sustainable food products.

H3: Taste has a positive impact on consumers' purchase decision of sustainable food products.

H4: Vision has a positive impact on consumers' purchase decision of sustainable food products.

H5: Haptics has a positive impact on consumers' purchase decision of sustainable food products.

RESEARCH FINDINGS

Sample Characteristics

Table 2: Characteristics of the Research Sample (Source: Conducted by the author from December 2023 to February 2024)

Sample n = 400		Frequency	%
Gender	Male	165	46
	Female	178	49,6
Age	From 15 to 18	148	21,2
	18 - under 25	166	56,3
	25 - under 35	57	22,6
	Over 45	21	5,4
Awareness of the research topic	Aware	359	89,8
	Not heard of it	41	10,3
Shopping frequency	0 - less than 3 times	120	33,4
	3 - less than 5 times	172	47,9
	More than 5 times	67	18,7
Average monthly income	Under 5 million VND	145	40,4
	5 - 10 million VND	95	26,5
	10 - under 15 million VND	82	22,8
	Over 15 million VND	37	10,3

Assessment of Measurement Scales Using Cronbach's Alpha and Exploratory Factor Analysis (EFA)

The results of Cronbach's Alpha reliability testing indicate that all measurement scales meet the required reliability threshold, with Cronbach's Alpha coefficients greater than 0.6 and Corrected Item-Total Correlations exceeding 0.3. Specifically, the Cronbach's Alpha coefficients were as follows: Olfaction = 0.706, Vision = 0.671, Auditory = 0.704, Taste = 0.662, Haptics = 0.722, and Purchase Decision = 0.706. These results demonstrate that the scales exhibit adequate internal consistency and are suitable for subsequent data analysis. Among them, the Haptics scale exhibited the highest reliability, indicating a strong interrelationship among its items. The scales for Olfaction, Auditory, and Purchase Decision also demonstrated strong reliability, while the Vision and Taste scales met the acceptable level. Overall, the measurement scales were appropriately constructed to

capture the intended constructs and demonstrated sufficient reliability for measuring both sensory dimensions and purchase behavior.

The reliability analysis was conducted using Cronbach's Alpha to assess the internal consistency of the measurement scales. The results indicate that all scales meet the accepted thresholds in research methodology (Cronbach's Alpha > 0.6 and corrected item-total correlation > 0.3), confirming strong inter-item correlations and consistent measurement of the constructs under investigation. Among these, the Tactile scale achieved the highest Cronbach's Alpha value (0.722), reflecting the strong association between factors such as skin safety, tactile comfort, and perceived freshness-characteristics that are particularly relevant for sustainable food products, which often require direct sensory engagement. The Olfactory (0.706), Auditory (0.704), and Purchase Decision (0.753) scales also demonstrated high reliability, aligning with prior multisensory marketing research and underscoring the potential of scent, sound, and experiential satisfaction to significantly influence purchasing behavior. Although the Visual (0.662) and Taste (0.671) scales yielded slightly lower reliability coefficients, they still surpassed the minimum acceptable threshold, thereby confirming the meaningful contribution of visual presentation and taste in the context of sustainable food shopping. Collectively, these findings support the international theoretical perspective that, within sustainable food retail environments, sensory modalities exert differing degrees of influence rather than equal effects, reflecting both consumer behavioral tendencies and cultural characteristics specific to the Vietnamese market.

Table 3: Cronbach's Alpha Reliability Test Results

Factor	Scale indicator	Summary of observed/measurement items	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Olfaction (KHUU)	KHUU1	Product scent	0.501	0.641	0.706
	KHUU2	Scent softness	0.488	0.648	
	KHUU3	Scent naturalness	0.502	0.642	
	KHUU4	Scent message	0.455	0.661	
	KHUU5	Atmosphere	0.375	0.693	
Audition (THINH)	THI1	Store music	0.404	0.629	0.671
	THI2	Background sound	0.509	0.58	
	THI3	Natural sound	0.437	0.614	
	THI4	Staff voice	0.352	0.654	
	THI5	Message conveyed through music	0.424	0.62	
Taste (VI)	THINH1	Product taste	0.539	0.62	0.704
	THINH2	Taste association	0.48	0.648	
	THINH3	Taste diversity	0.513	0.633	
	THINH4	Seasonal taste	0.342	0.699	
	THINH5	Taste of ingredients	0.432	0.667	
Vision (THI)	VI1	Product image	0.345	0.641	0.662
	VI2	Product color	0.368	0.634	
	VI3	Display design	0.452	0.593	
	VI4	Staff uniform	0.415	0.611	
	VI5	In-store materials	0.5	0.57	
Haptics (XUC)	XUC1	Ease of physical interaction	0.483	0.675	0.722
	XUC2	Skin safety	0.487	0.674	
	XUC3	Touch comfort	0.536	0.655	
	XUC4	Freshness when touched	0.438	0.693	

	XUC5	Store temperature	0.466	0.682	
Purchase decision (MUA)	MUA1	Sensory experience	0.698	0.64	0.753
	MUA2	Price	0.485	0.722	
	MUA3	Information provided	0.456	0.732	
	MUA4	In-store activities	0.304	0.782	
	MUA5	Trust	0.687	0.649	

Exploratory factor analysis for the dependent variable

The KMO measure of sampling adequacy was 0.632 ($0.5 < \text{KMO} < 1$), indicating that the dataset was suitable for EFA. Furthermore, Bartlett's Test of Sphericity produced a significance value of $\text{Sig} = 0.000 < 0.05$, confirming the presence of statistically significant correlations among the observed variables. The total variance explained was 73.352%, indicating the appropriateness of the EFA model. Two extracted factors accounted for 43.576% and 29.776% of the variance, respectively. These findings suggest that the purchase decision variable is multidimensional, with the two extracted factors representing distinct aspects: recommendation to others and personal purchase intention.

The exploratory factor analysis (EFA) for the dependent variable "Purchase Decision" yielded a KMO value of 0.632 ($0.5 < \text{KMO} < 1$), indicating that the dataset is suitable for factor analysis. Bartlett's Test of Sphericity produced a Chi-Square value of 1313.628 with a significance level of $0.000 (< 0.05)$, confirming the presence of statistically significant correlations among the observed variables. The total variance explained reached 73.352%, satisfying the standards in behavioral marketing research. The rotated factor solution revealed that the construct "Purchase Decision" comprises two components: The first factor, explaining 43.576% of the variance, includes overall sensory experience (MUA1), trust in the product/brand (MUA5), and a portion of in-store activities (MUA4); this factor reflects experiential and trust-related aspects. The second factor, explaining 29.776% of the variance, includes price (MUA2), product information (MUA3), and the remaining portion of in-store activities (MUA4); this factor represents purchasing conditions and informational aspects. These results align with existing theories, suggesting that purchase decisions in the sustainable food context are influenced simultaneously by emotional and experiential elements as well as rational and informational factors, thereby highlighting the combined role of sensory marketing and transparent information in optimizing purchasing behavior.

Table 4: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.632
Bartlett's Test of Sphericity	Approx. Chi-Square	1313.628
	df	10
	Sig.	0

Table 5: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.616	52.322	52.322	2.616	52.322	52.322	2.179	43.576	43.576
2	1.051	21.03	73.352	1.051	21.03	73.352	1.489	29.776	73.352
3	0.671	13.423	86.775						
4	0.641	12.814	99.589						
5	0.021	0.411	100						

Table 6: Rotated Component Matrixa

	Component	
	1	2
MUA1	0.968	
MUA5	0.965	
MUA4		0.85
MUA3		0.693
MUA2		0.493

EFA for independent variables

In the initial run, the result did not meet the acceptable threshold, with the total variance explained reaching only 48.795% , which is below the 50% benchmark. Therefore, the research team proceeded to eliminate low-performing items based on the Rotated Component Matrix, following these steps:

- Step 1: After the first EFA run, identify items with factor loadings below 0.45 as low-performing variables.
- Step 2: Rerun the EFA after simultaneously removing all identified low-performing variables.
- Step 3: Repeat Steps 1 and 2 iteratively until the model achieves the final acceptable solution.

The final results are presented as follows:

Table 7: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.917
Bartlett's Test of Sphericity	Approx. Chi-Square	1720.81
	df	190
	Sig.	0

Table 8: Rotated Component Matrixa

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.991	29.955	29.955	5.991	29.955	29.955	2.346	11.732	11.732
2	1.351	6.753	36.709	1.351	6.753	36.709	2.337	11.684	23.415
3	1.11	5.548	42.256	1.11	5.548	42.256	2.177	10.883	34.299
4	1.049	5.243	47.499	1.049	5.243	47.499	1.939	9.694	43.993
5	1.004	5.022	52.521	1.004	5.022	52.521	1.706	8.528	52.521
6	0.872	4.362	56.884						
7	0.825	4.125	61.009						
8	0.818	4.088	65.097						
9	0.725	3.626	68.723						
10	0.691	3.456	72.179						
11	0.683	3.417	75.596						
12	0.667	3.337	78.933						
13	0.608	3.038	81.971						

14	0.584	2.921	84.892						
15	0.562	2.81	87.702						
16	0.549	2.746	90.448						
17	0.528	2.639	93.088						
18	0.493	2.466	95.553						
19	0.456	2.282	97.836						
20	0.433	2.164	100						

The KMO measure of sampling adequacy was 0.52521 ($0.5 < \text{KMO} < 1$), which satisfies the threshold for proceeding with Exploratory Factor Analysis (EFA). Additionally, Bartlett's Test of Sphericity yielded a significance value of $\text{Sig.} = 0.000 < 0.005$, indicating that the observed variables are sufficiently correlated to justify the application of factor analysis.

Following factor extraction and analysis, five factors were successfully extracted from 20 observed variables, explaining 52.521% of the total variance-exceeding the minimum acceptable threshold of 50%. This result suggests that 52.521% of the total variance in the dataset is explained by the extracted latent constructs. The research team retained only factors with Eigenvalues ≥ 1 , with the minimum retained value being 1.004.

Based on the outcomes of Cronbach's Alpha reliability analysis and EFA, the research team finalized a measurement structure consisting of five latent factors influencing the purchase decision of sustainable food products. The dimensional structure of these factors remained conceptually stable, even though the number of observed variables was reduced from 25 to 20 by eliminating five items (THINH5, KHUU4, KHUU5, VI2, and VI3), which did not meet the minimum criteria for factor loading or reliability.

The Kaiser-Meyer-Olkin (KMO) measure yielded a value of 0.52521 ($0.5 < \text{KMO} < 1$), meeting the minimum requirement for conducting exploratory factor analysis (EFA). Concurrently, Bartlett's Test of Sphericity produced a Chi-Square value of 1720.8 with a significance level of $0.000 (< 0.005)$, confirming the presence of statistically significant correlations among the observed variables and validating the application of EFA. Following factor extraction and rotation, five latent factors were identified from 20 observed variables, collectively explaining 52.521% of the total variance-exceeding the 50% threshold commonly adopted in consumer behavior research. Only factors with Eigenvalues ≥ 1 were retained, with the smallest Eigenvalue being 1.004. Integrating the results of Cronbach's Alpha reliability testing and EFA, the research team finalized the measurement structure comprising five latent factors influencing the purchase decision of sustainable food products, ensuring conceptual stability in alignment with the original theoretical model.

During refinement, the number of observed variables was reduced from 25 to 20, eliminating THINH5, KHUU4, KHUU5, VI2, and VI3 due to failing to meet the minimum factor loading or reliability criteria. This reduction enhanced the parsimony and efficiency of the model while maintaining all essential aspects of multisensory marketing within the context of sustainable food consumption in Vietnam.

The EFA results confirmed that the five-sense model retained its conceptual validity after the removal of weaker items, providing empirical evidence that each sensory modality exerts its influence through distinct mechanisms but collectively contributes to strengthening purchase decisions. For sustainable food retailers in Vietnam, these findings suggest that investment should be made holistically across all five senses, with resource allocation guided by actual impact levels rather than focusing disproportionately on the visual dimension, as is common in traditional marketing.

Correlation Analysis

Based on the correlation matrix, all significance values (Sig.) between the dependent variable and the independent variables are less than 0.05, indicating that the correlation coefficients are statistically significant. All independent variables exhibit positive correlations with the dependent variable, as shown by their positive Pearson correlation coefficients. The symbol ** indicates that these variable pairs are linearly correlated at the 99% confidence level.

However, as the Pearson correlation coefficients for some independent variables exceed 0.8, this raises concerns about potential multicollinearity.

The Pearson correlation matrix analysis revealed that all Sig. (2-tailed) values between the dependent variable Purchase Decision (MUA) and the independent variables-Olfactory (KHUU), Visual (THI), Auditory (THINH), Taste (VI), and Tactile (XUC)-were less than 0.05, indicating that all correlation coefficients are statistically significant. All independent variables exhibited positive correlations with the dependent variable, with coefficients ranging from 0.482 (Taste) to 0.567 (Tactile). This suggests that enhancing customers' sensory experiences in each modality tends to increase their likelihood of purchasing sustainable food

products. In the correlation table, the ** symbol denotes a linear relationship significant at the 99% confidence level, whereas the * symbol denotes significance at the 95% confidence level.

Furthermore, the correlation coefficients among the independent variables ranged from 0.416 to 0.559, well below the 0.8 threshold, indicating that severe multicollinearity is not present. These findings are consistent with the theoretical foundations of multisensory marketing, confirming that while sensory modalities complement each other, they retain distinct roles in influencing sustainable product purchasing behavior.

Table 9: Pearson correlation analysis for the variables

		KHUU	THI	THINH	VI	XUC	MUA
KHUU	Pearson Correlation	1	.504**	.484**	.445**	.547**	.520**
	Sig. (2-tailed)		0	0	0	0	0
	N	359	359	359	359	359	359
THI	Pearson Correlation	.504**	1	.458**	.476**	.559**	.543**
	Sig. (2-tailed)	0		0	0	0	0
	N	359	359	359	359	359	359
THINH	Pearson Correlation	.484**	.458**	1	.416**	.516**	.535**
	Sig. (2-tailed)	0	0		0	0	0
	N	359	359	359	359	359	359
VI	Pearson Correlation	.445**	.476**	.416**	1	.500**	.482**
	Sig. (2-tailed)	0	0	0		0	0
	N	359	359	359	359	359	359
XUC	Pearson Correlation	.547**	.559**	.516**	.500**	1	.567**
	Sig. (2-tailed)	0	0	0	0		0
	N	359	359	359	359	359	359
MUA	Pearson Correlation	.520**	.543**	.535**	.482**	.567**	1
	Sig. (2-tailed)	0	0	0	0	0	
	N	359	359	359	359	359	359

Regression Model

Table 10: Multicollinearity diagnostics for independent variables

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	KHUU	0.598	1.671
	THI	0.588	1.701
	THINH	0.646	1.549
	VI	0.663	1.508
	XUC	0.528	1.894

According to the regression output, the VIF values for all independent variables were less than 2, indicating the absence of multicollinearity.

The multicollinearity diagnostic results indicate that all independent variables-Olfactory (KHUU), Visual (THI), Auditory (THINH), Taste (VI), and Tactile (XUC)-had VIF values below 2 (ranging from 1.508 to 1.894) and Tolerance values greater than 0.5. According to the accepted thresholds in regression analysis theory (Hair *et al.*, 2019), these results confirm that no severe multicollinearity exists among the independent variables. This is important as it ensures that each sensory variable contributes unique information to the model without excessive overlap with the others.

From a practical perspective, this finding reinforces the assumption in the multisensory marketing model that each sensory channel (sight, sound, smell, touch, taste) delivers a distinct impact while complementing the others, enabling managers to determine the independent influence of each sensory modality on the purchase decision for sustainable food products. Moreover, the absence of multicollinearity enhances the reliability of the regression estimates, ensuring that the Beta coefficients accurately reflect the actual magnitude of each independent variable's effect.

Model Fit Evaluation

Table 11: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.690a	0.476	0.468	0.47096

The Adjusted R² value was reported at 46.8%, indicating a moderate level of model fit. The R² value of 0.476 suggests that the sensory marketing variables collectively explain 47.6% of the variance in consumers' purchase decisions regarding environmentally sustainable products.

Analysis of Correlation Coefficients

Table 12: ANOVA summary table of the model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	70.657	5	14.131	63.711	.000 ^b
	Residuals	77.854	351	0.222		
Total		148.51	356			

F (sig) for the dependent variable was found to be less than 0.05, indicating that the regression model is statistically significant and appropriate for making statistical inferences.

The model fit assessment results show that the Adjusted R² value is 0.468, meaning that approximately 46.8% of the variance in consumers' purchase decisions for sustainable food products can be explained by the five independent sensory variables (visual, auditory, olfactory, Taste, and tactile). The R² value of 0.476 indicates a moderate level of explanatory power according to Hair *et al.* (2019), suggesting that multisensory marketing factors contribute significantly but are not the sole determinants of purchasing behavior. The correlation coefficient (R) of 0.690 reflects a relatively strong overall relationship between the independent and dependent variables, while the Standard Error of the Estimate of 0.47096 is within an acceptable range, ensuring the stability of the model.

From a theoretical perspective, these findings reinforce the notion that multisensory marketing exerts a significant influence on sustainable consumer behavior, consistent with prior research (Krishna, 2012; Hultén, 2015). However, the fact that 53.2% of the variance remains unexplained suggests that other factors-such as brand awareness, perceived value, pricing strategies, or social influences-may play complementary roles. From a managerial standpoint, businesses can leverage these results to focus resources on the sensory factors proven to have an impact, while also considering the integration of non-sensory elements to optimize sustainable marketing strategies.

3.7. Multiple Regression Model

Table 13: Coefficients table of the multiple linear regression model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.386	0.196		1.97	0.05
	KHUU	0.142	0.047	0.15	3.002	0.003
	THI	0.209	0.054	0.194	3.859	0
	THINH	0.212	0.047	0.215	4.472	0
	VI	0.14	0.049	0.135	2.843	0.005
	XUC	0.2	0.054	0.198	3.715	0

From the results of hypothesis testing presented in the table above, all Sig. values for the independent variables are less than 0.05, indicating that each variable has a statistically significant effect on the dependent variable.

Based on the regression results, the decision to purchase sustainable food products can be expressed through the following multiple linear regression equation:

$$MUA = 0.386 + 0.142KHUU + 0.209THI + 0.212THINH + 0.14VI + 0.2*XUC + \varepsilon$$

From this regression equation, the following conclusions can be drawn:

When the variable KHUU increases (or decreases) by one unit, MUA increases (or decreases) on average by 0.142 units.

When the variable THI increases (or decreases) by one unit, MUA increases (or decreases) on average by 0.209 units.

When the variable THINH increases (or decreases) by one unit, MUA increases (or decreases) on average by 0.212 units.

When the variable VI increases (or decreases) by one unit, MUA increases (or decreases) on average by 0.14 units.

When the variable XUC increases (or decreases) by one unit, MUA increases (or decreases) on average by 0.2 units.

The results of the multiple linear regression analysis demonstrate that all five sensory modalities: Vision, Auditory, Olfaction, Taste, and Haptics have a positive and statistically significant impact on the purchase decision of environmentally sustainable food products in retail settings (Sig. < 0.05).

Among these, Auditory emerged as the most influential sensory modality in this study, with the highest standardized regression coefficient ($\beta = 0.215$), indicating its substantial role in shaping purchase decisions for environmentally sustainable food products. Auditory elements such as background music, ambient sounds, and employee voices were found to enhance positive emotions, strengthen brand perception, and extend in-store dwell time, thereby fostering a more compelling shopping experience. This finding aligns with Praharaj (2016), who reported that music can influence up to 82% of purchase perceptions in retail environments, particularly when it is consistent with the brand's identity. In practical terms, sustainable food retailers could strategically incorporate soft background music or natural ambient sounds (e.g., birdsong, flowing water) to evoke associations with eco-friendliness and environmental harmony. Furthermore, training staff to adopt a warm and engaging tone of voice can further amplify the positive emotional impact of auditory cues, thereby reinforcing both the brand image and the consumer's purchase intent.

Vision demonstrated a standardized regression coefficient of $\beta = 0.194$ (Sig. < 0.001), underscoring its pivotal role in capturing consumer attention and fostering initial trust in environmentally sustainable food products. Visual cues such as color schemes, lighting, and product display layouts significantly influence how consumers assess product quality and sustainability attributes. This finding is consistent with Lindstrom (2005) and Hussain (2024), who emphasized that effective visual merchandising not only drives immediate purchase intention but also reinforces brand positioning at the point of sale. In practical application, sustainable food retailers should prioritize natural lighting, utilize signage and packaging in eco-associated colors such as green or earthy brown to evoke nature-related associations, and organize products into sustainability-themed groupings to enhance recognition and strengthen the eco-friendly brand image.

Haptics registered a standardized regression coefficient of $\beta = 0.198$ (Sig. < 0.001), ranking just behind vision and Auditory in terms of influence on purchase decisions for environmentally sustainable food products. Tactile cues such as the feel of materials, packaging texture, and the perceived freshness when holding a product play a pivotal role in fostering consumer trust and providing a sense of assurance. The human brain leverages tactile feedback as a rapid assessment mechanism, forming emotional connections that are difficult to replicate through other sensory channels. This aligns with findings by Peck and Childers (2003),

who demonstrated that physical contact with a product increases perceived ownership, thereby enhancing purchase likelihood. In practical application, sustainable food retailers can integrate haptic strategies by allowing customers to physically select products, employing recycled paper or eco-friendly packaging materials, and ensuring that textures are pleasant to the touch to reinforce both product quality perceptions and brand authenticity.

Olfaction exhibited a standardized regression coefficient of $\beta = 0.150$ (Sig. < 0.001), indicating a comparatively lower influence than vision, Auditory, and haptics, yet playing a critical supportive role in sustainable food purchase decisions. Natural product aromas or subtle ambient scents within the retail environment can evoke positive associations with “green” and environmentally friendly products. This is consistent with Krishna (2012), who emphasized that scents not only trigger emotional responses but also create enduring brand-related memories. Moreover, olfactory cues can subtly modulate consumer preferences and enhance perceived product appeal even in the absence of direct tasting by influencing affective evaluations and reinforcing sustainability perceptions. In practical retail applications, sustainable food stores can leverage olfactory strategies by incorporating natural scents from organic products (e.g., fresh produce, baked goods) or eco-friendly essential oils to strengthen the brand’s environmental image, create a welcoming atmosphere, and subtly guide consumer choice.

Taste emerged as the least influential of the five sensory modalities, with a standardized regression coefficient of $\beta = 0.135$ (Sig. < 0.01). Despite its relatively lower impact, taste remains a critical determinant in the food industry, as flavor experiences directly shape consumer satisfaction and repeat purchase intentions. Providing opportunities for product sampling is a proven strategy to build consumer trust and encourage purchase behavior, particularly for environmentally sustainable food products where quality assurance is paramount. This aligns with Spence’s (2015) research on crossmodal sensory integration, which demonstrated that taste perception can be significantly influenced by other sensory cues such as auditory stimuli and the shape of containers, thereby indirectly enhancing the taste experience. In practical application, sustainable food retailers can maximize the impact of taste by combining sampling activities with congruent visual and auditory elements, ensuring a multisensory alignment that reinforces product quality, brand positioning, and the overall eco-friendly narrative. This relatively lower influence may be attributed to the study’s in-store context, where consumers were not provided with actual tasting opportunities. As a result, the effect of taste perception was likely limited to memory or expectation rather than direct experience.

DISCUSSION OF RESEARCH FINDINGS

Summary of Findings

The research team identified five components of sensory marketing: olfaction, taste, haptics, Auditory, and vision. Based on prior literature and in-depth interviews, the team developed variables to describe constructs in the model, selecting 30 observed variables to measure five independent variables and one dependent variable. All measurement items were adjusted to suit the contextual specifics of the research.

Survey results revealed that 89.8% of participants had hard of sustainable consumption. The reliability analysis (Cronbach’s Alpha) indicated that all six constructs demonstrated moderate to high reliability. EFA confirmed that all five sensory dimensions influence purchase decisions. The dependent variable, purchase decision, was further classified into two subdimensions: personal purchase intention and recommendation to others. The study conducted multiple linear regression analysis to test the relative influence of each factor. Findings revealed that all five independent variables including Auditory, taste, haptics, vision, and olfaction have a positive and statistically significant effect on purchase decisions. The regression model was found to be statistically sound and free from critical assumption violations such as multicollinearity. All model variables were statistically significant at the 5% level. Among them, Auditory had the strongest influence, followed by vision, haptics, olfaction, and taste. Although all five senses had significant effects, their levels of influence varied, with auditory and visual cues demonstrating notably stronger effects than taste.

Comparison with Previous Studies

The findings confirm that consumers have a clear awareness of sustainability, with 89.8% of respondents acknowledging their familiarity with sustainable products. The results demonstrate that all five sensory dimensions: Auditory, vision, olfaction, taste, and haptics positively affect sustainable purchase decisions in the food sector in Vietnam. These results are consistent with prior research by Krishna (2012) and Wiedmann (2017), which also emphasized the critical role of sensory marketing in shaping purchase behavior. Therefore, despite differences in local context, consumer profiles, or measurement tools, the findings align well with the theoretical and empirical foundations established by earlier studies.

A notable insight is that within the Vietnamese retail environment, Auditory emerged as the most influential factor, followed by vision. This reflects specific cultural and environmental characteristics of the Vietnamese market, where sound and visual stimuli in retail spaces are particularly salient to consumers.

Discussion of Results

Most survey respondents indicated that they had previously encountered the concept of sustainable products or behavior, and this awareness was distributed across various demographics, including age, income, shopping frequency, and consumer habits. This suggests that public communication and awareness campaigns on sustainable consumption in Vietnam have begun to yield tangible results.

Theoretically, this study reinforces the argument that sensory marketing is not merely a tool for creating experiences but a strategic element in shaping consumer perception and fostering positive attitudes toward sustainable products. Notably, identifying the relative influence of each sensory dimension provides a critical reference framework for future research. Moreover, the findings suggest that sensory marketing can act as a bridge between environmental awareness and actual purchasing behavior, highlighting the importance of sensory integration in enhancing perceived value and promoting sustainable consumer choices.

Research Limitations

This study has several limitations that should be addressed in future research. First, data collection via online questionnaires (Google Form) may limit the representativeness of the sample. Moreover, the unique nature of sustainable food products often associated with health, culture, and personal conditions may lead to results being influenced by individual perceptions and emotions.

Additionally, this research employed a cross-sectional dataset collected at a single point in time, making it impossible to assess changes in consumer attitudes and intentions over time. Future research should consider longitudinal designs to track such changes across extended periods.

Furthermore, due to resource constraints, the study applied traditional methods: a combination of qualitative and quantitative approaches without the use of advanced tools. Emerging technologies such as neuromarketing, which allow researchers to measure neural and sensory responses directly, should be considered in future studies to validate and expand upon these findings in new contexts.

Managerial Implications

Based on the research findings, it is evident that in order to promote the purchase decision of environmentally sustainable food products in the Vietnamese market, service providers should prioritize several key areas:

First, from the perspective of Taste perception, Vietnamese consumers demonstrate a strong demand for high-quality taste experiences. In the emerging and highly demanding sustainable food sector, which remains in competition with traditional alternatives, the standard for taste must go beyond acceptable, it must be delicious, memorable, and aligned with local palates. Retailers should focus on delivering superior product quality, creating an appealing, eco-friendly shopping environment, and offering positive in-store experiences for consumers. This can be achieved by leveraging sensory stimuli, enabling product trials and tactile interaction, and organizing product showcases or sensory sampling events.

Additionally, layout design, auditory elements (e.g., background music), visual aesthetics (e.g., lighting, colors), and olfactory cues (e.g., ambient scent) should be strategically adjusted to align with the brand and product positioning. Retailers may also collaborate with non-governmental organizations (NGOs) and local communities to conduct educational programs and awareness campaigns on sustainability. These initiatives can include the use of banners, posters, or eco-themed product labeling to raise consumer awareness. Advertising campaigns, educational content, and direct customer engagement should aim to increase awareness of sustainable products highlighting aspects such as product origin, production process, and environmental impact, communicated through various media and digital platforms.

On the production side, it is essential to promote smart, safe, and organic agriculture, with a focus on improving cultivation methods, selecting regionally adapted crop varieties, and optimizing the use of resources. At the same time, consumers should be encouraged to engage in responsible consumption by prioritizing products with transparent origins, sustainable production practices, and demonstrable environmental benefits.

In conclusion, the integration of sensory marketing, educational communication, and sustainable production-consumption strategies represents a critical pathway for businesses in the sustainable food sector in Vietnam. Such an approach can strengthen brand positioning, enhance market competitiveness, and deliver long-term value for both companies and the broader community.

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