

HOW SENSORY MARKETING SHAPES FRESH FOOD PURCHASE DECISIONS: THE MEDIATING ROLES OF PERCEIVED QUALITY AND BRAND AWARENESS IN SUPERMARKET RETAILING IN CAN THO CITY, VIETNAM

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Abstract – *This study investigates how sensory marketing influences consumers’ fresh food purchase decisions in supermarkets in Can Tho City, Vietnam, an emerging market where modern retail formats are expanding rapidly. Drawing on the Stimulus – Organism – Response framework, the study examines how five sensory stimuli (sight, sound, smell, touch, and taste) shape purchase decisions through two internal responses: perceived quality and brand awareness. Data were collected in December 2025 from 203 supermarket shoppers using face-to-face surveys and analyzed using PLS-SEM. The results indicate that all five sensory stimuli positively influence both perceived quality and brand awareness. Perceived quality exerts a stronger influence on fresh food purchase decisions than brand awareness. Mediation analysis further reveals that perceived quality significantly mediates the effects of touch, taste, and sound, whereas brand awareness consistently mediates the relationships between all sensory stimuli and purchase decisions. These findings suggest that consumers rely primarily on direct sensory experiences to evaluate fresh food quality, while multisensory cues simultaneously strengthen supermarket brand awareness. The study extends sensory marketing research by demonstrating the distinct mediating roles of perceived quality and brand awareness in an emerging-market retail context. From a managerial perspective, supermarket retailers should prioritize tactile interaction, product sampling, and*

integrated multisensory experiences to enhance perceived quality, strengthen brand awareness, and encourage fresh food purchases.

Keywords: *brand awareness, fresh food purchase decision, perceived quality, sensory marketing, supermarket retailing.*

I. INTRODUCTION

Sensory marketing has become an increasingly important strategy for retailers seeking to differentiate consumers’ shopping experiences in highly competitive markets. In supermarket retailing, consumers are exposed to numerous competing products and brands simultaneously, making it increasingly difficult for retailers to attract attention and influence purchase decisions through conventional marketing approaches alone. As a result, creating engaging multisensory shopping environments has become an important source of competitive advantage, particularly in fresh food retailing where consumers often rely on sensory experiences to evaluate freshness, quality, and safety before purchasing. The importance of sensory marketing is becoming increasingly evident in Vietnam as modern retail formats continue to expand. Supermarkets, convenience stores, and minimarts are gradually replacing traditional retail channels and are expected to account for approximately 27% of total retail sales by 2024 [1]. This transformation reflects consumers’ growing preference for standardized, convenient, and experience-oriented shopping environments. In Can Tho City, the economic center of the Mekong Delta, supermarket chains such as GO!, Lotte Mart, Co.opmart, WinMart+, and Bach hoa Xanh have

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expanded rapidly in recent years, intensifying competition within the fresh food retail sector. Consequently, supermarket managers increasingly rely on sensory elements, including product displays, lighting, ambient music, store aroma, tactile interaction, and tasting activities, to create distinctive shopping experiences and encourage purchase decisions. Although previous studies have demonstrated that sensory marketing positively influences consumer behavior, including purchase decisions, satisfaction, and loyalty [2, 3], empirical evidence remains limited in emerging retail markets such as Vietnam. Existing Vietnamese studies primarily focus on tourism, restaurants, and food and beverage services [4, 5], while supermarket-based fresh food retailing has received relatively little attention. Furthermore, although recent studies acknowledge the importance of perceived quality and brand awareness in explaining consumers' responses to sensory stimuli [6–8], relatively few studies have examined these two mechanisms simultaneously within the Stimulus – Organism – Response (SOR) theory. To address these gaps, this study investigates how sensory marketing influences consumers' fresh food purchase decisions in supermarkets through the mediating roles of perceived quality and brand awareness. Using survey data collected from supermarket shoppers in Can Tho City and applying the SOR framework, this study provides empirical evidence from an emerging retail market and offers practical implications for supermarket managers seeking to develop more effective multisensory marketing strategies.

II. LITERATURE REVIEW AND PROPOSED RESEARCH MODEL

A. Literature review

Sensory marketing has attracted considerable attention in consumer behavior research because consumers continuously receive and process information through multiple senses during shopping experiences [9, 10]. Rather than relying solely on functional product attributes, retailers increasingly employ sensory cues, including sight, sound, smell, touch, and taste, to influence

consumers' perceptions, emotions, and behavioral responses. This multisensory perspective has become particularly important in food retailing, where consumers frequently depend on sensory information to assess freshness, safety, and overall product quality before making purchase decisions [11, 12].

Previous sensory marketing research generally follows two major streams. The first stream examines the direct effects of sensory stimuli on consumer outcomes and consistently reports positive relationships with purchase decisions, satisfaction, and loyalty [2, 3]. These studies show that individual sensory cues can influence consumers' shopping experiences by enhancing product evaluation, emotional responses, and purchase intentions. The second stream focuses on the psychological mechanisms through which sensory experiences affect consumer behavior. In this perspective, perceived quality and brand awareness have emerged as two important mediating constructs [6–8]. Perceived quality reflects consumers' evaluation of product excellence based on sensory experiences, whereas brand awareness represents consumers' ability to recognize and recall brands through repeated sensory interactions. In fresh food retailing, sensory cues such as touch and taste may directly enhance consumers' quality evaluations by reducing uncertainty regarding freshness and product condition [5, 10]. At the same time, multisensory shopping experiences may strengthen consumers' familiarity with supermarket brands, thereby improving brand awareness and facilitating purchase decisions [3, 12].

Despite these advances, several research gaps remain. First, existing sensory marketing research has predominantly examined consumers in developed-market contexts, whereas evidence from emerging retail markets remains relatively limited [3, 13–15]. Second, Vietnamese research has primarily examined sensory marketing in tourism, restaurants, and food and beverage services [4, 5], with comparatively little attention devoted to supermarket-based fresh food retailing. Finally, previous studies have generally ex-

amined perceived quality or brand awareness separately, providing limited evidence regarding their simultaneous mediating roles in explaining how sensory marketing influences consumers' fresh food purchase decisions [3, 5]. Thus, this study applies the SOR framework to investigate how five sensory stimuli influence consumers' fresh food purchase decisions through perceived quality and brand awareness in the supermarket retail context. By examining these two mediating mechanisms simultaneously, this study contributes to a more comprehensive understanding of sensory-driven consumer behavior in an emerging retail market.

B. Theoretical background

Sensory marketing

Sensory marketing refers to the strategic use of sensory stimuli to influence consumers' perceptions, evaluations, and behavioral responses by engaging the five human senses, including sight, sound, smell, taste, and touch [10]. Rather than focusing solely on functional attributes, sensory marketing aims to create emotionally rich and memorable consumption experiences that enhance consumer engagement and brand meaning [9, 11].

Recent research emphasizes that sensory cues shape consumers' cognitive and affective responses by strengthening perceived quality and brand-related perceptions, which subsequently influence purchase-related outcomes in retail and service contexts [16]. Moreover, empirical evidence suggests that congruence among multisensory cues across different modalities enhances overall sensory experiences, leading to more favorable brand evaluations and consumer responses [14]. Therefore, sensory marketing is increasingly conceptualized as a holistic experiential strategy that fosters consumer-brand relationships through coordinated multisensory stimulation.

Perceived quality

Perceived quality (PQ) reflects consumers' overall subjective judgment of a product's excellence or superiority, formed by comparing ex-

pectations with actual consumption experiences. This concept was originally articulated by Parasuraman [17], who emphasized that perceived quality represents customers' evaluative perceptions rather than objective product attributes. Building on this foundation, recent studies conceptualize perceived quality as a cognitive evaluation shaped by sensory and other product-related cues encountered throughout the consumption experience [5, 10, 14]. Contemporary research demonstrates that perceived quality plays an important role in shaping customer evaluations, brand differentiation, and purchase-related decisions, particularly in competitive retail environments [3, 5, 18, 19]. Perceived quality is increasingly recognized as a key mediating mechanism through which experiential and sensory marketing stimuli influence consumer behavioral responses [16].

Brand awareness

Brand awareness (BA) refers to consumers' ability to recognize and recall a brand when making purchase decisions. As a fundamental component of brand equity, brand awareness reflects how embedded a brand is in consumers' memory structures [18]. Recent literature further defines brand awareness as a cognitive representation that links a brand to a specific product category, increasing the likelihood that the brand enters consumers' consideration sets [18]. Brand awareness comprises two interrelated dimensions: brand recognition and brand recall. Brand recognition refers to consumers' ability to identify a brand when exposed to brand cues, whereas brand recall reflects the ability to retrieve a brand from memory in the absence of such cues [19]. Empirical studies indicate that higher levels of brand awareness enhance consumer confidence, reduce perceived risk, and positively influence purchase-related decisions across both physical and digital retail environments [19–21].

Purchase decision

Purchase decision (PD) represents the stage in which consumers choose a product or service from available alternatives after evaluating relevant information and attributes. According to

Kotler et al. [22, p.176–177], purchase decision is one stage within the broader buyer decision process, comprising need recognition, information search, evaluation of alternatives, purchase decision, and post-purchase behavior. Recent research argues that purchase decisions are influenced not only by functional product attributes but also by experiential cues, perceived quality, and brand-related perceptions that reduce uncertainty and strengthen consumers' confidence during evaluation [14, 16]. Following consumption, consumers evaluate the outcomes of their decisions, which influence satisfaction, repeat purchase behavior, and long-term responses. Purchase decisions are regarded as a behavioral outcome reflecting the cumulative effects of consumers' prior cognitive and perceptual evaluations.

C. Theoretical framework

This study adopts the SOR framework [23] as the primary theoretical foundation to explain how sensory marketing influences consumer purchase decisions. This framework posits that environmental stimuli (S) affect consumers' internal cognitive and affective states (O), which subsequently drive behavioral responses (R). In the present study, sensory marketing represents the stimulus component, operationalized through multisensory cues embedded in supermarket environments. Perceived quality and brand awareness are conceptualized as organism variables that capture consumers' internal evaluations formed in response to sensory stimuli. Purchase decision serves as the response variable, reflecting consumers' behavioral outcomes. By integrating these constructs, the SOR framework provides a coherent and parsimonious explanation of how sensory marketing influences purchase decisions through consumers' perceptual and cognitive mechanisms. Moreover, this framework aligns well with the causal-predictive orientation of PLS-SEM, supporting the examination of both direct and indirect effects among the study variables. Consistent with prior sensory marketing research, this study treats the five sensory dimensions, including sight, sound, smell,

touch, and taste, as distinct but related constructs, allowing their individual effects on perceived quality to be examined.

D. Proposed research model and hypothesis

As shown in Figure 1, this study conceptualizes sensory marketing stimuli as external environmental cues that influence consumers' internal cognitive evaluations and subsequent behavioral responses. Specifically, sight, sound, smell, touch, and taste stimuli are modeled as multidimensional stimuli (S) that shape consumers' perceived quality and brand awareness, which represent key organismic states (O). These cognitive evaluations, in turn, drive consumers' purchase decisions as the ultimate behavioral response (R). By integrating both perceived quality and brand awareness as parallel mediating mechanisms, the proposed research model captures the dual evaluative and cognitive pathways through which sensory marketing influences purchase decisions in supermarket retail.

E. Sensory marketing and perceived quality

According to the SOR framework, sight, sound, smell, touch, and taste function as environmental stimuli that shape consumers' internal evaluations before influencing behavioral responses [10, 23]. In supermarket retailing, consumers may rely heavily on sensory information to evaluate fresh food because direct sensory inspection provides cues about product quality and condition [5, 10, 13, 15]. Consequently, sensory marketing reduces uncertainty and strengthens consumers' confidence when evaluating product quality [24]. Although sight, sound, smell, touch, and taste stimulate different sensory systems, they share a common function of providing diagnostic information that consumers use to infer product quality and shopping experience. Sight influences quality evaluations through lighting, store layout, product displays, packaging, and employees' appearance, which signal freshness, cleanliness, and professionalism [11, 12]. Sound affects consumers' mood and evaluations of the shopping environment through background music

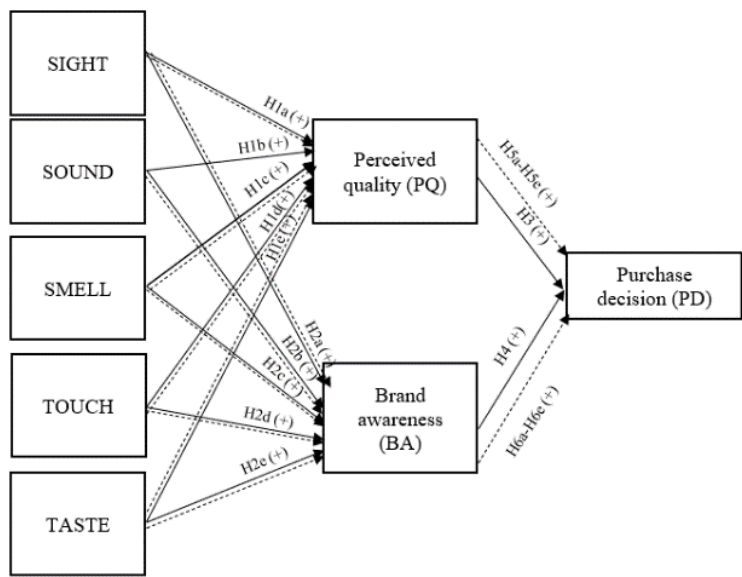


Fig. 1: Proposed research model

Source: Authors’ own elaboration

and sound atmosphere [8]. Smell enhances perceptions of freshness and product quality because pleasant scents generate favorable evaluations, particularly in food retailing [10]. Touch provides direct physical information that strengthens consumers’ confidence in evaluating products and retail environments [13]. Finally, taste provides a direct sensory cue for evaluating food quality, as tasting allows consumers to assess intrinsic product characteristics and inform their purchase decisions [5, 10]. Although each sensory stimulus contributes differently, all five sensory dimensions are expected to influence perceived quality positively. The following hypotheses are proposed:

- H1a: Sight stimuli positively influence perceived quality.
- H1b: Sound stimuli positively influence perceived quality.
- H1c: Smell stimuli positively influence perceived quality.
- H1d: Touch stimuli positively influence perceived quality.
- H1e: Taste stimuli positively influence perceived quality.

Sensory marketing and brand awareness

Besides shaping quality evaluations, sensory marketing also influences consumers through a different mechanism by strengthening brand-related cognition. Brand awareness reflects consumers’ ability to recognize and recall a brand during purchase situations and represents a fundamental dimension of brand equity [18]. Within the SOR framework, repeated sensory stimulation enhances attention, memory encoding, and associative learning, thereby improving consumers’ familiarity with supermarket brands [9, 11]. Similar to perceived quality, sight, sound, smell, touch, and taste contribute to brand awareness through different sensory experiences. Sight improves brand recognition through store design, lighting, colors, and product presentation [3, 12, 14]. Sound strengthens brand memory through repeated auditory exposure and emotional engagement [11]. Smell creates distinctive emotional associations that facilitate brand recall [10]. Touch increases familiarity and trust by allowing consumers to physically interact with products [15]. Taste can establish strong associations between product experience and brand

identity, particularly in food retailing, where sensory experiences can create memorable brand impressions [3, 9, 10, 12]. These sensory experiences are expected to strengthen consumers' brand awareness. The following hypotheses are proposed:

H2a: Sight stimuli positively influence brand awareness.

H2b: Sound stimuli positively influence brand awareness.

H2c: Smell stimuli positively influence brand awareness.

H2d: Touch stimuli positively influence brand awareness.

H2e: Taste stimuli positively influence brand awareness.

Perceived quality and purchase decision

Perceived quality reflects consumers' overall evaluation of a product's or service's excellence relative to their expectations and competing alternatives [18]. In supermarket retailing, consumers frequently rely on perceived quality when purchasing fresh food because higher perceived quality reduces uncertainty regarding freshness, safety, and product reliability [5, 10]. Consequently, perceived quality functions as an evaluative mechanism that transforms sensory experiences into purchase decisions. Therefore, the following hypothesis is suggested:

H3: Perceived quality positively influences purchase decision.

Brand awareness and purchase decision

Brand awareness refers to consumers' ability to recognize and recall a brand during purchase situations and constitutes an important dimension of brand equity [18]. Consumers generally prefer familiar brands because familiarity reduces cognitive effort and perceived risk during decision-making. In competitive supermarket environments, stronger brand awareness increases the likelihood that consumers include a supermarket brand in their consideration set, thereby facilitating purchase decisions [21]. Unlike perceived quality, which reflects product evaluation, brand awareness represents a cognitive mechanism based on familiarity and memory. The following hypothesis is presented:

H4: Brand awareness positively influences purchase decision.

The mediating role of perceived quality

Environmental stimuli influence consumer behavior indirectly through internal cognitive evaluations [10, 23]. In sensory-rich retail environments, sensory marketing cues function as external stimuli, while perceived quality represents an important internal evaluation through which experiential information may influence behavioral responses, particularly purchase decisions [3, 5, 10]. Prior research suggests that sensory stimuli do not directly trigger purchasing behavior in isolation but instead shape consumers' quality judgments, which subsequently guide decision-making [24]. Sight, sound, smell, touch, and taste cues provide diagnostic signals that consumers rely on to infer product freshness, reliability, and overall excellence, especially in contexts characterized by information overload and time constraints, such as supermarkets [14, 16]. When sensory cues are perceived as congruent and professionally designed, they enhance perceived quality, thereby reducing perceived risk and strengthening consumers' confidence in their purchase decisions. Furthermore, perceived quality can serve as an important mediating mechanism linking sensory stimuli to purchase-related outcomes [3, 5]. Sensory marketing enhances experiential processing and reinforces expectations, which leads to more favorable quality evaluations and, in turn, increases the likelihood of purchase [18]. This mediating process aligns with the SOR logic, in which internal cognitive evaluations act as the pathway through which external stimuli affect observable consumer behavior. Based on this theoretical rationale and building upon the direct effects hypothesized in H1a-H1e and H3, this study proposes the following mediation hypotheses:

H5a: Perceived quality mediates the relationship between sight stimuli and purchase decision.

H5b: Perceived quality mediates the relationship between sound stimuli and purchase decision.

H5c: Perceived quality mediates the relation-

ship between smell stimuli and purchase decision.

H5d: Perceived quality mediates the relationship between touch stimuli and purchase decision.

H5e: Perceived quality mediates the relationship between taste stimuli and purchase decision.

The mediating role of brand awareness

Beyond evaluative judgments such as perceived quality, sensory marketing also influences purchase decisions through cognitive mechanisms related to brand memory and salience. Brand awareness captures consumers' ability to recognize and recall a brand during purchase decision-making and represents a key cognitive pathway through which sensory experiences translate into behavioral outcomes [18, 19].

Sensory cues can enhance brand awareness by attracting consumers' attention and strengthening the encoding and storage of brand-related information in memory [3, 10]. Sight design, soundscapes, ambient scents, tactile interaction, and taste experiences create distinctive sensory signatures that increase brand memorability and facilitate brand retrieval at the point of purchase [24]. In cluttered retail environments, heightened brand awareness increases the likelihood that a brand enters consumers' consideration sets and is chosen over less salient alternatives [14]. Empirical evidence further indicates that brand awareness positively influences purchase decisions by reducing cognitive effort and reinforcing familiarity and trust toward the brand [19, 20]. Accordingly, sensory marketing is expected to affect purchase decisions indirectly by strengthening brand awareness, which acts as a positive mediating mechanism between sensory stimuli and consumer choice. Based on the direct effects proposed in H2a–H2e and the relationship between brand awareness and purchase decision (H4), this study proposes the following mediation hypotheses:

H6a: Brand awareness mediates the relationship between sight stimuli and purchase decision.

H6b: Brand awareness mediates the relationship between sound stimuli and purchase decision.

H6c: Brand awareness mediates the relationship between smell stimuli and purchase decision.

H6d: Brand awareness mediates the relationship between touch stimuli and purchase decision.

H6e: Brand awareness mediates the relationship between taste stimuli and purchase decision.

III. RESEARCH METHODOLOGY

A. Data collection

Primary data were collected in December 2025 using a structured questionnaire administered through face-to-face interviews. The survey targeted consumers aged 18 and above who had experience purchasing food products at supermarkets in central Can Tho City, Vietnam. The minimum sample size was determined using a ratio of five observations per estimated parameter [25]. With 35 observed variables, at least 175 responses were required. To account for incomplete or invalid questionnaires, 230 surveys were distributed, resulting in 203 valid responses after data screening. This sample size meets the recommended thresholds for PLS-SEM; a minimum of 100–200 observations is sufficient for reliable SEM estimation [26]. Data were collected using non-probability sampling methods, including convenience and snowball sampling.

B. Data analysis

Data were analyzed using SPSS 26 and Smart-PLS 3.0. The reliability of the measurement scales was first assessed using Cronbach's alpha to ensure internal consistency [25]. Exploratory factor analysis (EFA) was subsequently conducted to examine the underlying factor structure of the observed variables. PLS-SEM was then employed to test the proposed hypotheses and to evaluate the relationships among sensory stimuli, perceived quality, brand awareness, and purchase decision. PLS-SEM was chosen due to its suitability for prediction-oriented research and complex models with multiple latent constructs. The significance of the structural relationships was assessed using a bootstrapping procedure, as recommended in prior PLS-SEM studies [25, 27].

C. Measurement scales

This study examines consumers' food purchasing decisions in the supermarket retail context. The term food refers broadly to food products sold in supermarkets, including both fresh and processed food products, rather than a specific food category. The measurement of brand awareness is anchored at the supermarket brand level, whereas perceived quality captures consumers' overall evaluation of both the quality of food products offered by the supermarket and the overall food shopping experience. In this study, brand awareness refers to consumers' awareness of supermarket brands rather than individual fresh food brands. Perceived quality is conceptualized as consumers' overall evaluation of the supermarket's fresh food offering, encompassing the perceived quality of fresh food products as well as the shopping experience, retail environment, and product assortment associated with fresh food purchases.

All constructs were measured using a five-point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). In Table 1, the measurement items were adapted from validated scales in prior research [6, 9–11, 28–34].

IV. RESULTS AND DISCUSSION

A. Results

Data description

The sample consisted of 203 respondents, including 91 males (44.8%) and 112 females (55.2%). Most respondents were aged 18–32 (70.4%), followed by those aged 33–50 (19.2%) and those above 50 (10.3%); no respondents were under 18. Regarding marital status, 62.1% were single, 33.0% were married, and 4.9% reported other statuses. In terms of education, 55.7% of respondents held a university degree, and 17.2% had postgraduate qualifications, while 15.3% had college/vocational education and 18.1% had a high school education or lower. Office employees represented the largest occupational group (36.9%), followed by self-employed/business owners (22.7%), students

(13.3%), and other occupations (15.3%); homemakers and industrial workers each accounted for 5.9%. Most respondents reported a monthly income between VND 5 and under 10 million (41.9%), followed by VND 10 to under 15 million (27.6%), below VND 5 million (17.7%), and VND 15 million and above (12.8%).

The results indicate that sight marketing elements are the most salient sensory cues perceived by consumers in supermarkets in Can Tho City. Respondents identified product display and layout in 78.3% of cases, followed by packaging and product colors (70.4%), while in-store lighting and color schemes (30.0%) and promotional posters or in-store advertising (40.4%) were less frequently reported. Sound marketing cues were moderately perceived, with similar proportions of respondents recognizing staff greetings and sales consultations (51.7%), background music (51.2%), and audio advertising (49.3%). Smell marketing elements were also evident, particularly ambient scents within supermarkets (64.0%), food-related aromas (53.2%), and scents in food preparation areas (49.8%). In addition, most respondents expressed a desire to experience products prior to purchase (93.1%). A high proportion reported having participated in free food sampling (85.7%), and among those, 77.8% indicated that product trial influenced their purchase decision.

Prior to PLS-SEM estimation, an EFA was performed to examine the underlying structure of the measurement scales. The results confirmed the adequacy of the data for factor analysis ($KMO = 0.667$ – 0.856 ; Bartlett's test, $p < 0.001$). The extracted factors were consistent with the proposed conceptual model, all retained items loaded above 0.60 on their intended constructs, and no substantial cross-loadings were detected. These results provided preliminary evidence supporting the dimensionality of the measurement.

Results of PLS-SEM

Evaluation of the measurement model

As reported in Table 2, the measurement model was reassessed after the removal of two indicators (PQ4 and SIGHT6). The results of this second-

Table 1: Measurement scales

Construct	Code	Measurement Item	Source
Sight	SIGHT1	I am attracted to fresh food products with visually appealing and attractive packaging.	[11, 28, 29]
	SIGHT2	Sales staff with a friendly and positive appearance increase my interest in purchasing fresh food products.	
	SIGHT3	I am attracted to food products displayed in central and easily accessible locations within the supermarket.	
	SIGHT4	Appropriate lighting intensity makes me feel comfortable while shopping.	
	SIGHT5	A brand's distinctive color scheme helps me easily recognize the brand.	
	SIGHT6	The supermarket's lighting and color design influence my mood while shopping.	
Sound	SOUND1	Background music influences my mood and the amount of time I spend shopping.	[29, 30]
	SOUND2	Soft and relaxing music encourages me to stay longer in the supermarket.	
	SOUND3	I am attracted by persuasive sales messages delivered by sales staff.	
	SOUND4	Repeated fresh product advertising messages help me remember and better understand fresh products.	
Smell	SMELL1	A pleasant supermarket scent increases the amount of time I spend shopping.	[10, 31, 32]
	SMELL2	Pleasant product aromas stimulate my interest in purchasing.	
	SMELL3	A pleasant scent inside the supermarket helps reduce my negative emotions.	
	SMELL4	A moderate scent intensity in the supermarket makes me feel more comfortable.	
Touch	TOUCH1	The temperature inside the supermarket makes me feel comfortable.	[13, 15, 31]
	TOUCH2	The clean and well-maintained interior surfaces of the supermarket make me feel comfortable.	
	TOUCH3	I enjoy touching various fresh food products while browsing in the supermarket.	
	TOUCH4	I am more likely to purchase a fresh food product if I can touch it before buying.	
Taste	TASTE1	I pay more attention to fresh food brands that offer product samples for tasting.	[11, 28, 33]
	TASTE2	The appearance and color of fresh food products stimulate my sense of taste.	
	TASTE3	The aroma of fresh food products stimulates my sense of taste.	
	TASTE4	Descriptive sensory words (e.g., <i>spicy</i> , <i>juicy</i> , <i>creamy</i>) stimulate my sense of taste.	
	TASTE5	I am more likely to purchase a fresh food product after tasting a sample.	
Perceived quality	PQ1	I trust the quality of fresh food products sold in supermarkets.	[34]
	PQ2	My fresh food shopping experience at the supermarket is satisfactory.	
	PQ3	The supermarket provides a comfortable environment for fresh food shopping.	
	PQ4	The supermarket offers a wide variety of fresh food products, giving me many choices.	
Brand awareness	BA1	When buying food, supermarkets are the first retail brands that come to my mind.	[9, 34]
	BA2	I am familiar with supermarket brands when shopping for fresh food.	
	BA3	I can easily recognize supermarket brands through their distinctive characteristics.	
	BA4	I can easily recall supermarket brands when thinking about fresh food shopping.	
Purchase decision	PD1	I frequently purchase fresh food products from supermarkets.	[6, 34]
	PD2	I intend to continue purchasing fresh food products from supermarkets in the future.	
	PD3	I am willing to recommend purchasing fresh food products from supermarkets to my family and friends.	

round evaluation indicate that all remaining indicators exhibit outer loadings above the recommended threshold of 0.70, supporting adequate indicator reliability. To conserve space, item-level outer loading values are not reported in the table.

In addition, the average variance extracted (AVE) values for all constructs exceed the minimum criterion of 0.50, demonstrating satisfactory convergent validity. Composite reliability (CR) values are also above the recommended threshold of 0.70, indicating acceptable internal consistency and further supporting convergent validity [35]. The results confirm that the measurement model meets the established criteria for reliability

and convergent validity and is suitable for subsequent structural model analysis.

Table 2: Results the second round of reliability and convergent validity testing of the scales

Latent variables	VIF	CA	CR	AVE
SIGHT	1.634	0.836	0.843	0.578
SOUND	1.244	0.778	0.790	0.600
SMELL	1.564	0.805	0.811	0.631
TOUCH	1.105	0.736	0.736	0.568
TASTE	1.446	0.821	0.830	0.582
PQ	1.375	0.778	0.783	0.563
BA	1.375	0.785	0.788	0.609
PD		0.706	0.709	0.629

To assess potential multicollinearity among the predictor constructs, inner variance inflation

factor (VIF) values were examined. As shown in Table 2, all inner VIF values range from 1.105 to 1.634, which are well below the recommended threshold of 3.0 [35]. These results indicate that multicollinearity is not a concern in the structural model.

Discriminant validity was examined using three complementary approaches: the Fornell-Larcker criterion, the heterotrait-monotrait ratio (HTMT), and the cross-loading criterion. As reported in Table 3, the square roots of the average variance extracted (AVE), shown on the diagonal, exceed the corresponding inter-construct correlations for all latent variables, thereby satisfying the Fornell-Larcker criterion for discriminant validity [36]. In addition, the HTMT results presented in Table 4 indicate that all values are below the conservative threshold of 0.85, as recommended by Henseler et al. [27], providing further evidence of discriminant validity. Moreover, the cross-loading assessment confirmed that each indicator loaded more strongly on its intended construct than on the remaining constructs. To maintain readability and comply with space limitations, detailed cross-loading results are not reported in tabular form but are available upon request. Taken together, the consistent results across all three criteria provide strong support for the discriminant validity of the measurement model.

Table 3: Fornell-Larcker criterion

	SIGHT	SOUND	SMELL	TOUCH	TASTE	PQ	BA	PD
SIGHT	0.760							
SOUND	0.383	0.775						
SMELL	0.541	0.361	0.794					
TOUCH	0.218	0.199	0.205	0.747				
TASTE	0.477	0.305	0.453	0.272	0.763			
PQ	0.551	0.452	0.540	0.465	0.529	0.750		
BA	0.493	0.486	0.482	0.456	0.476	0.522	0.780	
PD	0.427	0.311	0.397	0.265	0.408	0.469	0.450	0.793

Table 4: Heterotrait-monotrait ratio results

	SIGHT	SOUND	SMELL	TOUCH	TASTE	PQ	BA
SIGHT							
SOUND	0.465						
SMELL	0.672	0.456					
TOUCH	0.276	0.258	0.259				
TASTE	0.577	0.372	0.547	0.352			
PQ	0.703	0.590	0.699	0.624	0.667		
BA	0.602	0.614	0.602	0.598	0.584	0.681	
PD	0.563	0.415	0.521	0.362	0.529	0.635	0.603

Table 5 and Figure 2 present the results of the hypothesis testing using PLS-SEM. The findings

reveal that all sensory marketing dimensions, including sight, sound, smell, touch, and taste, positively influence perceived quality (PQ) and brand awareness (BA). Among these factors, touch has the strongest effect on both perceived quality ($\beta = 0.286$, $p < 0.001$) and brand awareness ($\beta = 0.290$, $p < 0.001$). In addition, perceived quality ($\beta = 0.322$, $p < 0.001$) and brand awareness ($\beta = 0.282$, $p = 0.001$) positively affect fresh food purchase decisions (PD). The mediation analysis further shows that perceived quality partially mediates the effects of sound, touch, and taste on purchase decisions, while brand awareness significantly mediates the relationships between all sensory stimuli and purchase decisions.

Evaluation of structural model (PLS-SEM)

The structural model exhibits adequate explanatory power, with sensory stimuli explaining 55.0% of the variance in perceived quality (PQ) and 49.6% of the variance in brand awareness (BA), while PQ and BA together account for 27.7% of the variance in purchase decision (PD).

Bootstrapping results demonstrate that all sensory stimuli exert significant direct effects on PQ and BA ($p < 0.05$). Furthermore, PQ and BA function as mediating mechanisms linking sensory stimuli to purchase decision. Specifically, PQ partially mediates the effects of sound, touch, and taste stimuli on PD, whereas the indirect effects of sight and smell via PQ are not statistically significant. In contrast, BA consistently mediates the relationships between all sensory stimuli and PD, with all indirect paths supported by bootstrapping p-values below 0.05.

B. Discussions

Sensory marketing and perceived quality

The findings show that all five sensory stimuli positively influence perceived quality in fresh food supermarket retailing, supporting sensory marketing theory and the SOR framework, which proposes that environmental stimuli shape consumers’ internal evaluations before influencing behavioral responses [10]. This result is broadly in line with previous studies confirming that sensory cues enhance consumers’ perceptions of

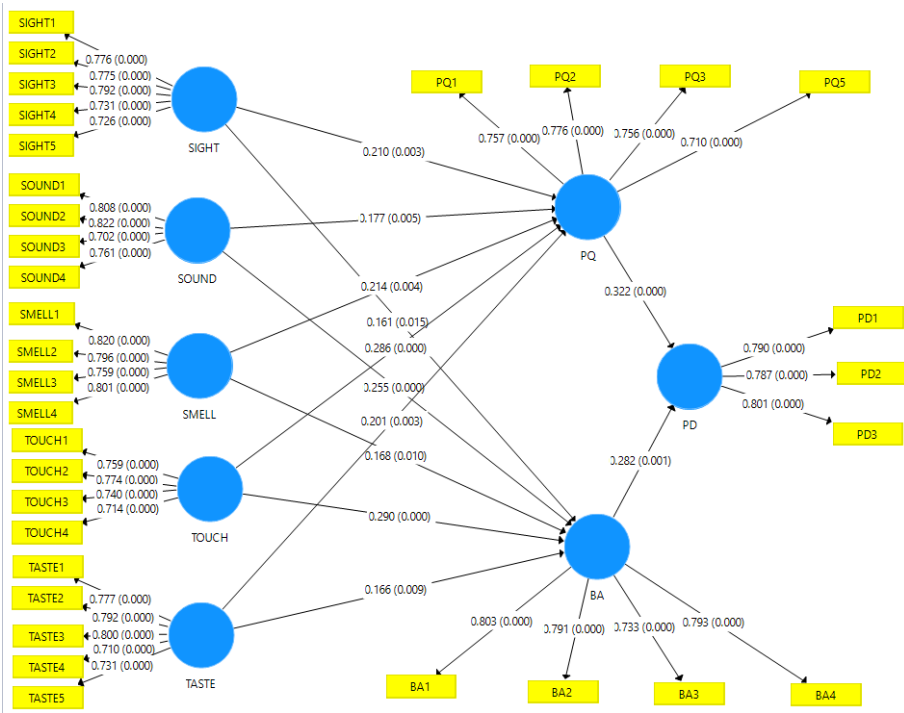


Fig. 2: PLS-SEM analysis diagram

Table 5: Hypothesis testing results

Hypotheses	Structural path	R ²	R ² adjusted	f ²	β	P-value	Results
H1a	SIGHT → PQ			0.060	0.210	0.003	Supported
H1b	SOUND → PQ			0.056	0.177	0.004	Supported
H1c	SMELL → PQ	0.550	0.539	0.065	0.214	0.003	Supported
H1d	TOUCH → PQ			0.164	0.286	0.000	Supported
H1e	TASTE → PQ			0.062	0.201	0.004	Supported
H2a	SIGHT → BA			0.032	0.161	0.014	Supported
H2b	SOUND → BA			0.104	0.255	0.000	Supported
H2c	SMELL → BA	0.496	0.483	0.036	0.168	0.009	Supported
H2d	TOUCH → BA			0.151	0.290	0.000	Supported
H2e	TASTE → BA			0.038	0.166	0.011	Supported
H3	PQ → PD			0.104	0.322	0.000	Supported
H4	BA → PD			0.080	0.282	0.001	Supported
H5a	SIGHT → PQ → PD				0.045	0.064	Not supported
H5b	SOUND → PQ → PD				0.072	0.008	Supported
H5c	SMELL → PQ → PD				0.047	0.067	Not supported
H5d	TOUCH → PQ → PD	0.277	0.270		0.082	0.003	Supported
H5e	TASTE → PQ → PD				0.047	0.033	Supported
H6a	SIGHT → BA → PD				0.068	0.025	Supported
H6b	SOUND → BA → PD				0.057	0.024	Supported
H6c	SMELL → BA → PD				0.069	0.017	Supported
H6d	TOUCH → BA → PD				0.092	0.002	Supported
H6e	TASTE → BA → PD				0.065	0.044	Supported

product and service quality in retail environments [29, 31]. Among the five sensory dimensions, touch exerts the strongest influence on perceived quality, followed by smell. This finding agrees with Spence et al. [24], McCabe et al. [13], and Hoang et al. [31], who argue that tactile experiences provide direct diagnostic information about product quality. In fresh food retailing, consumers often evaluate freshness, firmness, and product condition through physical contact, making touch a particularly reliable cue for quality assessment. Likewise, pleasant food aromas provide diagnostic sensory information that positively influences consumers' evaluations of food products by enhancing perceptions of freshness and overall quality [37].

Although sight, taste, and sound also positively influence perceived quality, their effects are smaller by comparison. This suggests that consumers distinguish between sensory cues that directly communicate product quality (e.g., touch and smell) and those that primarily enrich the shopping environment. This finding aligns with Biswas et al. [14], who reported that ambient sensory cues shape consumers' internal evaluations before influencing behavioral responses. In this study, sensory stimuli serve as environmental cues that affect consumers' cognitive judgments rather than merely creating pleasant shopping experiences. These findings support Biswas et al. [14], who reported that multisensory marketing enhances customer responses by creating richer consumption experiences and strengthening firms' non-economic performance. Although their study focused on restaurants rather than supermarkets, this study suggests that well-designed sensory stimuli contribute to more favorable consumer evaluations and behavioral outcomes. However, unlike Biswas et al. [14], which focused primarily on ambient lighting as a single atmospheric cue, the present study examines sight, sound, smell, touch, and taste simultaneously. The results suggest that although all five sensory stimuli contribute to perceived quality, their relative influence differs, reflecting the multidimensional nature of sensory marketing in fresh food

supermarket retailing. These findings reinforce the argument that perceived quality is an evaluative response more strongly activated by sensory experiences that provide direct information about food products.

Sensory marketing and brand awareness

The results confirm that all five sensory stimuli positively influence brand awareness, supporting the SOR framework and previous sensory branding research, which suggests that multisensory experiences strengthen consumers' memory, recognition, and recall of brands [10, 11, 24]. Among the five sensory dimensions, touch and sound exhibit relatively stronger effects on brand awareness. This finding is in accordance with Hultén et al. [11], who argue that direct sensory interaction enhances consumers' emotional engagement and facilitates stronger brand memory. Pleasant sound experiences and opportunities to physically interact with products may therefore create more memorable shopping experiences and strengthen supermarket brand recognition. Although sight also positively influences brand awareness, its effect is comparatively weaker than those of touch and sound. Rather than suggesting that sight cues are less important, this finding indicates that sight stimuli represent only one component of consumers' overall multisensory shopping experience. It is suggested that brand memory is strengthened when multiple senses are activated simultaneously rather than relying solely on sight information [11, 24]. These findings therefore highlight the importance of integrated multisensory strategies for strengthening supermarket brand awareness.

Perceived quality, brand awareness, and fresh food purchase decisions

The findings revealed that both perceived quality and brand awareness positively influence fresh food purchase decisions, consistent with previous research emphasizing the importance of product evaluation and brand-related cognition in consumer decision-making [3, 21, 22]. Among these two mediators, perceived quality exerts the stronger effect, suggesting that consumers place greater emphasis on evaluat-

ing food quality when purchasing fresh food. This result is reasonable because fresh food purchases involve relatively high uncertainty regarding freshness, safety, and product condition. Consequently, consumers rely more heavily on quality assessments before making purchasing decisions. Brand awareness also significantly influences purchase decisions, indicating that familiar supermarket brands reduce consumers' uncertainty and simplify decision-making in competitive retail environments. Together, these findings suggest that sensory marketing influences consumer behavior through two complementary psychological mechanisms: perceived quality reflects consumers' evaluative judgments regarding food quality, whereas brand awareness represents a broader cognitive response related to familiarity and brand recognition. This distinction provides a more nuanced understanding of the organism component within the SOR framework. The findings also extend the conclusions of Gao et al. [16]. Their study showed that sensory brand experience influences brand loyalty through multiple psychological mechanisms, with brand attitude playing a stronger mediating role than brand-self connection. Similarly, the present study shows that sensory marketing affects purchase decisions through multiple cognitive pathways. In contrast to Gao et al. [16], this study finds that perceived quality exerts a stronger influence on fresh food purchase decisions than brand awareness. This difference is likely attributable to the fresh food supermarket context, where consumers rely heavily on quality evaluations related to freshness, safety, and product reliability before making purchase decisions.

The mediating role of perceived quality

The mediation analysis denotes that perceived quality partially mediates the relationships between touch, taste, and sound and fresh food purchase decisions. These findings suggest that these sensory dimensions influence purchasing behavior primarily by improving consumers' evaluations of food quality. Touch and taste provide direct diagnostic information regarding freshness and product characteristics, while sound con-

tributes indirectly by creating a pleasant shopping atmosphere that enhances quality perceptions. In contrast, the indirect effects of sight and smell through perceived quality are not statistically significant, indicating that perceived quality is not a universal mechanism through which all sensory cues influence purchasing behavior. One possible explanation is that sight and smell stimuli primarily generate affective and atmospheric responses rather than directly shaping consumers' cognitive evaluations of food quality. Previous sensory marketing research has distinguished between sensory cues that evoke emotions and those that provide diagnostic information for product evaluation [10, 24]. In the context of fresh food supermarkets, consumers may regard attractive sight displays and pleasant ambient smells as desirable features of the shopping environment rather than reliable indicators of actual product quality. Although these sensory cues contribute positively to consumers' shopping experiences, they may not sufficiently strengthen perceived quality to translate into higher purchase decisions through this mediating pathway. These findings extend previous sensory marketing research by showing that the mediating role of perceived quality varies across sensory dimensions, highlighting the differential functions of individual senses within consumers' decision-making processes.

The mediating role of brand awareness

The findings fully support the mediating role of brand awareness across all five sensory dimensions, indicating that sensory marketing consistently influences fresh food purchase decisions through consumers' cognitive evaluations of supermarket brands. This result is consistent with previous sensory branding literature suggesting that multisensory experiences strengthen consumers' memory, familiarity, and recognition of brands [9, 11]. Unlike perceived quality, which only mediates selected sensory dimensions, brand awareness significantly mediates the effects of all sensory stimuli. This suggests that sensory experiences, including store atmosphere, product displays, ambient scent, music, tactile interaction,

and product tasting, collectively reinforce consumers' familiarity with supermarket brands regardless of whether they directly influence quality evaluations. The findings therefore indicate that brand awareness represents a more stable cognitive pathway linking sensory experiences to purchase decisions. The consistent mediating role of brand awareness also resonates with Gao et al. [16], who argued that sensory experiences strengthen consumers' cognitive connections with brands through psychological mechanisms. Nevertheless, unlike their study, which examined brand loyalty as the outcome, the present study focuses on purchase decisions in supermarket retailing. The findings suggest that brand awareness consistently supports purchase decisions across all sensory dimensions, whereas perceived quality is more dependent on the diagnostic relevance of individual sensory stimuli. This distinction highlights the complementary roles of brand-related cognition and product evaluation within the SOR framework.

The results reveal two complementary mechanisms through which sensory marketing shapes fresh food purchase decisions. Perceived quality mainly reflects evaluative judgments regarding product quality and selectively mediates sensory influences that provide diagnostic information, whereas brand awareness represents a broader cognitive mechanism that consistently translates multisensory experiences into purchasing behavior. These findings enrich the SOR framework by demonstrating that different organismic responses play distinct roles in explaining how sensory marketing influences consumer decision-making in fresh food supermarkets.

V. CONCLUSION AND IMPLICATIONS

This study examined how sensory marketing influences consumers' fresh food purchase decisions through perceived quality and brand awareness in supermarket retailing. Overall, the findings suggest that sensory marketing operates through two distinct but complementary psychological pathways. Perceived quality primarily functions as an evaluative mechanism through

which selected sensory cues influence purchase decisions, whereas brand awareness provides a broader brand-related pathway through which multisensory experiences translate into purchase-related responses. This distinction indicates that sensory marketing should not be viewed as a single mechanism with uniform effects across sensory dimensions. Instead, its effectiveness depends on the psychological response activated by each sensory cue. By examining these mechanisms simultaneously in fresh food supermarket retailing in Can Tho City, the study extends existing sensory marketing research by providing evidence from an emerging retail market and a product category in which consumers face considerable difficulty in evaluating quality prior to purchase.

The study contributes to the sensory marketing literature and the SOR framework in three ways. First, it demonstrates that the organismic component of the SOR framework can encompass multiple cognitive pathways, rather than a single internal response. The simultaneous consideration of perceived quality and brand awareness provides a more differentiated explanation of how sensory stimuli are translated into purchase decisions. Second, the findings refine the role of perceived quality by suggesting that its mediating function is cue-dependent rather than universal. Sensory cues that facilitate more direct evaluation of fresh food appear to be more closely connected with quality-based responses, whereas other sensory cues may operate through alternative mechanisms. This qualification extends previous research that has largely emphasized the general positive effects of sensory marketing on consumer evaluations. Third, the consistent mediating role of brand awareness across sensory dimensions highlights the importance of brand-related cognition as a relatively broad pathway through which multisensory experiences influence consumer responses. Together, these findings advance the SOR perspective by showing that the relationship between sensory stimuli and purchase behavior is contingent on the type of organismic response activated. Future sensory

marketing research could build on this framework by examining additional organismic mechanisms, such as trust, emotions, perceived value, or satisfaction, and by testing whether these mechanisms operate sequentially or in parallel. The findings also offer implications for sensory marketing practice. Supermarket managers should allocate sensory marketing resources according to the specific psychological function of each sensory cue, rather than adopting a uniform multisensory strategy. For fresh food, sensory activities that facilitate direct product evaluation should be prioritized when the objective is to strengthen quality perceptions and stimulate purchase. In practice, managers can provide appropriate opportunities for product interaction and tasting, while ensuring that displays and store environments facilitate convenient and credible evaluation of freshness and product condition. At the same time, because brand awareness provides a broader pathway across sensory dimensions, supermarkets should develop a consistent multisensory brand experience across visual identity, sound, scent, tactile interaction, and taste-related activities. The strategic objective should not simply be to increase the intensity of sensory stimulation, but to ensure that sensory cues are distinctive, consistent with the supermarket brand, and aligned with the desired consumer response. This approach can help managers avoid excessive investment in sensory elements that do not directly strengthen quality evaluations while simultaneously using multisensory experiences to build longer-term brand familiarity and recognition.

Several limitations should be considered for further research. First, the use of convenience and snowball sampling and data collected from 203 supermarket shoppers in Can Tho City limits the generalizability of the findings. Future studies should employ larger and more diverse samples across different cities and regions, preferably using probability-based or stratified sampling. Second, the study focuses on fresh food retailing; therefore, the observed relationships may differ across product categories with different levels of sensory accessibility and perceived risk. Compar-

ative studies across fresh food, packaged food, and non-food categories could clarify the boundary conditions of sensory marketing effects. Third, the model considers only perceived quality and brand awareness as mediating mechanisms. Future research could incorporate trust, emotions, perceived value, satisfaction, or perceived risk to examine whether sensory marketing influences purchase decisions through additional or sequential psychological pathways. Finally, the cross-sectional design does not capture changes in consumer responses over time. Longitudinal and experimental studies could provide stronger evidence of causality and determine whether repeated multisensory exposure produces sustained changes in brand awareness, quality perceptions, and purchase behavior.

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