JUKIM ADMI Jurnal Ilmiah Multidisiplin

OPEN ACCESS

JURNAL JUKIM Vol 4 No. 3 Mei 2025 | P-ISSN: 2829-0488 E-ISSN: 2829-0518, Page. 106-113

The Influence Of Multidimensional Sensory Experience On Purchase Decisions In Physical Retail In The Face Of E-Commerce Dominance

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Article History
Received : April 2025
Revised : April 2025
Accepted : Mei 2025
Published : Mei 2025

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Cite This Article:
Yusrin, N. A. (2025). THE INFLUENCE OF MULTIDIMENSIONAL SENSORY EXPERIENCE ON PURCHASE DECISIONS IN PHYSICAL RETAIL IN THE FACE OF E-COMMERCE DOMINANCE. Jurnal Ilmiah Multidisiplin, 4(03), 106–113.

DOI:
https://doi.org/10.56127/jukim.v4i03.2012

Abstract:
This study investigates the impact of five sensory dimensions, purchase intention, tactile, visual, gustative, and Olfactory, on consumer purchase decisions in physical retail environments amid the growing dominance of e-commerce. Employing a quantitative approach and Partial Least Squares Structural Equation Modelling (PLS-SEM) with data collected from 125 Mixue consumers in Jakarta area, the results indicate that only the visual and Olfactory dimensions significantly influence purchase intention. Visual stimuli emerge as the most dominant factor through the enhancement of aesthetic perceptions, while Olfactory stimuli foster positive emotional associations that encourage purchasing behaviour. Conversely, purchase intention, tactile, and gustative dimensions do not exhibit significant effects. These findings underscore the critical role of optimizing visual and Olfactory elements within multisensory marketing strategies to strengthen the attractiveness and competitiveness of physical retail stores in the digital age.
Keywords: *Sensory Marketing; Purchase Intention; Physical Retail; E-Commerce Competition; Consumer Behaviour*

INTRODUCTION

In recent years, consumer behavior has undergone a significant transformation, most notably marked by declining foot traffic in physical retail stores and the rising dominance of e-commerce. Recent data reveals a sharp reduction in physical store visits due to changing consumer preferences that favor the convenience and speed of online shopping (Li, Chen, & Huang, 2023). A Populix survey conducted in late 2023 indicated that 54% of Indonesian consumers prefer shopping through e-commerce platforms, with the majority coming from Generation Z (Populix, 2023). Among the primary reasons for this shift are lower prices than those offered in physical stores, with 71.6% of respondents citing promotions and discounts, and 60% emphasizing ease of transaction (Sleekflow, 2023). Moreover, the COVID-19 pandemic further accelerated this shift by limiting social interaction and strengthening trust in digital transactions, cementing e-commerce as the primary consumer choice.

Within this context, Indonesia's physical retail industry faces increasing pressure as foot traffic continues to dwindle. The growing dominance of e-commerce, especially in urban areas, has significantly reduced the appeal of traditional retail stores that once relied heavily on in-person shopping experiences (Djailani, 2023; Setyowati, 2023). Advancements in digital technology now provide easy access to a wider array of products at more competitive prices, prompting consumers to favor online platforms. This shift demands that physical retailers optimize every aspect of the in-store shopping experience to remain relevant and competitive (Rania, 2024; Sandi, 2023).

To address these challenges, sensory marketing has emerged as a promising strategic approach. Multidimensional sensory stimuli—comprising tactile, visual, gustative (taste), olfactory (smell), and purchase intention cues—play a vital role in shaping holistic shopping experiences and fostering positive consumer perceptions (Krishna, 2012; Spence et al., 2014). For instance, visual elements such as attractive store design and product packaging can increase consumer appeal, while olfactory cues are capable of evoking emotions and forming deep, positive associations (Han, Li, & Tan, 2025). While the application of tactile, gustative, and intentional sensory dimensions in physical retail still requires innovation to produce measurable impact, optimizing sensory experiences is a key strategy for creating competitive advantage in the digital age (Tuten & Solomon, 2017).

The growing strength of e-commerce compels physical retailers to provide shopping experiences that are unique and difficult to replicate digitally. Understanding how each sensory dimension influences purchase intention is crucial for developing in-store environments that not only attract but also retain customers while encouraging repeated purchases (Kotler, Keller, & Chernev, 2022). The primary issue faced by physical retailers is declining footfall, accompanied by difficulties in enticing consumers who increasingly prefer digital transactions. This phenomenon may stem from the suboptimal application of sensory marketing, which has yet to effectively stimulate purchase decisions (Setyowati, 2023; Djailani, 2023).

This research seeks to address the following core question: To what extent do sensory dimensions (tactile, visual, gustative, olfactory, and purchase intention) influence consumer purchase decisions in physical retail stores amid intense competition from e-commerce? Supporting questions include how each sensory input shapes consumer experience and decision-making, and whether optimal implementation of sensory marketing can serve as an effective strategy to enhance the appeal of physical retail (Chaffey & Ellis-Chadwick, 2019; Kotler et al., 2022).

The main objective of this study is to evaluate the influence of each sensory dimension, namely touch, sight, taste, smell, and purchase-related stimuli—on consumers' purchase decision-making in physical retail contexts. Additionally, the study aims to develop practical strategies based on empirical findings to enhance the in-store shopping experience through effective use of sensory elements. In doing so, physical retailers can compete more effectively against e-commerce platforms. Furthermore, this research is expected to contribute to the theoretical enrichment of sensory marketing by offering deeper empirical insights within the context of brick-and-mortar retail (Krishna, 2012; Han et al., 2025).

Several prior studies have investigated the impact of sensory stimuli on consumer behavior. Krishna (2012) and Spence et al. (2014) found that integrated multi-sensory experiences significantly enhance customer satisfaction and purchase intention. Research by Han, Li, and Tan (2025) confirmed the importance of visual and olfactory stimuli in boosting purchase intention, although further exploration is needed to understand the effects of tactile, gustative, and intentional stimuli in physical retail contexts. Most of these studies focused on e-commerce or generalized various sectors, without giving special attention to physical retail. Therefore, a clear research gap exists, highlighting the need for a comprehensive analysis of the individual effects of each sensory dimension within the context of brick-and-mortar retail, particularly in response to the growing dominance of e-commerce (Li, Chen, & Huang, 2023; Kotler, Keller, & Chernev, 2022).

The theoretical implication of this research lies in its potential to broaden the literature on the relationship between sensory factors and consumer purchase behavior, while redefining the role of sensory experience in delivering a unique shopping environment within physical retail (Spence et al., 2014). Practically, this study offers strategic insights for retail management on how to design sensory-rich store environments that drive purchase intention and customer retention despite the prevailing dominance of e-commerce (Tuten & Solomon, 2017; Kotler et al., 2022). This research also contributes actionable strategies for physical retailers to regain consumer interest through innovative sensory experiences.

The study is limited to physical retail consumers in major Indonesian cities, with the assumption that sensory dimensions are measured consistently and that consumers respond uniformly to presented stimuli. The research will test the following hypotheses: (1) The quality of sensory-based purchase intention positively affects purchasing decisions; (2) Optimal tactile experiences enhance consumer purchase intention; (3) Visual stimuli significantly influence purchase intention; (4) Gustative stimuli affect purchase intention; and (5) Olfactory stimuli influence purchase intention. The findings are expected to

systematically uncover how each sensory dimension impacts consumer decisions in the face of rising e-commerce competition (Chaffey & Ellis-Chadwick, 2019; Kotler, Keller, & Chernev, 2022). Hence, this study not only advances theoretical development in sensory marketing but also offers practical recommendations for improving the competitiveness of physical retail in the digital era.

RESEARCH METHOD

This study employs a quantitative approach with a cross-sectional research design, conducted over the course of one month in 2025. Data were collected through a closed-ended questionnaire survey distributed to consumers of Mixue outlets located across the Greater Jakarta area (Jabodetabek). Mixue was selected as the object of study due to its status as one of the fastest-growing physical retailers in Indonesia, with an extensive network and a strong brand identity consistently implementing comprehensive sensory marketing elements, including visual, auditory, tactile, gustative, and olfactory stimuli, which cannot be fully replicated through e-commerce platforms (Kotler, Keller, & Chernev, 2022; Setyowati, 2023).

This research specifically targeted respondents who had made purchases at Mixue stores and had consciously experienced sensory exposure, making purchasing decisions based on consideration rather than impulse. Respondents were selected using a purposive sampling technique, resulting in a total sample of 125 individuals who met the inclusion criteria. The research instrument was a five-point Likert scale questionnaire, which had previously undergone validity and reliability testing to ensure the quality of measurement.

The collected data were analyzed using the Partial Least Squares–Structural Equation Modeling (PLS-SEM) technique, with the assistance of SmartPLS software. PLS-SEM was chosen due to its ability to handle complex structural models and its suitability for testing latent variable relationships in exploratory and predictive research settings (Hair et al., 2021). Through this analytical approach, the study evaluates the influence of five sensory dimensions on purchase intention decisions, aiming to generate empirical insights that can serve as a foundation for developing effective experience-based marketing strategies in physical retail environments.

RESULT AND DISCUSSION

Results

After ensuring the validity and reliability of the measurement model, the next stage of analysis focuses on evaluating the structural model to test the research hypotheses. The structural model analysis in Partial Least Squares–Structural Equation Modeling (PLS-SEM) aims to determine the magnitude and significance of the relationships between latent variables, as hypothesized in this study.

The structural model in this research examines the influence of five exogenous constructs—Auditory Sensor, Tactile Marketing Sensor, Visual Sensory, Taste/Gustative Sensor, and Olfactory Sensor—on the endogenous construct, namely Purchase Intention. Each sensory dimension represents a unique aspect of sensory marketing that is hypothesized to contribute positively to consumers' purchase decision-making processes within the physical retail context.

The evaluation criteria for the structural model include the path coefficient (β) for each relationship, the coefficient of determination (R^2) for the dependent variable, and the overall explanatory power of the model. The R^2 value for Purchase Intention reflects the proportion of variance explained by the combined influence of all five sensory variables. Additionally, the strength of each path is indicated by the standardized coefficient, which represents the predictive relevance of each sensory factor toward consumer purchase intention.

Figure 1 below presents the structural model and visualizes the estimated path coefficients between constructs, as well as the indicator loadings for each latent variable.

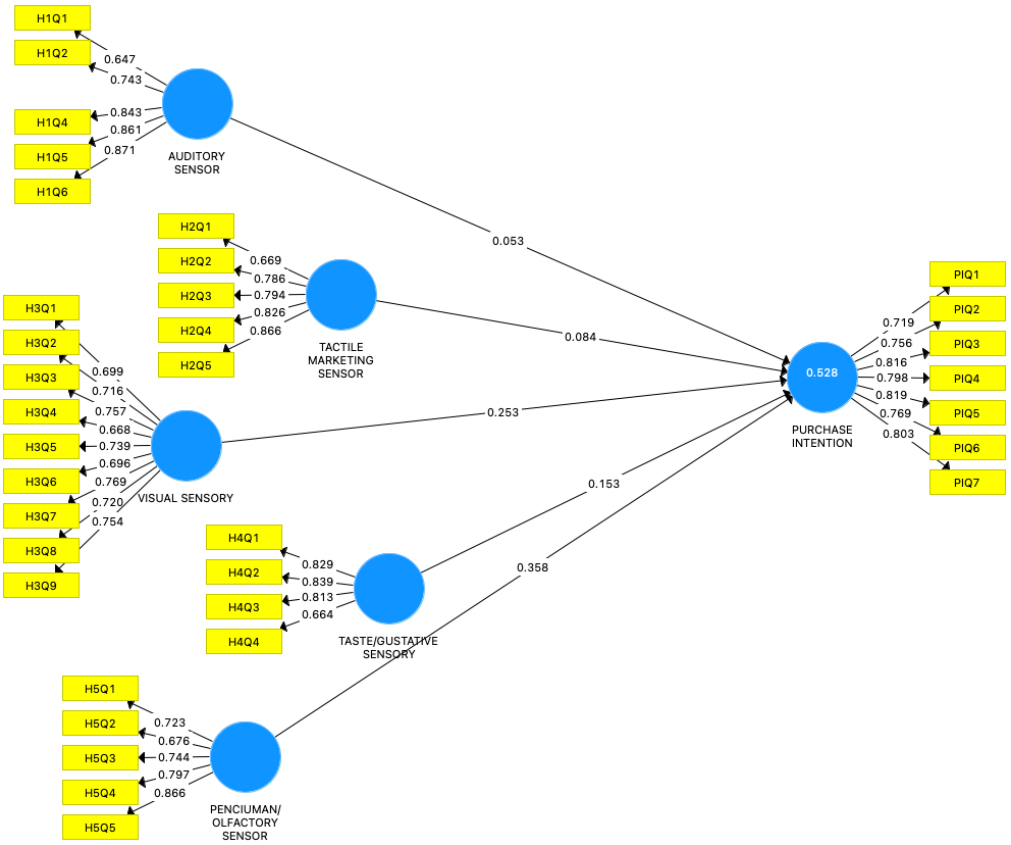

Figure 1. PLS Results

Figure 1 illustrates the structural model of the study, which analyzes the influence of five sensory dimensions—Auditory Sensor, Tactile Marketing Sensor, Visual Sensory, Taste/Gustative Sensor, and Olfactory Sensor—on Purchase Intention. Each latent variable is measured by multiple indicators with satisfactory loading values (≥ 0.6), indicating good construct reliability and convergent validity. The model reveals that the Taste/Gustative Sensor (β = 0.358) and Visual Sensory (β = 0.253) exhibit the strongest direct effects on Purchase Intention, followed by Olfactory Sensor (β = 0.153), while the influences of Tactile Marketing Sensor (β = 0.084) and Auditory Sensor (β = 0.053) are relatively weaker. The coefficient of determination (R^2 = 0.528) suggests that the five sensory constructs collectively explain 52.8% of the variance in Purchase Intention, reflecting a moderate explanatory power.

Following the assessment of the measurement model (outer model) and confirmation of construct validity and reliability, the next step involved analyzing the structural model to test the hypothesized relationships between latent variables. This analysis was conducted using the Partial Least Squares–Structural Equation Modeling (PLS-SEM) technique with the aid of SmartPLS software.
The purpose of this analysis is to examine the influence of the five sensory dimensions—Auditory Sensor, Tactile Marketing Sensor, Visual Sensory, Taste/Gustative Sensor, and Olfactory Sensor—on the Purchase Intention construct. The evaluation of the structural model is based on the path coefficients, their significance levels (t-statistics), and the coefficient of determination (R^2) for the endogenous variable Purchase Intention.

The following figure illustrates the structural model results, showing the direction and magnitude of the relationships between the exogenous variables and the dependent construct:

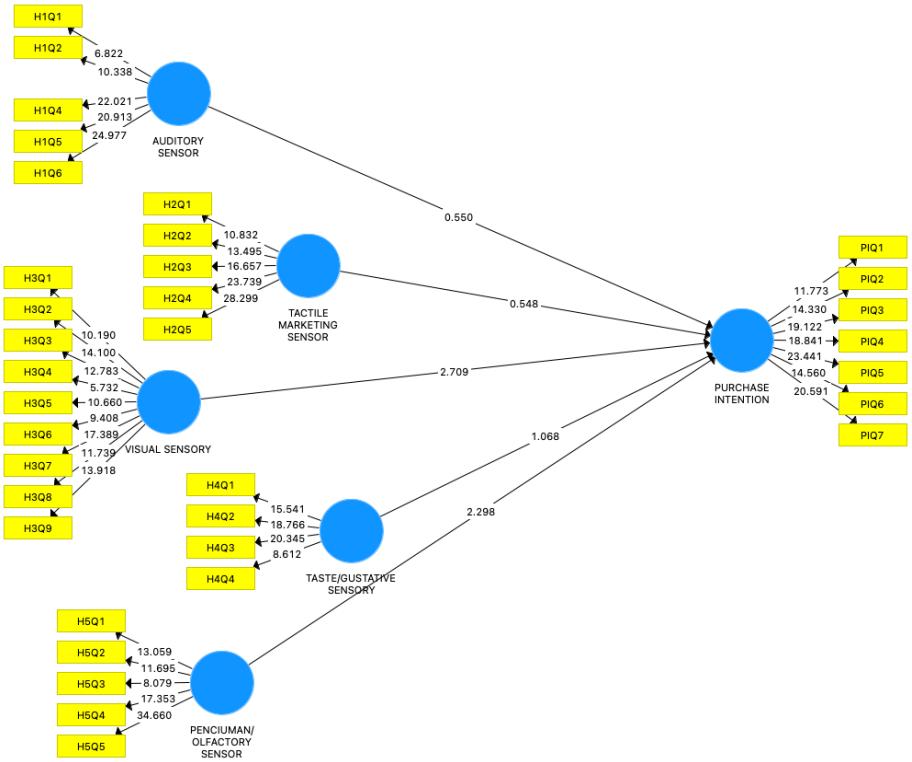

Figure 2. Structural Model Result of PLS-SEM Analysis on Purchase Intention

The structural relationships presented in Figure 2 are further clarified and supported by the results displayed in the following table of hypothesis testing. This table presents the output of the PLS-SEM analysis, including the original sample estimate (O), sample mean (M), standard deviation (STDEV), t-statistics, and p-values for each path coefficient.

The significance of each hypothesized relationship is assessed using the t-statistic and p-value thresholds, where a t-value > 1.96 and p-value < 0.05 indicate that the relationship is statistically significant at the 5% level. These results help determine the extent to which each sensory dimension exerts a significant influence on consumer Purchase Intention in the physical retail context.

The following table provides a detailed summary of the hypothesis testing results:

Table 1. Path Coefficients and Hypothesis Testing Results from the Structural Model

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Auditory Sensor -> Purchase Intention	0,053	0,066	0,092	0,578	0,564
Penciuman/Olfactory Sensor -> Purchase Intention	0,358	0,365	0,154	2,330	0,020
Tactile Marketing Sensor -> Purchase Intention	0,084	0,076	0,139	0,601	0,548
Taste/Gustative Sensory -> Purchase Intention	0,153	0,151	0,140	1,090	0,276
Visual Sensory -> Purchase Intention	0,253	0,257	0,097	2,618	0,009

Hypothesis Discussion

1. The Influence of Auditory Sensor on Purchase Intention.
   The analysis reveals that the influence of the auditory sensor on purchase intention is not statistically significant, with a path coefficient of 0.053 and a p-value of 0.564 (> 0.05). This suggests that auditory stimulation through background music or ambient sound does not contribute significantly to enhancing consumer purchase intention in the context of this study. This finding is consistent with previous research indicating that the effects of auditory stimuli can vary depending on product type and retail environment (Yalch & Spangenberg, 2000; Krishna, 2012).
2. The Influence of Olfactory Sensor on Purchase Intention.
   The olfactory sensor has a positive and significant effect on purchase intention, with a path coefficient of 0.358 and a p-value of 0.020 (< 0.05). Specific scents within the store environment have been shown to create a pleasant atmosphere and form positive brand associations that influence purchasing decisions. This result supports existing literature on the critical role of scent in sensory marketing (Pollák et al., 2021; Murwani et al., 2023).
3. The Influence of Tactile Marketing Sensor on Purchase Intention.
   The tactile marketing sensor does not exhibit a statistically significant influence on purchase intention, with a path coefficient of 0.084 and a p-value of 0.548 (> 0.05). This indicates that physical interaction or product touch did not strongly affect consumer buying intentions within this study's context. This result may be influenced by the nature of the product or suboptimal tactile experiences (Peck & Shu, 2009).
4. The Influence of Taste/Gustative Sensor on Purchase Intention.
   The gustative sensor also shows a positive but statistically insignificant relationship with purchase intention, with a path coefficient of 0.153 and a p-value of 0.276 (> 0.05). Although taste experiences are theoretically associated with emotional engagement (Fulton, 2020), the current empirical findings do not reflect a significant impact on actual purchase decisions.
5. The Influence of Visual Sensor on Purchase Intention.
   The visual sensor demonstrates the strongest and most significant positive effect on purchase intention, with a path coefficient of 0.253 and a p-value of 0.009 (< 0.05). This confirms the critical role of visual elements—such as lighting and product layout—in capturing attention and forming positive aesthetic perceptions that support purchasing decisions (Rajain & Rathee, 2017; Rafijevas & Razbadauskaite-Venske, 2025).

Among the five proposed hypotheses, only two were found to be statistically significant: the influence of visual and olfactory dimensions on purchase intention. These findings reinforce the literature emphasizing the importance of visual aesthetics and scent in multisensory marketing strategies. Visual stimuli act as cognitive tools that help consumers recognize, compare, and evaluate products, while olfactory cues function as affective triggers that build positive emotional states and increase the likelihood of purchase.

Conversely, the dimensions of auditory, tactile, and gustative stimuli did not show significant effects, which may be attributed to product characteristics, purchasing context, or limited sensory exposure—particularly in cases where direct sensory interaction is constrained, such as in hybrid or digital retail settings.

CONCLUSION

This study investigated the influence of five sensory dimensions—auditory, tactile, visual, gustative, and olfactory—on consumer purchase intention using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings revealed that only the visual and olfactory dimensions had a statistically significant impact. The visual dimension showed the strongest positive effect, emphasizing the importance of aesthetic perceptions such as product design, color, and layout in shaping buying interest. The olfactory dimension also had a significant effect, suggesting that ambient scents or product aromas can evoke emotional associations that drive purchasing decisions. Meanwhile, the auditory, tactile, and gustative dimensions did not significantly influence purchase intention, possibly due to limited direct sensory experiences during the buying process, particularly in digital or non-physical environments.

This study is limited by the context and product category examined, which may not fully engage taste and touch. Therefore, future research is encouraged to explore sensory-rich products such as food, beverages, or textiles to better evaluate gustative and tactile effects. Expanding the research setting to offline or hybrid shopping environments—where all senses can be stimulated—may also provide deeper insights.

Studies like Pal et al. (2024) affirm that multisensory experiences in physical retail enhance revisit intentions. In addition, experimental or neuromarketing approaches are recommended to capture consumers' emotional and physiological responses to sensory stimuli. Lastly, future studies should consider examining mediating or moderating factors such as brand experience, emotional response, or store environment to uncover underlying psychological mechanisms that link sensory elements to purchase intention.

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