Effect of Ambient Scents and Behavior Responses of Customer

Minh Tri CAO[a], Quynh Nga DUONG[b]

Abstract: This research aimed to explain the influence of an ambient scent and its effects could have on shopper's behavior by using stimuli (determinants) – organism (emotion) – response (effects) model. We applied PLS-SEM in an examination of how vanilla scent influences shoppers' behavior by submitting electrostatic aroma diffusers in fashion stores. The main findings indicated that vanilla scents have a significant positive impact on shoppers' emotional by taking into account its two dimensions pleasure and arousal in fashion stores. It was also discovered that shoppers' emotional states (pleasure and arousal) have a significant positive effect on shopper' activities (time spent in store, amount of money spent and the intention of revisit the place of purchase). We find also that ambient scent has a significant positive effect on intention of revisit the store, amount of money spent and time spend in store. We find that consumers' emotions play moderating roles in affecting the impact of ambient scent and behavioral responses of consumer. This study contributes to the retail store management and behavioral responses of consumer literature. The implications for retail store manager for future are discussed.

Keywords: olfactory marketing, emotional state, PLS-SEM model

JEL: M31, M30

1. Introduction

The retail business in general and the fashion business in particular in Vietnam are currently in fierce competition. In addition to the domestic fashion industry, there are also many fashion brands from all over the world flocking to the Vietnamese market, making the level of competition even fiercer than ever. With the above situation, the managers are trying very hard to create specific characteristics to increase their competitive advantage.

Humans are able to discriminate near thousand million odors (Bushdid et al., 2014) and the fragrance such as perfumes and room fresheners has always a significant impact on psychophysiological activities of humans in the fashion, jewelry, distribution (Krishna, 2013), medicinal and cosmetic industries (Sowndhararajan and Kim, 2016). Adding scents can generate realistic and immersive experiences in virtual reality and multisensory digital environments (Meibner et al., 2017; Obrist et al., 2017; Roschk, 2020).

The use of ambient fragrance becomes an increasingly distinctive trend in servicescapes

(Krishna, 2012). The objective of retailing manager using ambient scents in their olfactory marketing strategy is to increase their sales, brand evaluation and customer loyalty (Goldkuhl, 2007). Olfactory has a lot of implications for consumer judgment, perception and goods choices (Biswas, 2019).

There is a lack of studies investigating the integration of scents into shopper's experiences and their effect in shopper's behavior in Vietnam. This study examined the relationship between the emotional states of customer and behavioral responses of customer and the relationship of the ambient scent and the customer's emotional states. The results provide an important evidence-based determination for utilizing ambient scent in the marketplace.

The following question was tested in a fashion shop for men and women clothing: How is the impact the vanilla scent inside the fashion store affecting the spending behavior of customers through the moderating role of consumer's emotion?

The remainder of the study is divided into six sections: section 2 presents the literature review and hypotheses development. Section 3 outlines the methodology. Section 4 describes the statistical analysis. Section 5 presents the empirical findings and discussion. Section 6

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presents the conclusion, limitations and managerial implications of the study.

2. Literature Review and hypotheses development

2.1. Fashion store atmospherics

Atmospherics are defined as "the conscious designing of space to create certain buyer effects, specifically, the designing of buying environments to produce specific emotional effects in the buyer that enhance purchase probability" (Kotler, 1973, p.50). The three determinants of atmospheric cues such as design cues, ambient cues and social cues are the factors within an individual's perceptual field that arouses one's senses. The store/mall atmospheric that have an important role not only in attracting consumer and retaining customer's loyalty but also promote sales and brand evaluation, has been studied widely in the literature (Herrrman, 2013; Grewal, 2014; Foster, 2015)

Most of previous studies focus on the impact of scent on memory, such as memory for scent itself (Zucco, 2003), autobiographical memories (Chu et al., 2002). Lwin et al. (2010) tested the effect of scent on memory within the advertising field. They show that scent stronger improve verbal memory than pictures. Previous studies shows that scent may affect positively or negatively product evaluations (Krishna et al., 2010; Ludden et al., 2009), purchase intentions (Lwin et al., 2016), sale (Kivioja, 2017), motion and buying products (Adam and Douce, 2017; Douce, 2013), spending (Haberland, 2010; Mattila, 2001), atmosphere assessments (Spangenberg, 2005; Mattila, 2001), stimulus responses (Maille, 1999) and visit intentions (Spangenber et al., 2005)

Researchers have increasingly called attention to the non-visual aspects of environmental stimulation such as atmospheric scents, music, visual etc. Ambient scent was defined as largely a scent in the atmosphere, not originating from a single source (Spangenberg et al., 2016). Another idea of ambient scents is defined as part of the retail shop's environment, but do not emanate from products (Bradford and Desrochers, 2009). In other terms, atmospheric scents are not bound to the object and do not indicate certain qualities of the product. Ambient scent can lead to a different reaction in consumers based on where they are physically located within the retail shop (Parson, 2009). Scents may encourage positive customer responses with an unrelated product and/or service.

Sensory marketing may influence customer perceptions, decisions and actions (Krishna, 2012). The usage of scents has been examined in previous research. Scents were determined to affect customers' enjoyment and purchasing decisions while visiting a retail operation. Several other research have shown that some forms of environmental variables have a strong influence on customer behavior, such as the effect of music on product selections (North et al. 1999), consumer reactions to waiting for services (Hui et al., 1997), and consumer traffic and spending in supermarkets (Milliman, 1982); scent on perceived (Spangenberg, 1996) and actual time spent in-store (Lipman, 1990), actual time and money spent in restaurants (Guéguen & Petr, 2006), and money spent in casinos (Hirsch, 1995). Others studies (Quartier et al.,2009; Spence et al., 2014) have thoroughly researched the effect of ambiance on customer behavior and come up with new explanations on consumer behavior. They notice that ambient variables affect the outcomes of assessments (e.g. store image, valuation of brands, and quality of products), interpersonal reactions, and the perception of price. It is quite common for smaller retail shops to use friendly scents to lure buyers to not only cross over their threshold into the store, but also to be more comfortable while shopping (Mitchell et al, 1995; Spangenberg et al. 1996, 2006). Similarly, British Airways maintains an aromatherapy unit charged with the responsibility to improve consumer service (and customer attitudes) within their business class lounges (Bosmans, 2006).

In the process of studying the impact of environmental stimuli on customer feedback behavior, through the emotional state mediating variable according to the MR model of Mehrabian and Russell (1974), many previous studies have eliminated dominance in the set of three PAD emotional states because it is less effective than the other two emotional states, pleasure and arousal (Russell and Paratt, 1980; Donovan and Rossiter, 1982). Donovan and Rossiter (1982) also showed that the emotional state of autonomy does not seem to be related to the behavior inside the store. Accordingly, a series of serial studies did not mention the emotional state of autonomy (dominance) in the research model of the impact of ambient scent on customer behavior (Sherman and Smith, 1987); Sherman et al., 1997; Morrison et al., 2011; Doucé and Janssens, 2013). Therefore, the authors did not mention the state of dominance in the modified research model and accordingly built the research hypothesis.

Knasko (1995) showed that pleasant scents are

associated with a positive mood for individuals visiting a museum—this is but one example of how scent, as attractant, is positively used in unrelated environments. Chebat and Michon (2003) suggest that ambient scent can be beneficial sales tool for a retail store. Leenders et al. (1999) demonstrated that the presence of lemon scent in a supermarket environment (compared to fragrance-free conditions in the environment) positively influenced the emotional state of the customer while shopping. The presence of environmental scents leads to a positive emotional state (Spangenberg et al., 2006)- regardless the specific commercial environment. At the same time, the presence of a pleasant scent also improves mood and increases the customer's enjoyment of shopping, while an unpleasant scent seems to worsen the customer's mood (Ehrlichman and Bastone, 1992).

Some studies show that certain factors within the retail environment can have a significant effect on pleasure (Baker et al., 1992; Gulas and Bloch, 1995). More specifically, research by Doucé and Janssens (2013) demonstrated that the presence of an environmental scent inside a fashion store has a positive effect on both emotional states of pleasure and arousal.

2.2. Ambient scent and consumer emotions

The model is centered upon Mehrabian and Russell's Stimulus Organism-Replies (S-O-R) framework (1974). The previous papers concentrated on a number of retail atmospherics including Mehrabian and Russell (1974), Donovan and Rossiter (1982), Baker et al. (1992), Spangenberg et al. (2006), Kim et al. (2009), and Jang and Namkung (2009). These studies noted which emotion states have been deemed a mediating role between environmental stimulus and actions. Spangenberg et al. (1996) indicated that scent activates the limbic system, i.e. the heart, and the portion of the brain that regulates emotions. According to the M-R model, emotion states such as physical and biochemical shifts may also contribute to customer behavior. Emotional states consist of three dimensions, commonly defined as PAD, they are pleasure/displeasure, arousal/non-arousal, and dominance/submissiveness (Mehrabian and Russell, 1974). Pleasure/displeasure, arousal/non-arousal and dominance/submissiveness refer to the degree to which someone feels pleasant, cheerful, content or satisfied; the extent to which someone feels excited, alert or active; and the extent to which someone feels in charge or

voluntarily to behave in a circumstance (Mehrabian and Russell 1974, Donovan and Rossiter 1982). Different environmental characteristics can induce different levels of physiological arousal and emotional reaction in humans. Affect is characterized as the general positive or negative state of emotion or feeling. Often, affective response is the emotional reaction to the world that an individual has come into contact with others. The word arousal applies to people's understanding of the world, and how they rate it based on their encounters (Mehrabian and Russell, 1974). The definition of activation is also referenced within environmental psychology literature (Spangenberg et al., 1996).

In order to optimize the return visits of consumers, scent has been purposely used to recall a customer's happy memories in the past (Krishna, 2012). One survey claimed that 84% of people will purchase or enjoy shoes in a fragrant space more often than if they were shopping in a non-fragrant space (Lindstrom, 2005). In the same survey, several people recorded paying 10% to 15% more for the products. In a Las Vegas casino, the amounts of money gambled in 2 odorized slot machines was higher than the amount of money gambled in unodorized slot-machine (Hirsch, 1995).

The M-R model indicates that based on the feedback details associated with a certain smell, the related reaction would be either approach or avoidance. It has been known that odor memories are more emotional and less detailed than other forms of memories (Herz and Schooler, 2002; Herz, 1998; Willander and Larsson, 2007; Bradford and Desrochers, 2009). Other experiments have likewise concluded that pleasant-scented settings appear to elicit positive associations whereas unpleasantly scented environments tend to elicit avoidance responses (Bone and Ellen, 1999). In a comfortable atmosphere with pleasant and intentionally placed aromas, more positive associations would be displayed (Donovan and Rossiter, 1982). More precisely, a high-load (arousing) friendly atmosphere produces approach behaviors, while a high-load (arousing) unfavorable environment produces avoidance behaviors; a low-load environment is not triggering sufficiently to motivate any measurable approach/avoidance behaviors.

The researchers believe that the domination dimension of the study model should be eliminated. These recommendations were focused on previous studies (Donovan and Rossiter, 1982; Russell and Paratt, 1980; Sherman

et al., 1997; Morrison et al., 2011; Doucé and Janssens, 2013). Thus, the superiority dimension was not used in the updated study model of this paper and was excluded from the M-R model owing to the decreased number of assumptions on the first portion of the M-R model because of removing dominance dimension.

The results of the above studies have created a premise for the authors to build hypotheses H1 and H2 based on the first part (S-O) in the original M-R research model of Mehrabian and Russell (1974):

H1: Ambient scent positively effects on pleasure of the customer.

H2: Ambient scent positively effects on arousal of the customer.

2.3. Consumer emotions and behavioral responses of customer

Sherman et al. (1997) have shown that, without interfering with cognitive processes, a person's consumer behavior can be influenced by mood states. During the testing of the MR model of Mehrabian and Russell (1974), Donovan and Rossiter (1982) emphasized that there are only two emotional states (pleasure and arousal) that have an influence on the five behavioral intentions of customers inside the store, namely: they like to shop in the store, they spend a lot of time searching and exploring the store's services, they are willing to say with their friends, relatives, they tend to spend more money than originally planned and intend to return to the store in the future. In particular, Donovan and Rossiter (1982) also confirmed that only two emotional states (pleasure and arousal) are considered as mediating variables with special effects. It was strongly different in the MR model of Mehrabian and Russell (1974).

Another experiment found that the presence of a pleasant scent was linked to increased time spent in product discover, increased intention to return to the store, and intention to buy some of the most products but it reduced their perception of in-store real-time (Spangenberg et al., 1996).

Different from the research of Donovan and Rossiter (1982) on customer behavioral intent, follow-up studies have found many important results about the actual behavior of customers in the presence of environmental conditions and appearance of the scent. Mitchell et al. (1995) demonstrate that the customer spends a lot of time processing product information in a scent environment; at the same time, they also offer options that are distributed relatively more evenly across the store's products, even if the product itself is or is not related to the scent. Researchers Sherman and Smith (1987) conducted research on the actual behavior of customers. They emphasized that the consumer's mood can affect three actual shopping behaviors and important behavioral intent of customers inside the store, including: the number of goods purchased in the store (number of items), the actual amount of money spent compared to the original plan (actual amount of money spent), time spent in the store and intention to revisit.

Recently, more and more researchers are focusing on the actual behavior of customers in the retail environment. A large number of researchers focus on the actual behavior of customers who spend more money in different environmental contexts (with or without added scents) at casinos (Hirsch, 1995); at a clothing store (Terrling et al., 1992); a fashion store (Morrison et al., 2011); a shoe store, as well as a Pizza restaurant (Gueguen and Petr, 2006).

According to Donovan and Rossiter (1982), the intention to return to the store in the future (intention to revisit) is one of five behavioral intentions that still plays an important role as a dependent variable in many research responses of consumer behavior under the impact of stimuli from the environment. They showed that two emotional responses, pleasure and arousal, influence the tendency of customers to return to visit the store in the future. Spangenberg et al. (1996, 2005) showed that most of the shoppers who shop in the presence of an aromatic aroma intend to return to the store. Wakefield and Blodgett (1996) also found that increased satisfaction will prolong a customer's shopping time and increase their intention to return. Kim and Moon (2009) showed that emotional pleasure influenced a customer's intention to return to a restaurant which had a diffuse scent within its environment. Customer satisfaction levels also affect their intention to return to the same business—in this care a casino (Lam et al., 2011). In order to optimize the return visits of consumers, scent has been purposely used to recall a customer's happy memories in the past (Krishna, 2012).

One survey claimed that 84% of people will purchase or intent to buy shoes in a fragrant space more often than if they were shopping in a non-fragrant space (Lindstrom, 2005). In the same survey, several people recorded paying 10% to 15% more for the products. In a Las Vegas casino, the amounts of money gambled in 2 odorized slot

machines was higher than the amount of money gambled in unodorized slot-machine (Hirsch, 1995).

In the study of Vieira and Torres (2014) and Koo and Leee (2011), they argued that pleasure and arousal can adequately represent the range of emotions unveiled in reactions to various environmental mood. In this study, we take the two relevant emotional dimensions such as pleasure and arousal for measure customer's emotion. Hence, we expect H3 to H8 as:

H3: The pleasure of a customer positively affects the amount of money spent in a store.

H4: The pleasure of a customer positively affects the time spent in a store.

H5: The pleasure positively affects store return intent.

H6: The customer's arousal positively affects the amount of money spent in the store.

H7: The customer's arousal state positively affects the time spent in the store.

H8: A consumer's arousal positively affects intention to return to the store.

2.4. Ambient scent and behavioral responses

Chebat et al. (2009) demonstrate that environmental scent can effect purchase behavior. In line with the study of Spangenberg et al. (2005, 2006), the pleasant scent lead to more favorable behavioral responses of consumer. Hence, we expect H9 to H11 as

H9: Ambient scent positively effects on money spent in the store

H10: Ambient scent positively effects on the time spent in the store.

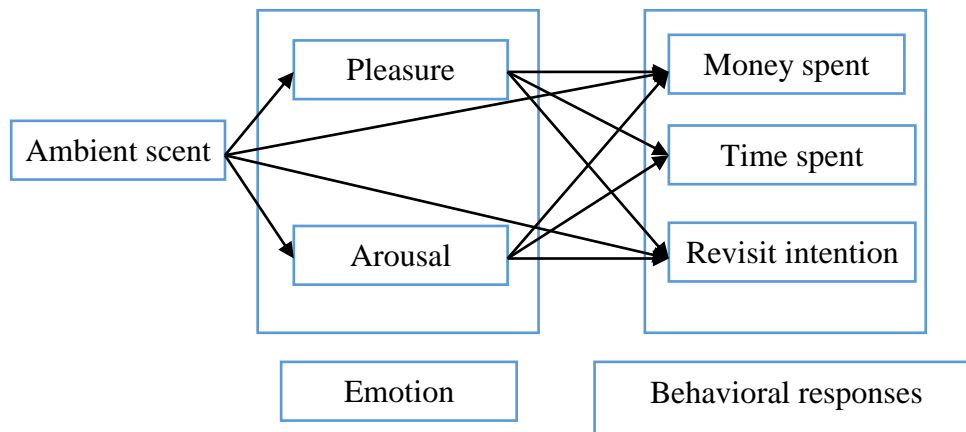**H11**: Ambient scent positively effects on intention to return to the store.

Figure 1**. Conceptual model of the behavioral responses of consumer to ambient scent through mediating role of consumers' emotion**

2.5. The moderating role of emotion in effect of ambient scent on behavioral responses

Other empirical studies have found a positive customer response with ambient aromas to increased use of real time in a store (Sherman and Smith, 1987; Knasko, 1989; Hirsch, 1995; Bone and Ellen, 1999; Leenders et al., 1999; Gueguen and Petr, 2006). In addition, Morrison et al. (2011) also demonstrated the relationship between the number of actual purchases and the actual purchase time of the customer with the expressed use of ambient scent. In this study, we take the three relevant behavioral responses dimensions such as money spend, time spend and intention to return to the store for measuring customer's responses. Hence, we expect H12 to H17 as:

H12: the more positive pleasure, the more it enhances the positive influence of the ambient scent on money spent

H13: the more positive pleasure, the more it enhances the positive influence of the ambient scent on time spent.

H14: the more positive pleasure, the more it enhances the positive influence of the ambient scent on revisit intention

H15: the more positive arousal, the more it enhances the positive influence of the ambient scent on money spent.

H16: the more positive arousal, the more it enhances the positive influence of the ambient scent on time spent

H17: the more positive arousal, the more it enhances the positive influence of the ambient scent on revisit intention.

3. Methodology

3.1. Data collection and sampling method

Data collection: Most of the research that has been accomplished in this field of inquiry has tested causality, i.e. researchers conducted environmental experiments, such as amplifier placement. Scent in the shop to influence the respondents. Then the researchers proceeded to collect information with the questions that were prepared in advance. The collection of samples included samples with experimental study affecting customers and sample which did not conduct experimental study at the same place and at the same time of day and month. After that, the researchers compared and analyzed the data and came to conclusions about the factor's effects.

It is essential to conduct experimental research, especially for new research areas where there is no specific scientific evidence. However, conducting empirical research is time consuming and costly. Therefore, in the research, sometimes the researchers proceed to inherit the results of the previous studies in order to serve as a foundation for their research to study the next directions. In the field of research on the effects of scent in the shopping environment on customer behavior, many authors have also inherited from previous research and have not conducted experimental studies to demonstrate the effects of odors in the shopping environment to customer behavior too. Other researchers such as Sherman et al. (1997), Fredriksson and Thuvander (2015) also inherited the previous results to conduct their research in the next direction.

In this research, the authors conducted research in the direction of inheriting previous studies to test how the fashion store scent is related to the buying behavior of the customers in a fashion store located in Ho Chi Minh City. The authors did not collect control samples in this study and chose vanilla scent to diffuse in those fashion stores where the authors collected survey samples.

In order to obtain experimental conditions that were comparable with respect to external variables (i.e. shopper characteristics, number of shoppers, shopping goals and store level sales), we selected days that showed the least between-weeks variance.

A random sample of shoppers was drawn during daytime opening hours by means of a systematic sampling procedure of arriving adults. In order to assess the actual time spent in the store, observers registered the arrival time of the potential respondent. When the observed respondent arrived at the checkout counter queue, the end time of the trip was registered. Upon leaving the shop, observed customers were intercepted and asked to participate in a study on the evaluation of the fashion store and to fill out a four questionnaire for which special facilities (e.g. tables and pencils) were available at a location nearby and out of sight of arriving customers. Before the interception, there was no interference with the regular shopping trip of the customer.

The following criteria were essential to the compilation of the questionnaire: easy-to-understand language, not misleading about meaning, non-duplicated statements, reasonable question structure and number of questions contributed by experts. For editing ideas, the author conducted data collection by disseminating survey.

Sampling method

The data collection was done through direct interviews with respondents. The authors proceeded to arrange scent diffusers in turn at 2 fashion stores in Ho Chi Minh City in Vietnam. After that, the author hired the collaborator at the fashion stores to distribute the survey.

Minimum sample size is 5 sample elements per parameter to be estimated. Research model has 19 parameters, so the minimum sample size must be 19 x 5 = 95 sample elements. To ensure that there are enough questionnaires, the authors prepared 300 survey questionnaires.

Overall, 66% of observed customers were willing to participate. For each experimental condition, data of about 205 shoppers were collected on 15 days. This resulted in a total sample of 205 respondents. Response rates is 205/205 = 100%.

4. Statistical Analysis

Scent: is adapted from Douce and Jansens (2013), the scale to measure Scent consists of 3 items. The response format is in a 5 point Likert's scale from strongly disagree (1) to strongly agree (5).

Pleasure: is adapted from Douce and Jansens (2013), the scale to measure Pleasure consists of 3 items. The response format is in a 5 point Likert's scale from strongly disagree (1) to strongly agree (5).

Arousal: is adapted from Douce and Jansens (2013), the scale to measure Arousal consists of 3 items. The response format is in a 5 point Likert's scale from strongly disagree (1) to strongly agree (5).

Money spend: is adapted from Douce and

Jansens (2013), the scale to measure Money spend consists of 3 items. The response used a 5 point Likert's scale from strongly disagree (1) to strongly agree (5).

Time spent: is adapted from Douce and Jansens (2013), the scale to measure Time spent consists of 4 items. The response used a 5 point Likert's

scale from strongly disagree (1) to strongly agree (5).

Intention of return: is adapted from Douce and Jansens (2013), the scale to measure Intention of return consists of 3 items. The response used a 5 point Likert's scale from strongly disagree (1) to strongly agree (5).

Table 1. **Measurement model**

Constructs	Items	Outer loadings	Cronbach's Alpha	Composite reliability	AVE
Scent	SC1	0.832	0.803	0.883	0.716
	SC2	0.841			
	SC3	0.865			
Pleasure	PL1	0.822	0.813	0.889	0.727
	PL2	0.892			
	PL3	0.843			
Arousal	AR1	0.877	0.812	0.888	0.726
	AR2	0.868			
	AR3	0.808			
Money Spent	MO1	0.850	0.810	0.887	0.723
	MO2	0.871			
	MO3	0.829			
Time spend	TI1	0.860	0.792	0.877	0.704
	TI2	0.867			
	TI3	0.852			
	TI4	0.870			
Revisit intention	RE1	0.877	0.885		
	RE2	0.804			
	RE3	0.836			

We used SmartPLS 3 to perform the partial least squares structural equation modeling (PLS-SEM) and to test the proposed hypotheses above. PLS gives some advantages over SEM such as its suitability in explorative research and target's prediction, and easier testing of moderating relationship and lower sample requirements. Measurement and structural model were assessed following a two-step analytical procedure approach.

Cronbach's Alpha (CA) and composite reliability (CR) determine the assessment of internal consistency reliability. Constructs with high internal consistency always have highly correlated indicators. In table 1, we have the Cronbach's Alpha and Composite reliability values for all constructs were above the suggested value of 0.7. According to Hair et al. (2017), the outer loading

should be greater than 0.708 and the average variance extracted (AVE) value should be higher than 0.5. In table 2, we can see that the outer loading for all items exceeded the benchmark value of 0.7. When the values for outer loading and AVE reach the threshold, values recommended by Hair et al (2017), we can conclude that all constructs have sufficient evidence of convergent validity.

Means of the Fornall-Larcker criterion and Heterotrait-Monotrait ratio of correlations (HTMT) criterion assess the discriminant validity. The Fornall-Larcker criterion means that the square root of the AVE for every construct should be higher than the inter-construct link (Fornell and Larcker, 1981), and the HTMT value between 2 constructs should be below 0.85 (Henseler et al., 2015). As show in table 2, we could not claim discriminant validity.

Table 2. **Discriminant validity**

	Arousal	Pleasure	Scent	money spent	revisit intention	time spent
Arousal	0.852					
Pleasure	0.268	0.853				
Scent	0.258	0.237	0.847			
money spent	0.337	0.478	0.212	0.850		
revisit intention	0.410	0.364	0.346	0.343	0.862	
time spent	0.354	0.346	0.243	0.336	0.362	0.839

Notes: values (bold) on the diagonal represent the square root of the AVE while the off-diagonals are correlations.

HTMT Criterion

	Arousal	Pleasure	Scent	money spent	revisit intention
Pleasure	0.317				
Scent	0.316	0.289			
Money spent	0.392	0.576	0.244		
Revisit intention	0.481	0.424	0.406	0.401	
Time spent	0.422	0.430	0.297	0.412	0.434

5. Empirical findings and discussions

Following the assessment procedure for the structural model suggested by Hair et al. (2017), the issue of multicollinearity was evaluated. All the variance inflation factor (VIF) values for the tree endogenous variables (money spend, time spend and revisit intention) were lower than the recommended value of 5, showing no sign of collinearity issue. Next, the model fit was assessed by evaluating the standardized root mean square residual (SRMR) (Henseler et al., 2016). As the SRMR value for this research model was 0.063, lower than the threshold value of 0.08, it can be concluded that the model is a reasonable model fit.

To assess the significance of coefficient for every path proposed in the research model, a bootstrapping technique was performed with 5000 re-sample (Hair et al., 2017). The outcomes in table 3 show that scent have a significant positive impact on pleasure and arousal. Hence H1 and H2 are supported. Additionally, pleasure and arousal have significant positive affect on time spend,

money spend and revisit intention, which support H3, H4, H5, H6, H7 and H8. The effect size for each relationship is reported in table 3 and the interpretation of f^2 is as follow: 0.02 (small), 0.15 (medium) and 0.35 (large).

To test the significance of the indirect effect (mediation effect) the bootstrapping method was used. Based on table 3, the results demonstrated that the mediation effect of scent has a significant impact on the linkage between pleasure and money time, on the linkage between pleasure and time spend, on the linkage between pleasures and revisit intention. We found also the significant positive impact of scent on the relationship between arousal and time spend, money spend and revisit intention, since all confidence intervals do not contain zero.

Moreover, to assess the significance of path coefficients, the model's predictive power was also assessed by looking at the coefficient of determination (R^2) values of the endogenous constructs. The model was able to explain 23.9% of revisit intetion, 27.5% of money spend and 19.3% of time spend

Table 3. **Structural model**

	Direct effect	Beta	Std	t-value	p-value	Decision	f^2
H1	Scent → pleasure	0.237	0.079	3.000	0.002	Supported	0.060
H2	Scent →Arousal	0.258	0.078	3.326	0.001	supported	0.071
H3	Pleasure → money spent	0.407	0.063	6.487	0.000	Supported	0.206
H4	Pleasure → time spend	0.250	0.061	3.907	0.0000	Supported	0.070
H5	Pleasure → Revisit intention	0.235	0.064	3.701	0.0000	Supported	0.069
H6	Arousal → money spend	0.213	0.059	3.628	0.0000	Supported	0.056
H7	Arousal → Time spend	0.257	0.062	4.135	0.000	Supported	0.074
H8	Arousal → revisit intention	0.292	0.062	4.972	0.0000	Supported	0.105
H9	Scent→ money spend	0.061	0.061	0.993	0.009	Supported	0.005
H10	Scent → Time spend	0.215	0.070	1.671	0.000	Supported	
H11	Scent → revisit intention	0.117	0.066	3.273	0.000	Supported	
One-tailed test							
	Indirect effect	Beta	Std	t-value	p-value	Decision	
H12	Scent →arousal → money spent	0.059	0.026	2.250	0.025	Supported	
H13	Scent → pleasure → money spent	0.100	0.037	2.680	0.008	Supported	
H14	Scent → arousal → time spend	0.073	0.030	2.427	0.016	Supported	
H15	Scent → pleasure → time spend	0.065	0,026	2.456	0.014	Supported	
H16	Scent → arousal → revisit intention	0.087	0.037	2.379	0.018	Supported	
H17	Scent → pleasure → revisit intention	0.066	0.028	2.325	0.020	Supported	
Two- tailed test							

Goodness-of-fit (GOF) is applied to verify that the model sufficiently explain the empirical data. The GOF values lied between O and 1, where values of 0.1 (small), 0.25 (medium) and 0.36 (large) indicate the global validation of the path model. A good model fit shows that a model is parsimonious and plausible. The GOF index for this study was measured as 0.413, which shows that empirical data fits the model satisfactory and has substantial predictive power in comparison with baseline value.

The SRMR is an index of the average of standardized residuals between the observed and the hypothesized covariance matrices. The SRMR is a measure of estimated model fit. When SRMR =< 0.08, then the study model has a good fit, with a lower SRMR being a better fit. Table 4 shows that this study model's SRMR was 0.063, which revealed that this study has a good fit, whereas the Chi-square was equal to 395.345 and NFI = 0.785 was also measured

Table 4. **Model fit summary**

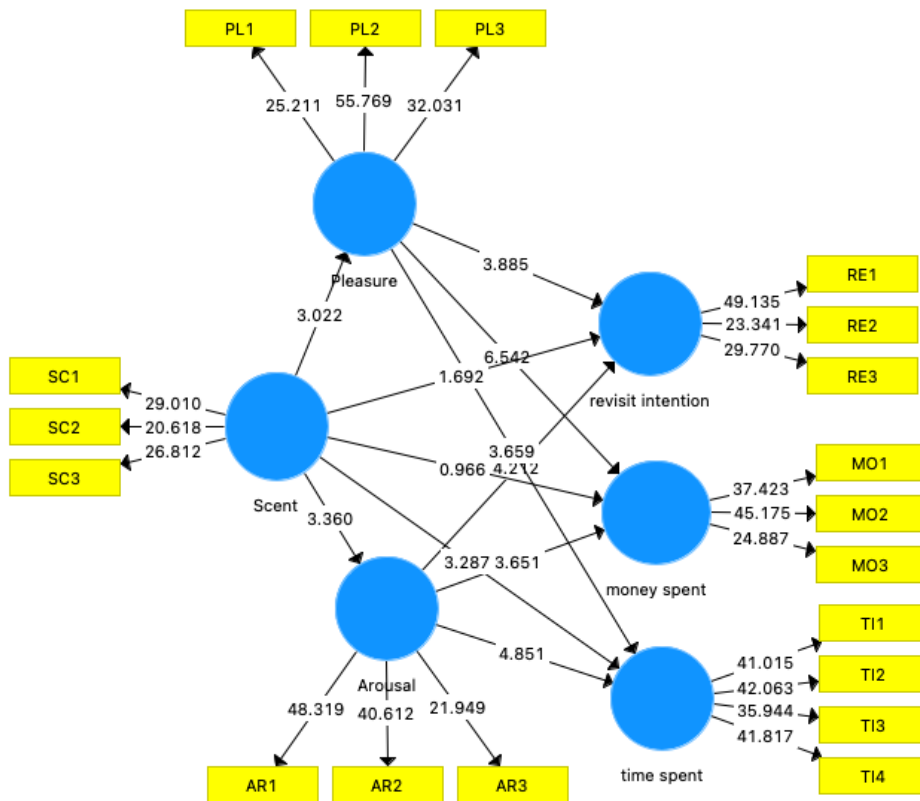|	Estimated Model
SRMR	0.063
d_ULS	1.292
d_G	0.331
Chi-Square	395.345
NFI	0.785

Figure 2. **Structural model**

The results in table 3 show that two hypotheses H1 and H2 are supported. It means that the scent in the shopping environment has an impact on the emotional state of the consumer, including the shopper's pleasure and shopper's arousal. These findings are completely in line with the previous study of Morrison et al. (2011).

Sherman and Smith (1987) concluded that two emotional states of pleasure and excitement of a customer affect the amount of money spent in a store. Our current quantitative results also showed similar results. The amount of shopping money a customer spends during the shopping season is affected by their emotional state of pleasure and arousal. Based the regression findings in table 3, we conclude that two hypotheses H3 and H6 are accepted. It shows that the feeling of pleasure has a stronger effect than that of arousal. This means

that if customers are just excited by the impact of the scent, they also tend to spend more money on shopping. But if the customer feels excited and happy because of the influence of the scent in the store, the higher money the customer will spend, as shown by spontaneous buying behavior. This means that the shoppers may purchase more than they would at other times and buy more items that they didn't intend to buy before they arrived. This results also shows that shoppers' emotional state plays a very important role in their buying behavior and especially affects to the amount of money and the amount of time they will spend. This result is completely consistent with the study of the authors Sherman et al. (1997) and Hirsch (1995) on Las Vegas casino revenue in 1995.

Spangenberg et al. (1996), in their study of olfactory cues that influence customer judgment and behavior, they indicate that a customer's shopping time in a retail environment is subject to the great impact of scent in the shopping environment through two emotional states of pleasure and euphoria is the intermediate.

According to the results of quantitative analysis of this study, two hypotheses H4 and H7 are accepted. That is, feelings of excitement and excitement both have an impact on time spent in a store. However, the factors such as customers spend more time shopping, experiencing the shopping environment and visiting in the store, are more affected by feelings. When they are excited, they tend to be indifferent to time and they feel like time passes quickly. This result is completely consistent with the study of Sherman, Mathur and Smith (1997).

According to a study of Spangenberg et al. (2006), they present of sexually appropriate scents in shopping environments with a state of pleasure and euphoria that mediated, concluded that, the customer expresses a strong intention to visit the store in the future. According to the results of quantitative analysis of this study, two hypotheses H5 and H8 are accepted. The store's intention to return is also affected by the emotional state of pleasure and arousal. However, there is no major difference between the two emotional states that impact a customer's intention to return to the store in the future. As long as they have good feelings, they'll be willing to come back for a shopping spree. Our findings of indirect effects are the same findings of Spangenber et al. (2006). That means the H9, H10 and H11 are supported. The sexually appropriate scents in shopping environment have an impact on shopper's pleasure and arousal and the arousal induced by

fragrant results in increased shopper's pleasure level, which in turn only positively impacts consumers' behaviors such as revisit intention to store, money spend and time spend in store.

We find that our results support hypothesis H12, H13, H14, H15, H16, H17. Consumers' emotions (pleasure and arousal) positively affect the influence of ambient scent on the behavioral responses of consumers (money spent, time spent and revisit intention).

6. Conclusion

This study contributes to the existing literature an integrated conceptual framework considering retail store atmospherics, consumer emotions, and behavioral responses. This study provides an empirical evidence for the relationship between the ambient scent and the consumer's emotion, and the relationship between the consumer's emotion and behavioral consumers. The model that scents influences shopper's pleasure and arousal, which in turn impact behavioral responses to the environment (time, money and revisit intention) was constructed based on 19 observed variables. And all hypotheses in the model were tested and accepted.

Due to the many scientifically – reported advantages of PLS-SEM, such as: latent growth modeling, PLS-SEM models, and approaches for dealing with missing data and with violations of normality assumptions, application of PLS-SEM in the field of languages assessment is highly recommended.

The study provides manager managing a retail stores in Vietnamese market with an overview of the olfactory marketing, with access to a new, more powerful factor influencing customer buying behavior in addition to traditional factors. From there, it helps businesses create their own characteristics to increase their competitive advantage in the market.

This study can be a source of reference for other studies related to studying the effects of the shopping environment in general and the ambient scent in the shopping environment in particular on customer buying behavior such as the spending amount, the purchase time or the intention to return to the store in the future through the intermediate variable is the emotional state.

As an experimental study and necessary scent diffusion aids and an ideal environment, the design of this study also faced some of the following limitations: this study captured consumer perceptions in 3 retail stores and one city. Future studies may expand this research

framework to other retail store and regions before generalizing the findings. Future studies may include more other determinants such as entertainment facilities and responses such as satisfaction of consumer. It's interesting to explore the mediating role of other variables like perceived crowding.

Finally, the current study employed PLS-SEM to investigate the relationship between scent and behavioral responses of customer (time, money and revisit) through its emotional states (pleasure and arousal). The finding shows that there was a statistically significant relationship between scent and emotional state of customer (pleasure and arousal) and emotional states of customer (pleasure and arousal) and behavioral responses of customer (time, money and revisit intention).

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