Do ambient scents affect customers’ behavioral responses at fashion stores in Vietnam?

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ABSTRACT

This research aims to study the effect of a carefully selected congruent and simple ambient scent in a real-world shop setting and to study how scent affects shopper’s mood and behavior. Using electrostatic aroma diffusers, the research applies a carefully selecting vanilla scent at two fashion stores in district 6 and district Tan Binh. The results show that the scent has a significant positive effect on shopper’s fashion store emotion’s state (pleasure and arousal), and emotion’s state of customer has a significant positive effect on behavioral responses of shopper (time spent in-store, amount of money spending and intention of a revisit of the customer). Implications for marketing and store management are discussed.

1. Introduction

According to Ridgway, Dawson, and Bloch (1990), the whole of emotional and behavioral responses of consumers do not only depend on the tangible products and services but also depend on the customer’s emotional experience. Nica (2013) also emphasized that marketers and advertisers need to capture the whole consumer experience during their buying process and not only focusing on the visual information.

Kotler (2001) mentioned four groups of factors that influence consumer behavior, including cultural, social, personal, and psychological factors. In which, perception is a part of the psychological factor or cognitive process. Through the cognitive process, consumers get a panoramic picture of the surrounding environment (Kotler, 2001). The influence of the environment on behavior has been explored by many researchers all over the world. Kotler (1973) and Baker, Levy, and Grewal (1992) noticed that the store atmosphere could be an effective and powerful tool for retailers. More recently, environment-behavior relationships have also been systematically studied by many psychologists, producing a rapidly growing discipline known as “environmental psychology”. Some of them studied the effect of premises clutter and cleanliness on consumers (Bitner, 1990; Gardner & Siomkos, 1986). Nica (2013) indicated that all the sensory elements (e.g., olfactory, auditory) should be considered to create a strong relationship with consumers. Turley & Milliman (2000) also found a significant relationship between customers behavior and the perceived environment. In a retail climate that is increasingly competitive, retailers have been constantly searching for ways to differentiate their goods and services. Since then, they have been researching non-stop on creating a unique “total experience” for customers (Berry, Carbone, &
Haeckel, 2002; Crosby & Johnson, 2003). There have been more in-depth studies on the particular effects of environmental cues such as music (e.g., Anderson, Kristensson, Wästlund, & Gustafsson, 2012; Dubé, Chebat, & Morin, 1995; Yalch & Spangenberg, 1990), lighting (e.g., Areni & Kim, 1994; Golden & Zimmerman, 1986), color (Crowley, 1993), crowding (Eroglu & Harrel, 1986; Eroglu & Machleit, 1990; Hui & Bateson, 1991) and ambient scent (Bouzaabia, 2014; E. A. Spangenberg, Crowley, & Henderson, 1996). Some scholars have studied the combined effects of different environmental cues on consumer’s behavior such as lightning and music (Mehrabian & Russell, 1974), music and aroma (Mattila & Wirtz, 2001; Morrin & Chebat, 2005; Morrison, Gan, Dubelaar, & Oppewal, 2011), lightning and ambient scents (Chebat & Michon, 2003).

The concept of sensory marketing can be defined as “marketing that engages the consumers’ senses and affects their perception, judgment and behavior” (Krishna, 2012). Historically, the use of scents as an environmental stimulus has been experimented in various cases to influence consumers’ satisfaction and buying behavior. In practice, hospitals have used ambient scents to calm cancer patients during medical procedures (Owen, 1994). Several hotels diffused fragrances into their lobbies to relax the guest by alleviating stress (Palmer, 2007). Travel agent Thomson used scents in three-quarters of its stores with a coconut aroma to convince customers to book their summer vacation (Roberts, 2008). Many bakeries, coffee, florist, popcorn, and nut shops using specific scents to draw customers to their store (Mitchell et al., 1995; E. A. Spangenberg et al., 1996; E. R. Spangenberg, Sprott, Grohmann, & Tracy, 2006). Likewise, British Airways uses an artificial scent called Meadow Grass in their business lounges to promote relaxation (Bosmans, 2006). Several luxury hotel chains used scents to make them exclusive. They hope that the scent will contribute to the customers’ recall of the pleasurable experiences of their hotels as well as to customers’ desire to return (Krishna, 2012). One study purported that 84% of people were more likely to buy shoes, or liked them more, when in a scented room (Lindstrom & Kotler, 2005). In the same study, many of the subjects reported they would pay 10% to 15% more for the product. In a Las Vegas casino, a pleasant ambient scent in an area of the casino was related to 45% more revenue than comparable non-scented slot machine areas (Hirsch, 1995).

Although the use of ambient scents as an environmental stimulus has been studied by a large number of researchers in specific fields, so far in Vietnam there has been little research about the effect of ambient scents on consumer behavior. This article focuses on the systematization of literature reviews relating to the impact of ambient scent on consumer behavior. Through many hypotheses and previous research models, the authors constructed a research model based on the Stimulus-Organism-Responds (S-O-R) paradigm of Mehrabian and Russell (1974), which was later modified by several studies. In particular, the ambient scent influences consumer behavior through two mediating variables of emotional state. The authors hope that we could provide basic materials for subsequent studies about the effect of ambient scents on consumer behavior in retail stores in Vietnam.

2. Literature review

2.1. The S-O-R paradigm and M-R model

In early research, environmental psychologists Mehrabian and Russell (1974) offered a multidimensional perspective in environmental psychology including antecedents (the attributes of the environment), the intervening emotional state, and a taxonomy of outcome based on the approach/avoidance concept suggested by Wundt (1905). They constructed Stimulus-Organism-Response (S-O-R) paradigm to describe an environment stimulus (S) influencing the consumers’ internal emotion states as intervening variables (O), which lead to response behavior (R). Later,
Mehrabian and Russell (1974) developed the Mehrabian-Russell model (M-R model), which has been approved as a useful tool to explain and predict the effects on consumer behavior Donovan and Rossiter (1982) expressed that the Mehrabian-Russell model was particularly strong in the intervening variable (O) and response area (R), while the appropriate stimulus taxonomy (S) untouched in larger extent due to the existence of various current environment stimulus. On the whole, M-R model assumed that the environmental stimulus influences the intervening variables of emotion states, leading to consumer behavior of either approach or avoidance (Figure 1).

2.2. Ambient scents and consumers’ behavior in the retail environment

Most marketing scholars studying retail atmospherics followed the M-R model of Mehrabian and Russell (1974) to study consumer behavior in retail environment such as Donovan and Rossiter (1982), Baker et al. (1992), E. A. Spangenberg et al. (1996), E. R. Spangenberg et al. (2005, 2006), Kim et al. (2009), Jang and Namkung (2009), etc., in which emotion states had been considered as a mediating factor between environmental stimulus and behavior.

Stimulus term had been used and accepted in several documentaries as something that rouses or incites to action or increased action (e.g., Bagozzi, 1980, 1986; Belk, 1975; Kelly, 1955). In a consumer decision-making context, the stimulus can be defined as those external factors related to a pending decision. Bagozzi (1986) indicated that when consumer behavior existed in a Stimulus-Organism-Response system, the stimulus is “external to the person” and consists of both marketing mix variables and other environmental inputs. According to Robertson, Zielinski, and War (1984), consumer decisions might be about whether to purchase or save, what categories of goods or services to purchase, how much money to spend, how many different purchases to make and how products would be used or discarded. Baker (1986) divided the elements of the store environment into three categories: social factors, design factors, and ambient factors, in which the ambient factors refer to non-visual elements of store environment such as temperature, lighting, noise, music and ambient scents. Also, Nevin and Houston (1980) provided overall store image to have an impact on consumers’ behavior (e.g., store choice).

Recently, a large number of researchers have been focusing on studying the non-visual elements of environmental stimulus, especially the ambient scents. Ambient scent was defined by E. A. Spangenberg et al. (1996) as “a scent that is not emitting from a particular object but is present in the environment”. Another definition of ambient scents had been provided by Bradford and Desrochers (2009) as general odors that do not emanate from a product but are present as part
of the retail environment. In other words, ambient scents are not associated with any characteristics of the product itself. Ambient scents may affect the consumers’ responses to the whole store and its products, even those that have no intrinsic fragrance of their own (Gulas & Bloch, 1995; Parson, 2009). On another hand, ambient scents can potentially influence reactions to all products sold in a given setting, including those that would be difficult or inappropriate to add fragrances.

Lindstrom (2005) pointed out that approximately 75% of human emotions are influenced by smell. E. A. Spangenberg et al. (1996) emphasized that odors enter the limbic system, i.e. the part of the brain at the center of emotions. Lorig and Schwartz (1988) mentioned that the effects of odors are observed by electroencephalographs (EEG). According to the M-R model, emotion states play an important role as intervening variables leading the environmental stimulus including ambient scents to consumer behavior. Emotional states had been conceptualized as consisting of three dimensions, known by the acronym PAD, they are pleasure/displeasure, arousal/non-arousal, and dominance/submissiveness (Mehrabian & Russell, 1974). Pleasure/displeasure relates to the degree to which an individual feels good, joyful, happy or satisfied; arousal/non-arousal prefers to what extent an individual feels excited, alert or active; and dominance/submissiveness relates to the extent to which the individual feels in control or free to act in a situation (Donovan & Rossiter, 1982; Mehrabian & Russell, 1974). In general, the combination of the environment’s characteristics creates different degrees of effective response and arousal in people. Affect is defined as the general positive or negative state of emotion or feeling and affective response in the context of this work is the emotional reaction to the environment that a person has come into psychological contact with (Bower, 1981). The term arousal refers to the psychological feeling state evoked by the environment that is most directly assessed by verbal report (Berlyne, 1960; Mehrabian & Russell, 1974). The construct of arousal is often referred to in environmental psychology literature as a load (E. A. Spangenberg et al., 1996).

In connection to the M-R model, Herz, Beland, and Hellerstein (2004) expressed that depending on the input information a certain scent is related to, it can lead to either approach or avoidance behavior. It has also been noted in previous research that odor-evoked memories are more emotional compared to the memories evoked through visual or verbal cues (Bradford & Desrochers, 2009; Herz, 1998; Herz & Schooler, 2002; Willander & Larsson, 2007). Other kinds of literature supported that pleasantly scented environments encourage approach behaviors while unpleasantly scented environments elicit avoidance behaviors (Bone & Ellen, 1999). In a pleasant environment, the greater the arousal, the greater the approach behaviors (Donovan & Rossiter, 1982). More specifically, a high-load (arousing) pleasant environment produces approach behaviors, whereas a high-load (arousing) unpleasant environment produces avoidance behaviors; a low-load environment is not activating enough to motivate any measurable approach/avoidance behaviors.

In the early research of Mehrabian and Russell (1974), it is expressed that all the response taxonomy in an environment ending with either approach or avoidance behaviors. Following Mehrabian and Russell (1974), and Bagozzi (1986) defined response as the outcome or final action toward or reaction of consumers including psychological reactions. Wundt (1905) argued that behaviors due to mood and environmental assessment can be categorized as approach or avoidance. The approach behaviors are considered as the positive responses of consumers towards the environment while, the avoidance behaviors are described to be the negative responses (Bradford & Desrochers, 2009; Mehrabian & Russell, 1974). These two types of behavioral
responses are divided into four aspects in Table 1.

**Table 1**
The Four Aspects of Approach - Avoidance behaviors

<table>
<thead>
<tr>
<th>Aspects</th>
<th>Approach - Avoidance behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Perspective</td>
<td>Physical desire to stay (approach) or leave (avoid) the environment.</td>
</tr>
<tr>
<td>Exploratory</td>
<td>The degree of desire or willingness to explore the specific environment (approach) versus a tendency to avoid moving through, stay inactive, or do nothing (avoidance) in the environment.</td>
</tr>
<tr>
<td>Communication</td>
<td>The degree of desire or willingness to communicate with others in the environment (approach) as opposed to a tendency to avoid or ignore communication from others.</td>
</tr>
<tr>
<td>Performance and Satisfaction</td>
<td>The degree of performance and satisfaction related to repeat-shopping frequency as well as in-store time spending and money spent in the store.</td>
</tr>
</tbody>
</table>

Source: Mehrabian and Russell (1974)

More recently, researchers have increasingly expanded their studies of consumer behavioral responses due to ambient scents’ stimulus. For example, Hirsch (1995) found that gamblers spent more money in a casino with a pleasant scent emitted from slot machines than those in one without fragrances. Mitchell, Kahn, and Knasko (1995) demonstrated that consumers spent more time processing information in the scented condition, they also made choices that were more evenly distributed across all options even though the products are either related or unrelated to the scents. Other experiments showed that the presence of pleasant ambient scents, consumers increase in-store time spent exploring products, intention to revisit the store and intention to buy certain products but decreases their perception about actual in-store time spent (E. A. Spangenberg et al., 1996).

Donovan and Rossiter (1982) suggested several consumers’ behavioral responses in a retail environment due to ambient scents as a factor of environmental stimulus, that represent approach or avoidance including communication with other people in-store, amount of time spent in the store, tendency to spend more money than originally planned, whether the shopper liked the store environment, the intention of returning to the store in the future. Extending Donovan and Rossiter (1982), Sherman and Smith (1987) examined not the behavioral intention but actual behavior just after it occurred in a natural retail setting. They suggested that the mood of the consumer may influence the number of items bought in the store, spending more money than originally anticipated, and wore time than intended spent in the store.

**2.3. Hypothesis development and model construction**

In accordance with the M-R model of Mehrabian and Russell (1974) and previous researches generalized in the literature review above, the authors constructed a conceptual model in Fig. 2 representing the framework for the hypotheses used in this article that would be tested in the next studies. The following section will discuss the various sections to formulate the hypotheses used in the authors’ model.
Figure 2. Proposition of Model construction and Hypotheses development.

2.3.1. Ambient scents affect to emotion state (pleasure, arousal, and dominance)

Knasko (1995) showed that a pleasant scent is associated with a positive mood in the case of a museum visit. M. Leenders, Smidts, and Langeveld (1999) provided that the presence of a lemon scent (vs. no scent) positively influences the emotional state of an individual in the supermarket. The presence of a pleasant scent seems to improve mood and increase the level of enjoyment, whereas an unpleasant scent seems to deteriorate that emotional state (Ehrlichman & Bastone, 1992). Within the framework of the modified Mehrabian and Russell environmental psychology model (M-R model), Mehrabian and Russell (1974) regarded that environmental stimulus effect on three emotional dimensions, including pleasure, arousal, and dominance.

Although other researches proposed a modification of the Mehrabian and Russell that deletes the dominance dimension because of its ineffective effect (Donovan & Rossiter, 1982; Russell & Patt, 1980), the authors kept the original M-R model of Mehrabian and Russell (1974) to discuss with Vietnamese experts before deciding to keep all of three emotional dimensions or eliminate any of them. The results of both discussing with Vietnamese experts and model modification will be presented in the next section of this paper - qualitative research and modified research model. Accordingly, the authors formulated the hypotheses H1, H2, and H3 based on the first part of M-R model (Stimulus - Organism):

H1: Ambient scent positively affects the pleasure state of the consumer

H2: Ambient scent positively affects the arousal state of the consumer

H3: Ambient scent affects the dominance state of the consumer
2.3.2. Ambient scents effect on consumers’ behavior

At first sight of testing the M-R model of Mehrabian and Russell (1974), Donovan and Rossiter (1982) emphasized that only two emotional reactions (pleasure and arousal), in turn, influence the consumer’s shopping five behaviors-related intentions within the store. They are enjoying shopping in-store, time spent browsing and exploring the store’s offerings, willingness to talk to sales personnel, tendency to spend more money than originally planned and whether returning to the store in the future. Especially, Donovan and Rossiter (1982) also confirmed that the two-dimensions (e.g., pleasure and arousal) considered as intervening variables of emotion states which was particularly strong in the second part of M-R model (Organism - Response).

According to Donovan and Rossiter (1982), returning (or revisiting) the store in the future is one of the five behavior intentions that still has an important role as a dependent variable in many pieces of research about consumers’ behavioral responses due to environmental stimulus. Donovan and Rossiter indicated the two emotional reactions (pleasure and arousal) influence the tendency of returning to the store. E. A. Spangenberg et al. (1996) and E. R. Spangenberg et al. (2005) found that most participants who were in a scented condition expressed a strong intention to revisit the store. Wakefield and Blodgett (1996) also showed that greater satisfaction lengthens the time of stay and increases the intention to revisit. Kim and Moon (2009) found that feelings of pleasure affected customer’s revisit intention in theme restaurants. Furthermore, gamblers’ level of satisfaction also affects their intention to revisit the same casinos (Lam, Chan, Fong, & Lo, 2011).

Extending Donovan and Rossiter (1982), Sherman and Smith (1986) conducted the study of the actual behavior of consumers rather than their behavioral intention. They emphasized that the mood of the consumers may have an influence on their actual purchase behavior including the number of items bought in the store, actual amount of money spent compared to originally anticipated, and wore time than intended spent in the store.

In doing experiments, recent researches have been focusing on the actual behavioral responses of the consumer in the retail environment. A large number of researchers focused on the actual consumer behavior of spending more money in a different environmental context such as casino (Hirsch, 1995), a clothing store (Terrling, Niscedor, & Koster, 1992), a fashion retail store (Morrison et al., 2011), a shoe shop, as well as a Pizza restaurant (Gueguen & Petr, 2006). Other empirical studies discovered the positive consumers’ response in increasing the actual in-store time spent (Bone & Ellen, 1999; Gueguen & Petr, 2006; Hirsch, 1995; Knasko, 1989; M. Leenders et al., 1999; Sherman & Smith, 1986).

Those upon significant results have formulated hypotheses from H4 to H11:

H4: Consumers’ pleasure state positively affects the actual amount of money spent in-store
H5: Consumers’ pleasure state positively affects the actual amount of time spent in-store
H6: Consumers’ pleasure state positively affects the number of items bought in-store
H7: Consumers’ pleasure state positively affects intention to revisit the store
H8: Consumers’ arousal state positively affects the actual amount of money spent in-store
H9: Consumers’ arousal state positively affects the actual amount of time spent in-store
H10: Consumers’ arousal state positively affects the number of items bought in-store
H11: Consumers’ arousal state positively affects intention to revisit the store

By the way of testing M-R model of Merabian and Russell (1974), previous studies have found that dominance, one of the three emotional dimensions, is of little value related to in-store behavior (e.g., Donovan & Rossiter, 1982; Russell & Paratt, 1980), and was therefore not included in their model (Doucê & Janssens, 2013; Morrison et al., 2011; Sherman, Mathur, & Smith, 1997). However, the authors have formulated hypotheses of the dominance dimension, as an intervening variable of emotional states, based on the original M-R model of Merabian and Russell (1974):

H12: Consumers’ dominance state affects the actual amount of money spent in-store

H13: Consumers’ dominance state affects the actual amount of time spent in-store

H14: Consumers’ dominance state affects the number of items bought in-store

H15: Consumers’ dominance state affects intention to revisit the store

2.4. Qualitative research and modified research model

2.4.1. Expert interview

In order to examine the appropriateness of the research model and research hypotheses in Vietnam, the authors used the face-to-face interview method to interview two academic specialists and two practical experts. The two academic specialists are Associate Professor. Ph.D. in International Business and Doctor of International Marketing. They have been teaching at the University of Economics Ho Chi Minh City and the Open University for many years, including experience in marketing research for at least seven years. The two practical experts are Sales Manager and Store Manager in the Fashion field. They have at least five years of experience in running some fashion stores in Ho Chi Minh City, Vietnam.

Academic specialists supposed that the dominance dimension should be removed from the research model. These suggestions were unique to the point of view of previous researchers (e.g., Donovan & Rossiter, 1982; Doucê & Janssens, 2013; Morrison et al., 2011; Russell & Paratt, 1980; Sherman et al., 1997). Therefore, dominance dimension was not included in the modified research model of this paper as an intervening variable (Figure 3) and authors reduced hypotheses on the first part of M-R model (Stimulus - Organism) from 3 to 2 (because of removing dominance dimension):

H1: Ambient scent positively affects the pleasure state of the consumer

H2: Ambient scent positively affects the arousal state of the consumer

The two practical experts were particularly interested in the amount of money spent in-store, the number of items bought in the store, and the intention to revisit the store. They claim that the amount of time spent in-store would be only really useful when consumers spend more money. Therefore, they suggested removing the dependent variable “time spent in-store”. These suggestions corresponded with Morrison et al. (2011); they proved the fact that higher levels of money spend should correspond with longer stay times. These significant results encouraged authors in ignoring “time spent in-store” in the modified model. Moreover, due to the limited resources on doing research, authors limited the research model towards the removal of the dependent variable “number of items bought in-store”. Therefore, the dependent variables were removed from 4 to 2 and authors modified hypotheses on the second part of M-R model (Organism - Response) by reducing hypotheses from 8 to 4:
H3: Consumers’ pleasure state positively affects the actual amount of money spent in-store
H4: Consumers’ pleasure state positively affects intention to revisit the store
H5: Consumers’ arousal state positively affects the actual amount of money spent in-store
H6: Consumers’ arousal state positively affects intention to revisit the store

In general, the authors modified the research model with only two dimensions of emotional state as intervening variables (pleasure and arousal) and two dependent variables (Figure 3). The result of the modified variables and factors was summarized in Table 2.

2.4.2. Qualitative survey

Based on the proposition of model construction and hypotheses development (Figure 2), the authors built qualitative questionnaires to ask fifteen respondents in a fashion store with ambient scent conditions. The presence and absence of scent were designed experimentally in-store with vanilla scent as an independent variable in the model because the vanilla odor is effective on both males and females (E. R. Spangenberg et al., 2006).

The emotional states served as the intervening variable including pleasure, arousal, and dominance dimension. It was measured by a semantic differential scale (Donovan & Rossiter, 1982; Fredriksson & Thuvander, 2015; Merabian & Russell, 1974; Sherman et al., 1997). However, the dominance dimension was suggested to be removed by academic specialists; it was unique to many pieces of research as presented in the previous section.

The dependent variables included four factors of behavioral responses. They are the actual amount of money spent in-store, the actual amount of time spent in-store, the number of items bought in the store, and the intention to revisit the store.

In practice, the two practical experts are supposed to delete one dependent variable “time spent in-store”, which corresponded with the research of Morrison et al. (2011). Authors also eliminated the dependent variable “number of items bought in-store” because of a lack of resources. The result of the modified variables and factors was summarized in Table 2.

The modified research model was presented in Figure 3. Accordingly, the authors also reduced the number of the research hypotheses from fifteen hypotheses to six hypotheses as follow:

H1: Ambient scent positively affects the pleasure state of the consumer
H2: Ambient scent positively affects the arousal state of the consumer
H3: Consumers’ pleasure state positively affects the actual amount of money spent in-store
H4: Consumers’ pleasure state positively affects intention to revisit the store
H5: Consumers’ arousal state positively affects the actual amount of money spent in-store
H6: Consumers’ arousal state positively affects intention to revisit the store

During the survey, Vietnamese respondents were confused because of differences in word usage among different languages when qualitative questionnaires were translated from English and Swedish into Vietnamese. With the assistance of experts, the authors have adjusted the Vietnamese questionnaire to be suitable for the Vietnamese culture and psychology.
Table 2
Summary of modified variables and factors

<table>
<thead>
<tr>
<th>Code</th>
<th>Variables and Factors</th>
<th>Citation</th>
<th>Modified after qualitative research</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td><strong>Independent variable (Stimulus) - In case of Presence or Absence</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I. Presence of ambient scent</td>
<td>Morrison et al. (2011)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>II. Absence of ambient scent</td>
<td>Morrison et al. (2011)</td>
<td>None</td>
</tr>
<tr>
<td>II</td>
<td><strong>Intervening variables (Organism): 3 Factors of emotional state</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. <em>Pleasure (6 items)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PL1 Happy - Unhappy</td>
<td>Sherman et al. (1997)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>PL2 Relaxed - Bored (R)</td>
<td>Sherman et al. (1997)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>PL3 Satisfied - Unsatisfied (R)</td>
<td>Sherman et al. (1997)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>PL4 Pleased - Annoyed</td>
<td>Sherman et al. (1997)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>PL5 Contented - Depressed</td>
<td>Sherman et al. (1997)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>PL6 Hopeful - Despairing (R)</td>
<td>Sherman et al. (1997)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>2. <em>Arousal (5 items)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AR1 Frenzied - Sluggish</td>
<td>Sherman et al. (1997)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>AR2 Stimulated - Relaxed</td>
<td>Sherman et al. (1997)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>AR3 Calm - Excited (R)</td>
<td>Sherman et al. (1997)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>AR4 Dull - Jittery (R)</td>
<td>Sherman et al. (1997)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>AR5 Unaroused - Aroused (R)</td>
<td>Sherman et al. (1997)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>3. <em>Dominance (3 items)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DO1 Controlling - Controlled</td>
<td>Donovan and Rossiter (1982)</td>
<td>Removed</td>
</tr>
<tr>
<td></td>
<td>DO2 Dominant - Submissive</td>
<td>Donovan and Rossiter (1982)</td>
<td>Removed</td>
</tr>
<tr>
<td></td>
<td>DO3 Influential - Influenced</td>
<td>Donovan and Rossiter (1982)</td>
<td>Removed</td>
</tr>
<tr>
<td>III</td>
<td><strong>Dependent variables (Response): 4 factors of Approach or Avoidance behaviors.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. <em>Money spent (2 items)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MO1 How much money did you spend at this store today?</td>
<td>Bouzaabia (2014)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>MO2 Do you spend money more than you set out to?</td>
<td>Donovan and Rossiter (1982)</td>
<td>None</td>
</tr>
<tr>
<td>Code</td>
<td>Variables and Factors</td>
<td>Citation</td>
<td>Modified after qualitative research</td>
</tr>
<tr>
<td>------</td>
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<tr>
<td>2</td>
<td><strong>Time spent (2 items)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>TI1</strong> Almost how much time do you think you went through within the store</td>
<td>E. A. Spangenberg et al. (1996)</td>
<td>Removed</td>
</tr>
<tr>
<td></td>
<td><strong>TI2</strong> Real-time went through in store</td>
<td>M. A. A. M. Leenders, Smidts and Haji (2016)</td>
<td>Removed</td>
</tr>
<tr>
<td>3</td>
<td><strong>Number of items (3 items)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>NU1</strong> The number of items bought in the store</td>
<td>Sherman and Smith (1987)</td>
<td>Removed</td>
</tr>
<tr>
<td></td>
<td><strong>NU2</strong> I made some spontaneous purchases today.</td>
<td>Fredriksson and Thuvander (2015).</td>
<td>Removed</td>
</tr>
<tr>
<td></td>
<td><strong>NU3</strong> I felt tempted to buy something that I have not placed to buy</td>
<td>Fredriksson and Thuvander (2015).</td>
<td>Removed</td>
</tr>
<tr>
<td>4</td>
<td><strong>Revisit intention (2 items)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>RE1</strong> Accepting you were seeking out for items like those sold at this store and you had cash, how likely would you be to visit this store?</td>
<td>E. A. Spangenberg et al. (1996)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td><strong>RE2</strong> Would you avoid returning the store (R)</td>
<td>Donovan and Rossiter (1982)</td>
<td>None</td>
</tr>
</tbody>
</table>

Source: The research’s data analysis

![Figure 3. Modified research model and hypotheses](image-url)
3. Data collection and sampling

100% of the watched clients were willing to take an interest. Information of almost 205 customers were collected on 2 months. This brought about in a add up to test of 205 respondents. Reaction rates is $205/205 = 100\%$.

3.1. Statistical analysis

We use a Structural Equation Modelling (SEM) approach that was performed by utilizing weighted least squares with mean and variance adjusted (WLSMV). The WLSMV estimation approach handle categorical variables and yielded good estimates of the parameters for both non-normal category data and small sample data. The criteria below were used to explore selected items: (1) cross-loading (>0.3) on a factor other than the hypothesized factor; (2) cross-loading (>0.2) on two or more other factors. The SEM model fit criteria that we used is: root mean square error of approximation (RMSEA) < 0.08, weighted root mean square residual (WRMR) <1, comparative fit index (CFI) > 0.90, Tucker - Lewis index (TLI) > 0.90. We use Amos version 25 for treating data.

3.2. Empirical findings

Figures 4 and 5 show the overall explanatory power, the standardized path regression coefficients that indicate the direct influences of the predictor upon the predicted latent constructs for the model, and associated t-values of the paths of the research model. The result of goodness-of-fit statistics demonstrates that the structural model fit the data well. The 6-item model delivered a chi-square of 203.481 (df = 144, p = 0.000) to lighten the sensitivity of the chi-square statistics, the value of chi-square is divided by the degrees of freedom. The re-estimated chi-square value was 1.413 and this value is within an acceptable cut-off value range, from 1.0 to 3.0. The goodness of fit is GFI - 0.910, comparative fit index CFI = 0.964, the comparative fit index NFI = 0.912, and Tucker-Lewis index TLI = 0.958. The root means square error of approximation RMSEA = 0.045, indicated that the structural model was a reasonable fit.

![Figure 4. The overall explanatory power](image-url)
Figure 5. Structural equation modeling

Table 3
Hypotheses testing

<table>
<thead>
<tr>
<th>Paths</th>
<th>Standardized estimate</th>
<th>S.E</th>
<th>C.R.</th>
<th>Two-tailed P-value</th>
<th>Hypotheses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scent → Pleasure</td>
<td>0.330</td>
<td>0.087</td>
<td>3.737</td>
<td>&lt;0.01</td>
<td>Supported</td>
</tr>
<tr>
<td>Scent → Arousal</td>
<td>0.360</td>
<td>0.08</td>
<td>4.105</td>
<td>&lt;0.01</td>
<td>Supported</td>
</tr>
<tr>
<td>Pleasure → Money</td>
<td>0.542</td>
<td>0.09</td>
<td>5.958</td>
<td>&lt;0.01</td>
<td>Supported</td>
</tr>
<tr>
<td>Pleasure → Time</td>
<td>0.339</td>
<td>0.078</td>
<td>4.373</td>
<td>&lt;0.01</td>
<td>Supported</td>
</tr>
<tr>
<td>Pleasure → Revisit</td>
<td>0.345</td>
<td>0.084</td>
<td>4.121</td>
<td>&lt;0.01</td>
<td>Supported</td>
</tr>
<tr>
<td>Arousal → Money</td>
<td>0.276</td>
<td>0.077</td>
<td>3.541</td>
<td>&lt;0.01</td>
<td>Supported</td>
</tr>
<tr>
<td>Arousal → Time</td>
<td>0.419</td>
<td>0.080</td>
<td>5.291</td>
<td>&lt;0.01</td>
<td>Supported</td>
</tr>
<tr>
<td>Arousal → Revisit</td>
<td>0.380</td>
<td>0.084</td>
<td>4.528</td>
<td>&lt;0.01</td>
<td>Supported</td>
</tr>
</tbody>
</table>

Source: The research’s data analysis

Table 2 demonstrated the relationship of latent variables for the mentioned model. Pleasure (β=0.54) and arousal (β=0.276) had direct effects on money spending. Scent manifested direct effects on Pleasure (β=0.33), arousal (β=0.36) respectively. Pleasure (β=0.339, p ≤ 0.01) and arousal (β=0.419) had direct effects on time. Pleasure (β=0.345) and arousal (β=0.380) had direct effects on intention of revisit store.

Scent had a direct positive effect on pleasure and arousal. The standardized path coefficients of each direct effect were (0.33; 0.36) respectively.

Pleasure has a direct positive effect on time, money, and revisit. The standardized path coefficients of each direct effect were (0.542; 0.339; 0.345) respectively.
Arousal has a direct positive effect on time, money, and revisit. The standardized path coefficients of each direct effect were (0.419; 0.276; 0.380) respectively.

According to the direct effects of all factors, the pleasure and arousal had been ameliorated by 33% and 36% respectively when the scent raised its degree by 1%. When pleasure was ameliorated by 1%, time, money, and revisit had been ameliorated by 54.2%, 33.9%, and 34.5% respectively. When arousal was ameliorated by 1%, time, money, and revisit had been ameliorated by 41.9%, 27.6%, and 38%, respectively.

4. Conclusion

Based on the original model of Mehrabian and Russell (1974), scholars from many countries have conducted empirical studies about the impact of environmental stimulus on consumer behavior including behavioral intention (Donovan & Rossiter, 1982) and actual shopping behavior (Sherman & Smith, 1986). In addition to the tangible elements of the environmental stimulus that influence consumers’ behavioral responses, researchers have been gradually turning their studying on non-visual environmental cues. Many of them have had various in-depth studies on the impact of ambient scent as an invisible stimulus from the environment to consumer behavior through the intervening variables (i.e., emotional states). Their results provided a significant literature review for subsequent studies on the impact of scent (individually or in combination with another environmental stimulus) on consumer behavior. That would be suggested to conducted in an experiment in many different environmental contexts and different economic sectors.

Within the framework of this paper, the authors adjusted the original model of Mehrabian and Russell (1974), and modified research hypotheses based on relevant research in the retail store. The model of scent through pleasure and arousal on behavioral responses (time, money and revisit) was constructed based on 19 observed variables.

SEM was used to study the relationship between scent and behavioral responses of the customer (time, money and revisit) through its emotional states (pleasure and arousal). And all hypotheses were accepted. The findings also showed that there was a statistically significant relationship between scent and emotional state of the customer (pleasure and arousal) and emotional states of the customer (pleasure and arousal) and behavioral responses of the customer (time, money and revisit).

References


