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## Innovation and trends in olfactory marketing: A review of the literature

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### Abstract

**Aim/purpose** – Olfactory marketing is a phenomenon that is in the current trend of usage by marketing experts to ensure that consumers are more involved in the purchase decision-making process. This paper aims to review the studies involved in consumer purchase intentions influenced by fragrance and develop a framework for modeling consumer responses.

**Design/methodology/approach** – PRISMA technique was used as a methodological approach. First, the researchers made criteria for inclusion and exclusion of studies along with the application of a set of keyword research strings to identify the relevant research articles. Second, prominent scientific search databases like EBSCO Host, Scopus, and ScienceDirect were used to mainly search the relevant literature.

**Findings** – This article advances knowledge on the topic of fragrance marketing and proposes an integrative framework of consumer purchase responses considering the mutual relationship shared between fragrance, the influence of control variables, and response outcomes focusing on cognitive responses, intentions and behavior. The results of the conducted review also suggest that retail consumers tend to develop a positive attitude and behavior towards the place where the product and service are being sold.

**Research implications/limitations** – The paper would be particularly helpful for managers in designing the right strategy for creating loyalty for their retail outlets and thereby creating a niche for themselves.

**Originality/value/contribution** – The study assists marketers in understanding the impact of olfactory marketing in increasing short-term and long-term retail sales and determines future research directions to enrich the existence of these theories to fathom the essence behind consumers' interpretations of olfaction in retail outlets.

**Keywords:** olfactory marketing, consumer behavior, retail store, marketing innovation, fragrance, review.

**JEL Classification:** M00, M31.

## 1. Introduction

The sense of fragrance happens to be one of the ancient and remarkable senses as it directs us in our entire journey of life guiding us constantly on which objects to be approached and which ones to be avoided (Axel, 1995). It has not only supported humans to merely survive but made a constant effort to evoke emotions (Hertz, 1997). The fragrance has further paved the way to influence the sense of beauty and pleasantness. The ambient scent could also be defined as the fragrance infused not only from any specific object but for its sheer existence in the environment itself (Spangenberg, Crowley, & Henderson, 1996). The ambient scent is the fragrance emulating from the atmosphere of a particular place (Spangenberg et al., 1996). Bradford and Desrochers (2009) discussed how fragrance has become an integral part of retail store atmospherics as the competition amongst retailers to create a positive in-store experience for the consumers is extremely high.

However, the major concern was that for a considerable period, the power of smell was under-valued compared to other senses (Morrin, 2010) like sight, auditory cues, and cutaneous senses (Martin, Apena, Chaudry, Mulligan, & Nixon, 2001). Marketers started anticipating the power of scent, dug in revealing olfactory literature from different disciplines such as anthropology and psychology in the past last decade. Visual cues are widely known and are predominantly used in marketing. However, marketers slowly realized that the sense of scent could play a pivotal role in identifying and differentiating products and brands in retail places thus contributing to improved brand evaluation and recall (Morrin & Ratneshwar, 2000) and increased brand perception (Chebat & Michon, 2003) for end-users. This contributed to the utilization of fragrance as a marketing tool to create a mood (Vlahos, 2007), promoting products and services by optimum usage of scents (Morrin, 2010).

Emsenhuber (2011) discussed how fragrance can induce consumer decision-making by increasing their emotions, thus influencing their purchase decisions without drawing attention to the smell (Ward, Davies, & Kooijman, 2007).

Researchers in marketing have experimented with scents in and along with primary products sold such as beauty products, and room fresheners to build a positive attitude contributing to the prominent evaluation of the products (Chebat

& Michon, 2003). In such cases fragrance happens to be the main stimulating cue for the consumers' decision-making based on product recall (Morris & Ratneshwar, 2003) in choosing the brand. However, most importantly fragrance could be enforced as an alternative product attribute in pushing the brand to get it differentiated from products or services and most importantly from competitors. Olfactory marketing is not just about getting associated with end-products manufactured for sale, but also it is gaining immense importance recently due to the infusion of scent in the place where the product is getting sold to uplift the overall store atmosphere and ultimate purchase experience of the consumers (Kotler, 1973). It was observed from the past studies that fragrance does create a positive impact for the consumers on the environment where the products and services are being consumed.

The objective of this review is to propose a framework for understanding the influence of fragrance on consumer responses under the influence of control variables. A careful review of the existing literature would assist in establishing a future research direction for the advancement of this field in marketing, both at the research level as well as at the application level in business.

The layout of the paper is organized as follows. The following section introduces the methodology followed by findings from the literature. Subsequently, a framework for Modeling Consumer Responses to Olfactory Marketing is presented followed by presenting a set of characteristics identified from the selected studies. Finally, section 6 contains the discussion, and the last section points out the future scope of studies of the research.

## **2. Methodology**

### **2.1. Data collection**

A literature review is a powerful instrument and has its prominence in almost all disciplines (Cassell, Denyer, & Tranfield, 2006). Bringing out a synthesis is the prime task involved in digging into the literature (McKibbin, 2006; Tranfield, Denyer, & Smart, 2003). Hence it is of utmost importance to have clarity in paper selection engagements and strictly follow a specific method of article selection (Pittaway, Robertson, Munir, Denyer, & Neely, 2004; Tranfield, Denyer, Marcos, & Burr, 2004).

The study maintained strict search criteria, inclusion, and exclusion results. Prominent scientific search databases like EBSCO Host, Scopus, and ScienceDirect were used to mainly search the relevant literature. "Olfactory marketing," "olfactory cues," "fragrance marketing," "scent marketing," "ambient scents," and "retail market" are the main keywords used for evaluating the literature on the concepts of olfactory marketing.

The researchers have not considered the concepts and application of olfactory marketing discussed in reports or newspaper articles and the focus of this review has been mainly restricted to journal articles (Ngai, 2005).

Strict inclusion and exclusion criteria were set for the study which are highlighted in Table 1. To execute the theory-based review, the study utilized 81 papers to form a review of literature from journals listed in ABDC comprising of the A & A\* category. The choice seemed more eminent as the ABDC (Australian Business Deans Council) list is more inclusive than other journal lists for example ABS (Association of Business Studies) (Hao, Paul, Trott, Guo, & Wu, 2019; Lim, Yap, & Makkar, 2021).

First: The paper selection protocol is based on Emerald, Scopus, ScienceDirect, Wiley Online Library databases, and JSTOR. Additionally, alternative academic platforms such as Research Gate and Google Scholar have been used for articles that are difficult to reach.

Second: Key words of searching were set out as follows: “Olfactory marketing,\*” “olfactory cues,\*” “fragrance marketing,\*” “scent marketing,” “ambient scents,\*” “retail markets,” “scent congruence.\*”

Third: This research used the PRISMA methodology to collect the data (Figure 1). The PRISMA is an important tool used for recording systematic reviews; it helps to precisely screen articles for eligibility to the scope of systematic review research (Liberati et al., 2009). After searching for the keywords, the search returned 1,946 documents containing any of these terms within the keywords. Then the study used an advanced search across all scholarly platforms to skip duplicated titles; the results reassembled 864 documents after removing duplicated articles.

Later, in the screening process with abstracts and/or keywords of the original works, only 237 records were screened according to identical titles. Then, 68 papers were excluded to assure accurate original work for the study. Then, the study adopted 103 articles for a full-text article assessed for eligibility to the main scope of the study; the study excluded any articles that do not include theoretical psychological background about the behavioral theories used in studies. Then, with journals’ ranking reasons to select only A\* and A journals, 22 articles were excluded. Finally, the number of studies to build the literature review was 81, considering the ABDC list as mentioned above considering a time frame of 26 years from 1995 to 2021 (December).

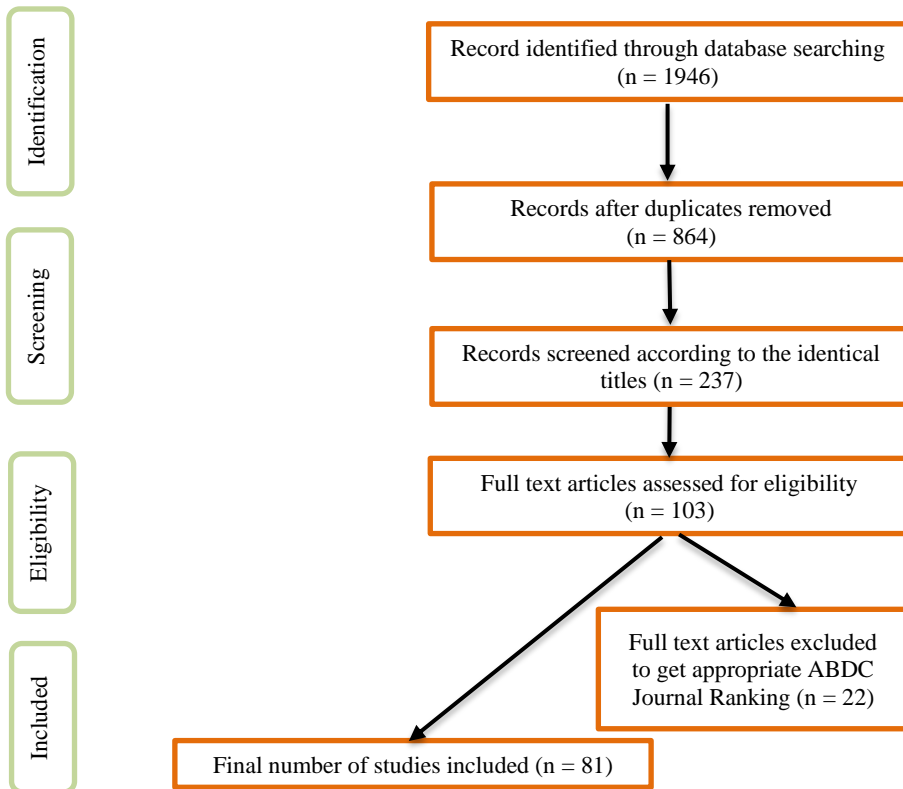
Fourth: The authors’ names, title, keywords, methodology, research dimensions, journal name, findings, and year of publication of the identified records were exported to an MS Excel spreadsheet to position the results (Table 3 in Appendix).

**Table 1.** Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Focus on purchase intentions of consumers considering the time spent and money spent, developing attachment towards the product categories inside retail outlets, and product-scent congruencies formed	Books
Published journal papers	Conference papers
Only full-text papers	Papers with no abstract availability
Peer-reviewed journals	Articles other than in the English language
Full reference availability	Other sensory attributes which are not related to olfactory cues
Selection criteria revolving around the keywords – “olfactory marketing,” “fragrance marketing,” “olfactory cues,” “scent marketing,” “retail market”	

Source: Authors’ own elaboration.

**Figure 1.** PRISMA flow diagram of data collection

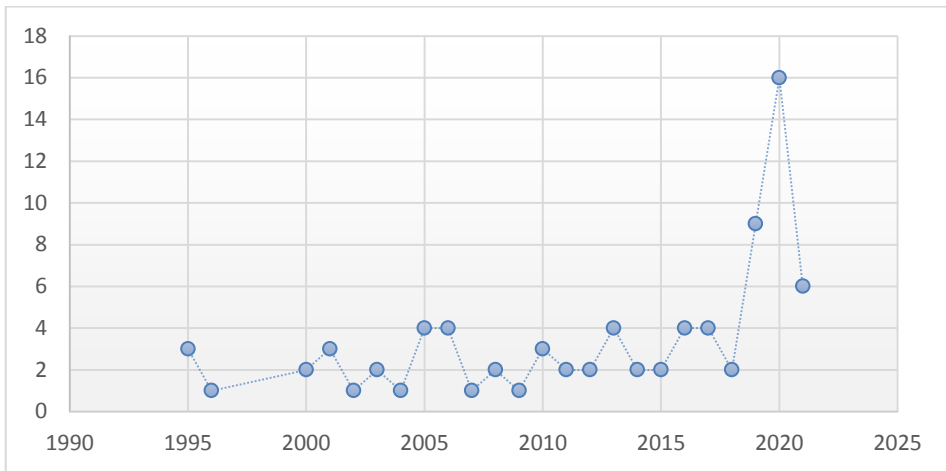


Source: Authors’ own elaboration.

## 2.2. General characteristics of the selected studies

Figure 2 summarizes the distribution of articles by year of publication. It shows that the rate of published articles on olfactory marketing has increased remarkably since 2010, reaching a peak in 2020 with sixteen published articles. The interest in marketing innovation took considerable interest after the big recession in 2008, and nowadays, with COVID-19, scholars are looking for innovation in marketing as a key strategy.

**Figure 2.** Distribution of articles by years of publication

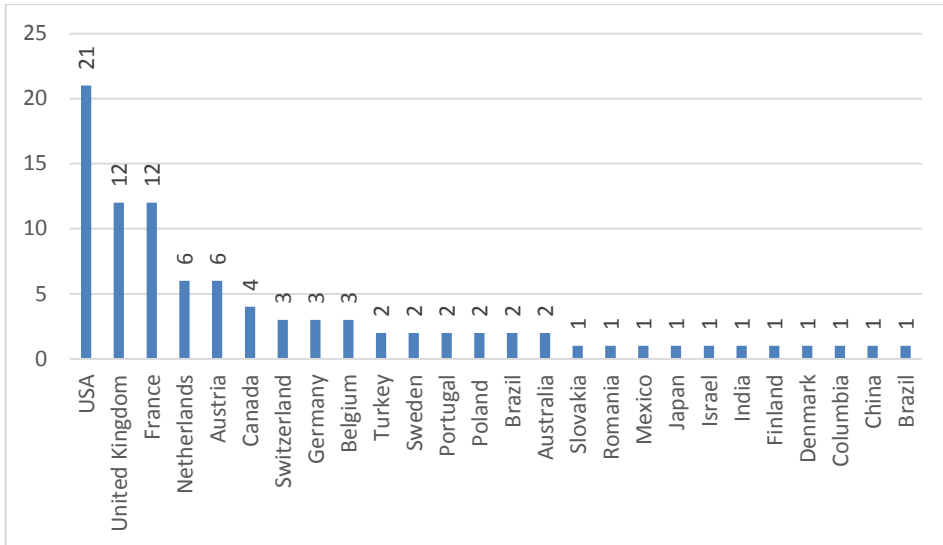


Source: Authors' own elaboration.

### 2.2.1. Investigated countries for publishing articles on olfactory marketing

Figure 3 shows the distribution of selected empirical studies by country, thus revealing that the most studied area is Europe with 60% of articles having a focus on understanding the impact of olfactory marketing followed by America with a 25% study implementation rate.

**Figure 3.** Distribution of the empirical publications by investigated countries

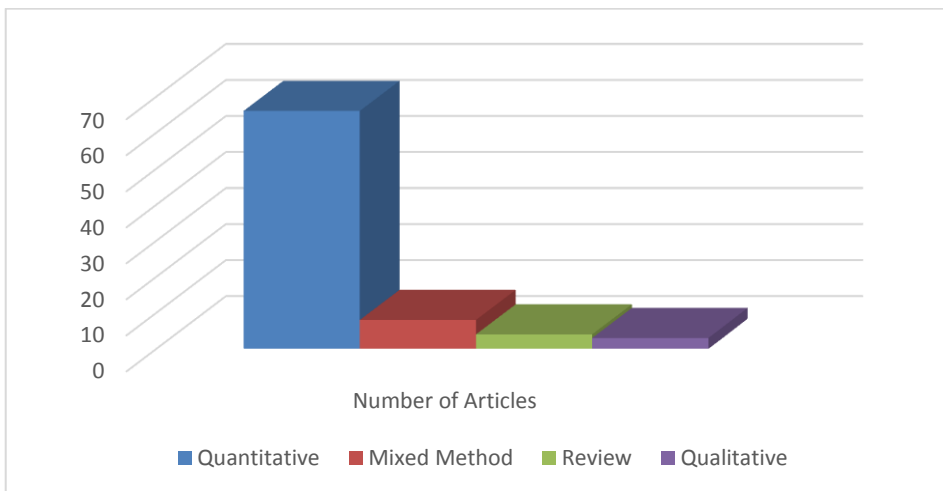


Source: Authors' own elaboration.

**2.2.2. Distribution of articles by type of methodology**

Figure 4 depicts the distribution of the selected studies through their research design verifying 81% are empirical studies, while 18% are conducted through qualitative, reviews, and mixed-method approaches, respectively.

**Figure 4.** Distribution of the research methodologies used in the articles



Source: Authors' own elaboration.

### 3. Findings from the literature

#### 3.1. Ambient fragrance & consumer response

The ambient fragrance is discussed as the fragrance discovered as a part of the retail environment and its success is gauged by the consumer’s response to an unscented vs scented situation (Doucé & Janssens 2013). The literature primarily discusses three main functions of ambient fragrance namely – cognitive responses, consumer purchase intentions, and consumer purchase behavior (Morrison, Gan, Dubelaar, & Oppewal, 2011) toward the store under the aromatic influence. Past literature suggests pleasant fragrance results in experiments on quite a substantial consumer response such as store recall and evaluation (Schifferstein, Talke, & Oudshoorn, 2011) and time elusiveness, purchase intentions, and further intentions to recommend along with expenditure and lingering at the retail store (Morrin, 2010; Nibbe & Orth, 2017). Spence (2021) narrated how fragrance has been found to positively influence consumers inside a flight to help reduce stress and anxiety of travel and build an impression of hygiene and cleanliness inside the flight. Errajaa, Legohérel, Daucé, and Bilgihan (2021) discussed how fragrance needs to be consistent with the brand image to build customer satisfaction along with increased intention for revisits. Castellanos, Hudson, Haviland-Jones, and Wilson (2010) investigated that fragrance helped individuals recall positive emotional incidents from their childhood. Doucé and Janssens (2013) further discussed how consumers having a strong effect intensity with the fragrance could contribute to stronger store re-visit intentions.

#### 3.2. Constructs involved in consumer response

The literature review allowed us to indicate the following constructs involved in consumer responses (Table 2).

**Table 2.** Construct definition

Constructs	Definition	Adaptation
<i>1</i>	<i>2</i>	<i>3</i>
<b>Cognitive responses</b>	Information that is processed by consumers while the ambient fragrance was present or absent, thus, contributing to measuring consumers’ ability to remember information and time during the shopping	Lwin, Morrin, & Krishna, 2010b; Morrin, Chebat, & Chebat, 2011
<b>Purchase intentions</b>	Is an individual’s readiness to demonstrate a specific behavior which is measured as a self-report indicating a sense of willingness to behave in a certain manner	Motyka et al., 2014



**Table 2 cont.**

<i>1</i>	<i>2</i>	<i>3</i>
<b>Purchase behavior</b>	Acts performed by the customer that is often measured by observing customers during the shopping episode	Motyka et al., 2014
<b>Isolated control variables</b>	Demographic variables that significantly affect consumers' purchase intentions. The effect of age and gender was found to influence the buying behavior of the consumers	Helmefalk & Hulten 2017; Correia et al., 2016

Source: Authors' own elaboration.

### 3.2.1. Cognitive responses

The information which was fetched while fragrance was present or absent inside a retail setup did measure the cognitive exploitations of a consumer's ability to process information regarding the time spent shopping (Lwin, Morrin, & Krishna, 2010a; Morrin, Chebat, & Chebat, 2011). Silva, Sá, Escadas, and Carvalho (2021) investigated how a field experiment conducted in a public bus under the influence of fragrance does increase passengers' perceived travel experience and helps build memory recall with the brand as well. De Luca and Botelho (2020) discussed how fragrance deployed in retail settings could help consumers not only experience pleasure during their purchasing experience, but also promotes cognitive responses to brand recall.

Mitchell, Kahn, and Knasko (1995) explored how consumers remembered and recalled the various attributes of the store offerings under the influence of fragrance, the findings of which were also similar to the research conducted by Morrin and Ratneshwar (2003). Chebat and Michon (2003) spoke about how consumers' decision making not solely influenced by mood, but also by cognitive processing as well. The fragrance inside retail stores does build a favorable perception of the overall ambiance. However, these studies were challenged by Teller and Dennis (2012) who concluded that no concrete results could be found supporting the cognitive positive response of consumer's decision making inside a retail outlet under the influence of fragrance. Guillet, Kozak, and Kucukusta (2019) suggested how fragrance in a hospitality setup does influence consumers into developing higher brand recall. Dörtyol (2020) examined the importance of fragrance scale developments to help retailers understand how olfactory cues inside a retail store influence the human brain in fulfilling desires, satisfaction, and expectations. Errajaa et al. (2021) reflected how fragrance needs to have congruency with the brand to reap maximum visibility and association along

with building a positive brand image. Girard Lichters, Sarstedt, and Biswas (2019) study reflected the impact of fragrance on a long-term association building more conscious remembrance of the fragrance post its discontinuation.

### **3.2.2. Purchase intentions**

Motyka et al. (2014) discussed purchase intentions as individual's inquisitiveness to perform a specific behavior or willingness to behave in a specific manner. Herrmann, Zidansek, Sprott, and Spangenberg (2013) defined purchase intention as certain purposes that reflect the willingness to engage in business transactions with an organization for the acquisition of a product against the price willing to pay. It is one of the widely used and explored topics in marketing and consumer behavior.

Doucé and Janssens (2013) revealed consumer purchase intentions to be the reflection of their willingness to engage in a business transaction in various ways like the acquisition of products or the price readiness to pay. It was also indicated by similar results from studies conducted by Herrmann et al. (2013); Spangenberg et al. (1996) that talked about consumers' intention to re-visit the store or pay a higher price for products. Consumer intentions also deal with the willingness to spread positive word of mouth and encourage others to perform business with the store Adams and Doucé (2016). Gvili, Levy, and Zwilling (2018) reflected on how the effects of scented cues along with color congruent advertisements build a positive impact on consumers' emotional and attitudinal responses.

### **3.2.3. Purchase behavior reflecting time and money spent**

Solomon (1996) discussed consumer purchase behavior to be an extremely complex concept, usually resulting from an interaction between the consumer and its immediate environment (Hansen, Percy, & Hansen, 2004). According to Holbrook and Hirschman (1982), purchase behaviors are driven by a certain set of factors and motivations. Scholars have been interested to decode these factors contributing to consumers' purchase decision-making. Blackwell, Miniard, and Engel (2001) identified personality, culture, social class, and consumer attitude to be the contributing factors to decision making. However, Voss, Spangenberg, and Grohmann (2003) defined hedonic and utilitarian motivations to be prime contributors to purchase intentions.

Motyka et al. (2014) spoke about acts performed by the consumers which are judged by observing them making purchases inside the retail stores. Morrin and Chebat (2005) discussed how purchase behavior influenced by fragrance tends to make consumers intend to spend extra time inside the store willingly. Chebat, Morrin, and Chebat (2009) considered how consumers tend to underestimate the time spent inside a retail store under the influence of fragrance which was again in line with the research outcomes of Spangenberg et al. (1996). Similar observations were made by Morrison et al. (2011) and Herrmann et al. (2013) where consumer purchase behavior under the influence of fragrance was further supported by impulsive buying within the store as well along with increased time spent. Leenders, Smidts, and El Haji (2019) discussed how consumers tend to underestimate the time spent inside a retail store under the influence of high-intensity fragrance. Doucé, Poels, Janssens, & De Backer (2013) also observed that intentions to linger the time spent inside retail stores were another reflection of consumer behavior with the influence of fragrance. Jacob, Stefan, and Guéguen (2014) discussed how lavender fragrance infused in a flower shop increases consumer spending considerably. Helmfalk and Hulten (2017) discussed that a multi-sensory (auditory and olfactory) influence does increase consumers' time spent inside the retail store and builds positive purchasing behavior intentions. Jacob et al. (2014) discussed how fragrance induced in a flower shop made consumers spend more money in making their purchasing decisions similar to Guéguen and Petr (2006) research in a restaurant where fragrance did influence consumers inside the restaurant making them spend both more money and time under its influence.

### **3.2.4. Fragrance attribute in building store recall**

Morrin and Ratneshwar (2003) discussed store recall as remembering the product and service attributes of the store. This plays an important role for consumers to have an association with the store as the recall is attributed to memory which the consumer experiences and registers during their purchasing process (Lwin, Morrin, & Krishna, 2010b).

Fragrance characteristics try to explain the morphological structures of a pleasant ambient fragrance including the quality, congruency, and structure. Fragrance quality symbolizes the scent perception and differentiates it from others (Dravnieks, 1982). While individuals could distinguish various fragrances, they have previous experience with, it would be difficult to provide a verbal description of the same and thus most of the time could be able to experience

a feeling of association and could recognize the scent, without being able to identify the same (Morris, 2010) as fragrance acts as a memory cue without identification even as well (Herz & Engen, 1996), the fragrance is often pillared upon other scent characteristics as well. One such feature is congruency where the theorizing goes that people not only respond to discrete products or elements but to the total configuration of it (Bitner, 1992). Hence, Bosman (2006) and Herrmann et al. (2013) study talked about building a combined prior fit for the environment and the offerings. The effect size is influenced by congruence as people are positively predisposed to it (Herz, 2010) and incongruent fragrance deals with the processing of information (Mitchell, Kahn, & Knasko 1995). Considering structure, Herrmann et al. (2013) dealt with the condition where a pleasant ambient scent containing a single or a multi-aroma dimensional allows for a greater cross-study scope. His study found that ambient orange-basil scent with green tea (multi-dimensional) is less effective than orange (single) because it is more challenging to process.

### **3.2.5. Isolated control factors**

Researchers distinguished gender and age as the most widely used control variables in past studies. It was observed that considering physiological evidence, women have a greater level of sensitivity and outperform men in fragrance detection and response (considering detection, identification, discrimination and memory) and more response to fragrance than men (Doty & Cameron, 2009; Herz & Engen 1996). Helmfalk & Hulten (2017) study discussed that fragrance results in women exhibiting a more positive mood than men. Further, it was observed that fragrance does affect a considerable portion of a women's brain (Yousem et al., 1999). However, not many tests are there discriminating gender differences in response to ambient fragrance (Baron. 1997; Lwin, & Morris, Krishna, 2010b) which might be a result of lower power in aggregate analysis. Chebat, Morris, and Chebat (2009) study spoke about how fragrance facilitates expenditure for young consumers less than 35 years of age and does not have a significant impact on older consumers. At the same time, considerable differences in respondents' susceptibility to ambient fragrance could be related to olfactory capacity which continues to change with age during an individual's lifespan, where significant loss of olfaction happens for older generations (Correia et al., 2016). Correia et al. (2016) study also determined that olfactory performance is best visible within the age group of 20 to 40 years and considerably declines afterward.

### **3.3. ZMET – a unique process orientation for building constructs**

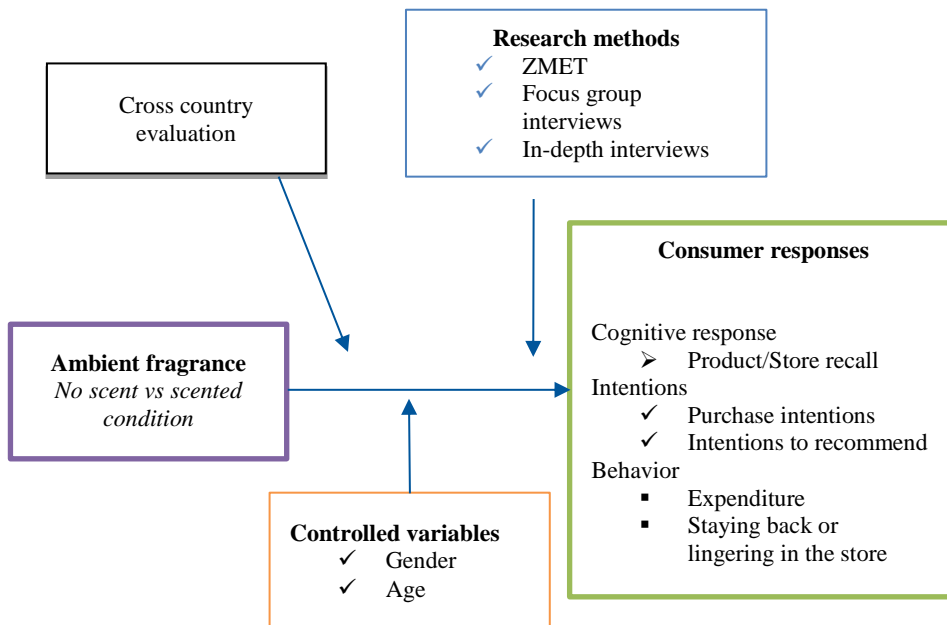
Zaltman Metaphor Elicitation Technique (Zaltman, 1997; Zaltman & Coulter, 1995) is a tested method discovered in the early 1990s basically to comprehend and understand consumers by evoking metaphors that disclose prominent aspects of the unexpressed mental models. The laddering interview technique which is a qualitative research tool is highly successful in understanding what and why people buy and use products and services. By using the power of eliciting metaphor, it could further move to illustrate in the respondent's tune the concepts and ideas that are there in the mental model (Ling, Yang, Liu, & Tsai, 2009).

The usage of metaphor as a research tool also helps consumers reveal and form a concrete mental structure of both their thoughts and feelings revolving around the object of inquiry, thus creating a deeper understanding of knowledge by probing out the concepts found through laddering channels. This in a way allows researchers to study the data thus retrieved in a deeper context than is possible through a traditional laddering research study. Warden and Chen (2009) discussed how the combination of in-depth interviews and photographs collected from the respondents helps build a connection between the respondent's deeply rooted thoughts and their external experiences, which further contributes to generating important questions comprising of "how" and "why" as part of the laddering techniques (Ling et al., 2009). This defines a well-built mental structure of the respondents (Christensen & Olson, 2002; Ji & King, 2018). ZMET would be the starting point for carrying out further research with a structured questionnaire that emerged from the hidden constructs identified in the study. Moreover, this mixed-method approach was prominent in research carried out by Yang and Chen (2015) where in-depth interviews were performed to understand that fragrance did play an important role in making a purchase intention for buying cosmetics. Additionally, Castellanos et al. (2010) introduced an in-depth interview through narrative analysis to understand how respondents, when introduced to fragrance, bring out positive childhood memories. Xiao, Tait, and Kang (2020) conducted in-depth interviews to understand how fragrance plays an important role in mapping people and places and building perceptual patterns influenced by fragrance.

#### 4. Integrative framework based on the findings

As the main result of the literature review, an integrated framework (Figure 5) has been developed which maps insights within fragrance impact on consumer responses on the 81 articles reviewed. The model below brings the determinants driving or hampering consumer responses, the set of control variables that influence such consumer responses, outcomes, and consequences of measured fragrance in retail stores. It is also emphasized that ZMET would play a crucial role to bring out the hidden metaphors amongst consumers which would play a significant role in decision making under fragrance in a retail setup and it would be interesting to understand the impact of fragrance on consumer responses on a cross-country setup (India and Poland) as it is already established that culture plays a significant role in consumer’s decision making (Fleck & Maille, 2010; Gilbert, 2008). Möller and Herm (2013) discussed the difficulties of presenting the appropriateness of fragrance considering culture and other personal attributes. Helmefalk and Hultén (2017) spoke about how more attention should be devoted to studies on the impact of fragrance on consumers’ emotions and purchase behavior across different cultures.

**Figure 5.** An integrative framework for modeling consumer responses to olfactory marketing



Source: Authors’ own elaboration.

## 5. Discussion

The study is an attempt to present the research framework which can be useful for the retailer in developing their strategies aiming at evaluating olfactory marketing.

Turley and Milliman (2000) investigated the impact of fragrance on consumers under an artificial laboratory setup. This review also witnesses several studies conducted in real commercial retail spaces and the results from both environments seem to comply with each other.

Fragrance marketing is an integral part of today's contemporary marketing approaches, but from the literature review, it could not be concluded that the organizations implementing fragrance marketing fully comply with the completeness and accuracy of the information of the results fetched from scientific studies while applying fragrance in their retail environment as it is a highly expensive affair for these firms to extensively conduct independent research. Studies have also witnessed fragrance having no impact on consumer perceptions and emotions (Teller & Dennis, 2012). Moreover, Parodi et al. (2010) discussed how some potentially harmful chemical fragrances in cosmetics could lead to leukemia along with severe skin inflammation, and certain nanoparticles used with fragrance in anti-aging creams and perfumes also induce cancer (Vijaya et al., 2020). Further investigation by Bagasra et al. (2013) disclosed how synthetic perfumes are used extensively in a variety of products such as cosmetic soaps, detergents, and other daily used products contribute to autism spectrum disorder amongst individuals, mostly kids. Hence retail marketers need to be cautious about the ill effects of fragrance and its consequences on retail consumers as well.

It is recommended that firms that are planning to adopt fragrance marketing as a part of their customized marketing approach or retail marketers who are already incorporating fragrance in their retail spaces, need to be fully aware of the applications and effects used in scientific studies and at the same time fine-tune their fragrance marketing research considering their strategy so that they could best utilize the same.

It is also important to note that fragrance is one of the elements of sensory expression to have a long-lasting impression on a retail consumer and it could be best exploited if goes together with other sensory cues like temperature, music, layout. Considering the relationship between fragrance and retail store to yield optimum results, the former needs to build congruency with the product or service, with the retail space, and most importantly the profile of the consumers to receive the set results (Lin, 2004). Hence, consumer demographics, especially gender, plays a crucial role in successful fragrance implementation. Knasko

(1995) administered a chocolate fragrance as the respondents' observed a series of images considering babies, chocolates, and trees which induced a level of excitement, while Vinitzky and Mazursky (2011) using the same fragrance identified an increase in footfall to the online store along with an increase in exploration of products. This sets the basis for investigating the impact of fragrance on demographics, especially gender.

Finally, retail firms are desperately trying to full-proof their in-store innovations with pleasant ambient fragrances, an unpleasant fragrance could yield more serious detrimental effects, with severe impact than a pleasant fragrance yielding positive effects (Herz, 2011). Hence an extensive exploration and understanding of the impact of unpleasant fragrances on sources like kitchen areas displayed inside retail spaces need to be explored given the lack of studies conducted. Furthermore, Gaby and Tepper (2020) discussed how fragrance when presented in different ways creates a difference in intensity and pleasantness and reflects differences in subsequent brand recall as well. Hence, fragrance intensity and its impact on retail setup could also be a possible research area that needs attention.

## **6. Conclusions**

There are several contributions this study has made, especially for retail marketers. First, retail managers would have a clear understanding that controlled input of fragrance would positively impact the time spent by consumers in a retail store. This finding is in line with the studies of Doucé et al. (2013) and Morrison et al. (2011) who have similar results on the influence of fragrance on consumers' decision-making regarding time spent inside the retail store.

Second, the fragrance would create a "feel-good" factor and thereby a positive brand attachment for consumers inside retail destinations, thus contributing to spending more money. This is in line with Herrmann et al. (2013) study which discussed how consumers influenced by fragrance ends up spending more during their shopping encounters.

The study contributed to the existing body of literature establishing why it is more important to create that first impression with the right fragrance, creating a long-lasting positive emotional state of mind that helps create experiences (Schmitt, 1999) and form brand loyalty (Pullman & Gross, 2004; Anguera-Torrell, Álvarez León, Cappai, and Sanmartín Antolín (2021) toward the store.



## 7. Limitations & future work

This review like all other research work has limitations. First, the proposed framework is a summary of the most studied variables. Data constraints are also reflected on pleasant fragrance and its geographic focus on Europe and America. In most cases, fragrance perceptual properties are learned and carry culture-bound meanings. Hence, for this study, generalizations would be difficult which accounts for the main effects of scent pleasantness and activation and the review may not be extended to other cultures.

The researchers suggest scope for future work. The authors identified studies on the interaction between fragrance and music (Mattila & Wirtz, 2001; Morrison et al., 2011). Thus, there is scope to consider the influence of fragrance clubbed with other atmospheric variables (color, lighting, temperature, and crowding). Moreover, a lack of studies has been identified on the influence of ambient scent on the service environment, especially in restaurants (Guéguen & Petr, 2006). A significant number of studies have investigated the influence of fragrance on consumer behavior. However, little to very less has explored the impact of fragrance on employee behavior understanding the factors that moderate this relationship.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

## References

- Adams, C., & Doucé, L. (2017). The effect of crossmodal congruency between ambient scent and the store environment on consumer reactions: An abstract. In M. Stieler (Ed.), *Creating marketing magic and innovative future marketing trends* (pp. 913-914). Cham: Springer. [https://doi.org/10.1007/978-3-319-45596-9\\_169](https://doi.org/10.1007/978-3-319-45596-9_169)
- Anguera-Torrell, O., Álvarez León, I., Cappai, A., & Sanmartín Antolín, G. (2021). Do ambient scents in hotel guest rooms affect customers' emotions? *European Journal of Tourism Research*, 27, 2701-2716. <https://doi.org/10.54055/ejtr.v27i.2120>
- Axel, R. (1995). The molecular logic of smell. *Scientific American*, 273(4), 154-159. <https://doi.org/10.1038/scientificamerican1095-154>
- Bagasra, O., Golkar, Z., Garcia, M., Rice, L. N., & Pace, D. G. (2013). Role of perfumes in pathogenesis of autism. *Medical Hypotheses*, 80(6), 795-803. <https://doi.org/10.1016/j.mehy.2013.03.014>

- Baron, R. A. (1997). The sweet smell of... helping: Effects of pleasant ambient fragrance on prosocial behavior in shopping malls. *Personality and Social Psychology Bulletin*, 23(5), 498-503. <https://doi.org/10.1177/0146167297235005>
- Bitner, M. J. (1992). Servicescapes: The impact of physical surroundings on customers and employees. *Journal of Marketing*, 56(2), 57-71. <https://doi.org/10.1177/002224299205600205>
- Blackwell, R. D., Miniard, P. W., & Engel, J. F. (2001). *Consumer behavior* (9<sup>th</sup> ed.). Mason, OH: South-Western Thomas Learning.
- Bosmans, A. (2006). Scents and sensibility: When do (in) congruent ambient scents influence product evaluations? *Journal of Marketing*, 70(3), 32-43. <https://doi.org/10.1509/jmkg.70.3.032>
- Bradford, K. D., & Desrochers, D. M. (2009). The use of scents to influence consumers: The sense of using scents to make cents. *Journal of Business Ethics*, 90(2), 141-153. <https://doi.org/10.1007/s10551-010-0377-5>
- Castellanos, K. M., Hudson, J. A., Haviland-Jones, J., & Wilson, P. J. (2010). Does exposure to ambient odors influence the emotional content of memories? *The American Journal of Psychology*, 123(3), 269-279. <https://doi.org/10.5406/amerjpsyc.123.3.0269>
- Correia, C., Lopez, K. J., Wroblewski, K. E., Huisingh-Scheetz, M., Kern, D. W., Chen, R. C., Schumm, L. P., Dale, W., McClintock, M. K., & Pinto, J. M. (2016). Global sensory impairment in older adults in the United States. *Journal of the American Geriatrics Society*, 64(2), 306-313. <https://doi.org/10.1111/jgs.13955>
- Cassell, C., Denyer, D., & Tranfield, D. (2006). Using qualitative research synthesis to build an actionable knowledge base. *Management Decision*, 44(2), 213-227. <https://doi.org/10.1108/00251740610650201>
- Chebat, J. C., & Michon, R. (2003). Impact of ambient odors on mall shoppers' emotions, cognition, and spending: A test of competitive causal theories. *Journal of Business Research*, 56(7), 529-539. [https://doi.org/10.1016/S0148-2963\(01\)00247-8](https://doi.org/10.1016/S0148-2963(01)00247-8)
- Chebat, J. C., Morrin, M., & Chebat, D.-R. (2009). Does age attenuate the impact of pleasant ambient scent on consumer response? *Environment and Behavior*, 41(2), 258-267. <https://doi.org/10.1177/0013916507311792>
- Christensen, G. L., & Olson, J. C. (2002). Mapping consumers' mental models with ZMET. *Psychology & Marketing*, 19(6), 477-501. <https://doi.org/10.1002/mar.10021>
- Davies, B. J., Kooijman, D., & Ward, P. (2003). The sweet smell of success: Olfaction in retailing. *Journal of Marketing Management*, 19(5-6), 611-627. <https://doi.org/10.1080/0267257X.2003.9728228>
- Doty, R. L., & Cameron, E. L. (2009). Sex differences and reproductive hormone influences on human odor perception. *Physiology & Behavior*, 97(2), 213-228. <https://doi.org/10.1016/j.physbeh.2009.02.032>

- Doucé L., & Janssens, W. (2013). The presence of a pleasant ambient scent in a fashion store: The moderating role of shopping motivation and affect intensity. *Environment and Behavior*, 45(2), 215-238. <https://doi.org/10.1177/0013916511410421>
- Doucé, L., Poels, K., Janssens, W., & De Backer, C. (2013). Smelling the books: The effect of chocolate scent on purchase-related behavior in a bookstore. *Journal of Environmental Psychology*, 36, 65-69. <https://doi.org/10.1016/j.jenvp.2013.07.006>
- Dörtyol, İ. T. (2021). Do consumers need to smell? Scale development and validation. *Journal of Sensory Studies*, 36(2), e12630. <https://doi.org/10.1111/joss.12630>
- Dravnieks, A. (1982). Odor quality: semantically generated multidimensional profiles are stable. *Science*, 218(4574), 799-801. <https://doi.org/10.1126/science.7134974>
- Errajaa, K., Legohérel, P., Daucé, B., & Bilgihan, A. (2021). Scent marketing: Linking the scent congruence with brand image. *International Journal of Contemporary Hospitality Management*, 33(2), 402-427. <https://doi.org/10.1108/IJCHM-06-2020-0637>
- Emsenhuber, B. (2011). Scent marketing: Making olfactory advertising pervasive. In J. Müller, F. Alt, D. Michelis (Eds.), *Pervasive advertising* (pp. 343-360). London: Springer. [https://doi.org/10.1007/978-0-85729-352-7\\_17](https://doi.org/10.1007/978-0-85729-352-7_17)
- Fleck, N., & Maille, V. (2010). Thirty years of conflicting studies on the influence of congruence as perceived by the consumer: Overview, limitations and avenues for research. *Recherche et Applications en Marketing* (English edition), 25(4), 69-92. <https://doi.org/10.1177/205157071002500404>
- Gaby, J. M., & Tepper, B. J. (2020). A comparison of hedonic and emotional responses to common odors delivered by qPODs (Portable Olfactive Devices) and traditional sniff jars. *Food Quality and Preference*, 80, 103804. <https://doi.org/10.1016/j.foodqual.2019.103804>
- Guéguen, N., & Petr, C. (2006). Odors and consumer behavior in a restaurant. *International Journal of Hospitality Management*, 25(2), 335-339. <https://doi.org/10.1016/j.ijhm.2005.04.007>
- Gilbert, N. (2008). *What the nose knows*. New York: Crown Publishers.
- Girard, A., Lichters, M., Sarstedt, M., & Biswas, D. (2019). Short- and long-term effects of nonconsciously processed ambient scents in a servicescape: Findings from two field experiments. *Journal of Service Research*, 22(4), 440-455. <https://doi.org/10.1177/1094670519842333>
- Gvili, Y., Levy, S., & Zwilling, M. (2018). The sweet smell of advertising: The essence of matching scents with other ad cues. *International Journal of Advertising*, 37(4), 568-590. <https://doi.org/10.1080/02650487.2017.1339584>
- Guillet, B. D., Kozak, M., & Kucukusta, D. (2019). It's in the air: Aroma marketing and affective response in the hotel world. *International Journal of Hospitality & Tourism Administration*, 20(1), 1-14. <https://doi.org/10.1080/15256480.2017.1359727>
- Hao, A. W., Paul, J., Trott, S., Guo, C., & Wu, H.-H. (2021). Two decades of research on nation branding: A review and future research agenda. *International Marketing Review*, 38(1), 46-69. <https://doi.org/10.1108/IMR-01-2019-0028>

- Hansen, F., Percy, L., & Hansen, M. H. (2004). *Consumer choice behaviour: An emotional theory* (Research Paper, No. 1). Copenhagen: Department of Marketing, Copenhagen Business School.
- Helmefalk, M., & Hultén, B. (2017). Multi-sensory congruent cues in designing retail store atmosphere: Effects on shoppers' emotions and purchase behavior. *Journal of Retailing and Consumer Services*, 38, 1-11. <https://doi.org/10.1016/j.jretconser.2017.04.007>
- Hertz, R. S. (1997). The effects of cue distinctiveness on odor-based context-dependent memory. *Memory & Cognition*, 25(3), 375-380. <https://doi.org/10.3758/BF03211293>
- Herz, R. S. (2011). The emotional, cognitive, and biological basics of olfaction: Implications and considerations for scent marketing. In A. Krishna (Ed.), *Sensory marketing: Research on the sensuality of products* (pp. 117-138). London: Routledge.
- Herz, R. S., & Engen, T. (1996). Odor memory: Review and analysis. *Psychonomic Bulletin & Review*, 3(3), 300-313. <https://doi.org/10.3758/BF03210754>
- Herrmann, A., Zidansek, M., Sprott, D. E., & Spangenberg, E. R. (2013). The power of simplicity: Processing fluency and the effects of olfactory cues on retail sales. *Journal of Retailing*, 89(1), 30-43. <https://doi.org/10.1016/j.jretai.2012.08.002>
- Hirsch, A. R. (1995). Effects of ambient odors on slot-machine usage in a Las Vegas casino. *Psychology & Marketing*, 12(7), 585-594. <https://doi.org/10.1002/mar.4220120703>
- Holbrook, M. B., & Hirschman, E. C. (1982). The experiential aspects of consumption: Consumer fantasies, feelings, and fun. *Journal of Consumer Research*, 9(2), 132-140. <https://doi.org/10.1086/208906>
- Jacob, C., Stefan, J., & Guéguen, N. (2014). Ambient scent and consumer behavior: A field study in a florist's retail shop. *The International Review of Retail, Distribution and Consumer Research*, 24(1), 116-120. <https://doi.org/10.1080/09593969.2013.821418>
- Ji, M., & King, B. (2018). Explaining the embodied hospitality experience with ZMET. *International Journal of Contemporary Hospitality Management*, 30(11), 3442-3461. <https://doi.org/10.1108/IJCHM-10-2017-0709>
- Kivioja, K. (2017). Impact of point-of-purchase olfactory cues on purchase behavior. *Journal of Consumer Marketing*, 34(2), 119-131. <https://doi.org/10.1108/JCM-08-2015-1506>
- Knasko, S. C. (1995). Pleasant odors and congruency: Effects on approach behavior. *Chemical senses*, 20(5), 479-487. <https://doi.org/10.1093/chemse/20.5.479>
- Kotler, P. (1973). Atmospherics as a marketing tool. *Journal of Retailing*, 49(4), 48-64.
- Lwin, M. O., Morrin, M., & Krishna, A. (2010a). Exploring the superadditive effects of scent and pictures on verbal recall: An extension of dual coding theory. *Journal of Consumer Psychology*, 20(3), 317-326. <https://doi.org/10.1016/j.jcps.2010.04.001>
- Lwin, M. O., Morrin, M., & Krishna, A. (2010b). Product scent and memory. *Journal of Consumer Research*, 37(1), 57-67. <https://doi.org/10.1016/j.jcps.2010.04.001>

- Lehrner, J., Eckersberger, C., Walla, P., Pötsch, G., & Deecke, L. (2000). Ambient odor of orange in a dental office reduces anxiety and improves mood in female patients. *Physiology & Behavior*, *71*(1-2), 83-86. [https://doi.org/10.1016/S0031-9384\(00\)00308-5](https://doi.org/10.1016/S0031-9384(00)00308-5)
- Lehrner, J., Marwinski, G., Lehr, S., Jöhren, P., & Deecke, L. (2005). Ambient odors of orange and lavender reduce anxiety and improve mood in a dental office. *Physiology & Behavior*, *86*(1-2), 92-95. <https://doi.org/10.1016/j.physbeh.2005.06.031>
- Leenders, M. A., Smidts, A., & El Haji, A. (2019). Ambient scent as a mood inducer in supermarkets: The role of scent intensity and time-pressure of shoppers. *Journal of Retailing and Consumer Services*, *48*, 270-280. <https://doi.org/10.1016/j.jretconser.2016.05.007>
- Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P., Clarke, M., Devereaux, P. J., Kleijnen, J., & Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration. *Journal of Clinical Epidemiology*, *62*(10), e1-e34. <https://doi.org/10.1016/j.jclinepi.2009.06.006>
- Lim, W. M., Yap, S. F., & Makkar, M. (2021). Home sharing in marketing and tourism at a tipping point: What do we know, how do we know, and where should we be heading? *Journal of Business Research*, *122*, 534-566. <https://doi.org/10.1016/j.jbusres.2020.08.051>
- Lin, I. Y. (2004). Evaluating a servicescape: The effect of cognition and emotion. *International Journal of Hospitality Management*, *23*(2), 163-178. <https://doi.org/10.1016/j.ijhm.2003.01.001>
- Ling, I-L., Yang, C.-M., Liu, Y.-F., & Tsai, Y.-H. (2009). Penetrating adolescents' mental models of mp3 with ZMET. *Adolescence*, *44*(176), 949-963. Retrieved from <https://fddocuments.in/document/penetrating-adolescents-mental-models-of-mp3-with-zmet.html?page=1>
- De Luca, R., & Botelho, D. (2020). Olfactory priming on consumer categorization, recall, and choice. *Psychology & Marketing*, *37*(8), 1101-1117. <https://doi.org/10.1002/mar.21342>
- Lunardo, R. (2012). Negative effects of ambient scents on consumers' skepticism about retailer's motives. *Journal of Retailing and Consumer Services*, *19*(2), 179-185. <https://doi.org/10.1016/j.jretconser.2011.11.007>
- Martin, G. N., Apena, F., Chaudry, Z., Mulligan, Z., & Nixon, C. (2001). The development of an attitudes towards the Sense of Smell Questionnaire (SoSQ) and a comparison of different professions' responses. *North American Journal of Psychology*, *3*(3), 491-502. Retrieved from <https://eprints.mdx.ac.uk/3516/>
- Mattila, A. S., & Wirtz, J. (2001). Congruency of scent and music as a driver of in-store evaluations and behavior. *Journal of Retailing*, *77*(2), 273-289. [https://doi.org/10.1016/S0022-4359\(01\)00042-2](https://doi.org/10.1016/S0022-4359(01)00042-2)
- McKibbin, A. (2006). Systematic reviews and librarians. *Library Trends*, *55*(1), 202-215. <https://doi.org/10.1353/lib.2006.0049>

- Mitchell, D. J., Kahn, B. E., & Knasko, S. C. (1995). There's something in the air: Effects of congruent or incongruent ambient odor on consumer decision making. *Journal of Consumer Research*, 22(2), 229-238. <https://doi.org/10.1086/209447>
- Möller, J., & Herm, S. (2013). Shaping retail brand personality perceptions by bodily experiences. *Journal of Retailing*, 89(4), 438-446. <https://doi.org/10.1016/j.jretai.2013.05.004>
- Morrison, M., Gan, S., Dubelaar, C., & Oppewal, H. (2011). In-store music and aroma influences on shopper behavior and satisfaction. *Journal of Business Research*, 64(6), 558-564. <https://doi.org/10.1016/j.jbusres.2010.06.006>
- Morrin, M. (2010). Scent marketing: An overview. In A. Krishna (Ed.), *Sensory marketing: Research on the sensuality of products* (pp. 75-86). New York: Routledge/Taylor & Francis Group.
- Morrin, M., & Chebat, J. C. (2005). Person-place congruency: The interactive effects of shopper style and atmospherics on consumer expenditures. *Journal of Service Research*, 8(2), 181-191. <https://doi.org/10.1177/1094670505279420>
- Morrin, M., Chebat, J. C., & Chebat, G. C. (2011). The impact of scent and music on consumer perceptions of time duration. In A. Krishna (Ed.), *Sensory marketing. Research on the sensuality of products* (pp. 153-164). London: Routledge.
- Morrin, M., & Ratneshwar, S. (2000). The impact of ambient scent on evaluation, attention, and memory for familiar and unfamiliar brands. *Journal of Business Research*, 49(2), 157-165. [https://doi.org/10.1016/S0148-2963\(99\)00006-5](https://doi.org/10.1016/S0148-2963(99)00006-5)
- Morrin, M., & Ratneshwar, S. (2003). Does it make sense to use scents to enhance brand memory? *Journal of Marketing Research*, 40(1), 10-25. <https://doi.org/10.1509/jmkr.40.1.10.19128>
- Motyka, S., Grewal, D., Puccinelli, N. M., Roggeveen, A. L., Avnet, T., Daryanto, A., de Ruyter, K., & Wetzels, M. (2014). Regulatory fit: A meta-analytic synthesis. *Journal of Consumer Psychology*, 24(3), 394-410. <https://doi.org/10.1016/j.jcps.2013.11.004>
- Ngai, E. W. (2005). Customer relationship management research (1992-2002) An academic literature review and classification. *Marketing Intelligence and Planning*, 23(6), 582-605. <https://doi.org/10.1108/02634500510624147>
- Nibbe, N., & Orth, U. R. (2017). Odor in marketing. In A. Buettner (Ed.), *Springer handbook of odor* (pp. 141-142). Cham: Springer. [https://doi.org/10.1007/978-3-319-26932-0\\_56](https://doi.org/10.1007/978-3-319-26932-0_56)
- Parodi, A., Sanguineti, R., Catalano, M., Penco, S., Pronzato, M. A., Scanarotti, C., & Bassi, A. M. (2010). A comparative study of leukaemia inhibitory factor and interleukin-1 $\alpha$  intracellular content in a human keratinocyte cell line after exposure to cosmetic fragrances and sodium dodecyl sulphate. *Toxicology Letters*, 192(2), 101-107. <https://doi.org/10.1016/j.toxlet.2009.10.013>
- Pittaway, L., Robertson, M., Munir, K., Denyer, D., & Neely, A. (2004). Networking and innovation: A systematic review of the evidence. *International Journal of Management Reviews*, 5(3-4), 137-168. <https://doi.org/10.1111/j.1460-8545.2004.00101.x>

- Pullman, M. E., & Gross, M. A. (2004). Ability of experience design elements to elicit emotions and loyalty behaviors. *Decision Sciences*, 35(3), 551-578. <https://doi.org/10.1111/j.0011-7315.2004.02611.x>
- Rindfleisch, A., & Inman, J. (1998). Explaining the familiarity-liking relationship: Mere exposure, information availability, or social desirability? *Marketing Letters*, 9(1), 5-19. <https://doi.org/10.1023/A:1007958302123>
- Schiffstein, H. N. J., & Blok, S. T. (2002). The signal function of thematically (in) congruent ambient scents in a retail environment. *Chemical Senses*, 27(6), 539-549. <https://doi.org/10.1093/chemse/27.6.539>
- Schiffstein, H. N. J., Talke, K. S. S., & Oudshoorn, D.-J. (2011). Can ambient scent enhance the nightlife experience? *Chemosensory perception*, 4(1), 55-64. <https://doi.org/10.1007/s12078-011-9088-2>
- Seo, H.-S., Roidl, E., Müller, F., & Negoias, S. (2010). Odors enhance visual attention to congruent objects. *Appetite*, 54(3), 544-549. <https://doi.org/10.1016/j.appet.2010.02.011>
- Schmitt, B. (1999). Experiential marketing. *Journal of Marketing Management*, 15(1-3), 53-67. <https://doi.org/10.1362/026725799784870496>
- Silva, J., Sá, E. S., Escadas, M., & Carvalho, J. (2021). The influence of ambient scent on the passengers' experience, emotions and behavioral intentions: An experimental study in a public bus service. *Transport Policy*, 106, 88-98. <https://doi.org/10.1016/j.tranpol.2021.03.022>
- Solomon, M. R. (1996). *Consumer behavior, buying, having, and being*. London: Pearson Education.
- Spangenberg, E. R., Crowley, A. E., & Henderson, P. W. (1996). Improving the store environment: Do olfactory cues affect evaluations and behaviors? *Journal of Marketing*, 60(2), 67-80. <https://doi.org/10.2307/1251931>
- Spangenberg, E. R., Grohmann, B., & Sprott, D. E. (2005). It's beginning to smell (and sound) a lot like Christmas: The interactive effects of ambient scent and music in a retail setting. *Journal of Business Research*, 58(11), 1583-1589. <https://doi.org/10.1016/j.jbusres.2004.09.005>
- Spangenberg, E. R., Sprott, D. E., Grohmann, B., & Tracy, D. L. (2006). Gender-congruent ambient scent influences on approach and avoidance behaviors in a retail store. *Journal of Business Research*, 59(12), 1281-1287. <https://doi.org/10.1016/j.jbusres.2006.08.006>
- Spence, C. (2021). Scent in motion: On the multiple uses of ambient scent in the context of passenger transport. *Frontiers in Psychology*, 12, 702517. <http://doi.org/10.3389/fpsyg.2021.702517>
- Teller, C., & Dennis, C. (2012). The effect of ambient scent on consumers' perception, emotions and behaviour: A critical review. *Journal of Marketing Management*, 28(1-2), 14-36. <https://doi.org/10.1080/0267257X.2011.560719>
- Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, 14(3), 207-222. <https://doi.org/10.1111/1467-8551.00375>

- Tranfield, D., Denyer, D., Marcos, J., & Burr, M. (2004). Co-producing management knowledge. *Management Decision*, 42(3/4), 375-386. <https://doi.org/10.1108/00251740410518895>
- Turley, L. W., & Milliman, R. E. (2000). Atmospheric effects on shopping behavior: A review of the experimental evidence. *Journal of Business Research*, 49(2), 193-211. [https://doi.org/10.1016/S0148-2963\(99\)00010-7](https://doi.org/10.1016/S0148-2963(99)00010-7)
- Vijaya, N., Umamathi, T., Baby, A. G., Dorothy, R., Rajendran, S., Arockiaselvi, J., & Al-Hashem, A. (2020). Nanomaterials in fragrance products. In A. Nanda, S. Nanda, T. A. Nguyen, S. Rajendran, Y. Slimani (Eds.), *Nanocosmetics. Fundamentals, applications and toxicity micro and nano technologies* (pp. 247-265). Amsterdam: Elsevier. <https://doi.org/10.1016/B978-0-12-822286-7.00012-7>
- Vinitzky, G., & Mazursky, D. (2011). The effects of cognitive thinking style and ambient scent on online consumer approach behavior, experience approach behavior, and search motivation. *Psychology & Marketing*, 28(5), 496-519. <https://doi.org/10.1002/mar.20398>
- Vlahos, J. (2007, September 9). Scent and sensibility. *New York Times*. Retrieved from <https://www.nytimes.com/2007/09/09/realestate/keymagazine/909SCENT-txt.html>
- Voss, K. E., Spangenberg, E. R., & Grohmann, B. (2003). Measuring the hedonic and utilitarian dimensions of consumer attitude. *Journal of Marketing Research*, 40(3), 310-320. <https://doi.org/10.1509/jmkr.40.3.310.19238>
- Ward, P., Davies, B. J., & Kooijman, D. (2007). Olfaction and the retail environment: Examining the influence of ambient scent. *Service Business*, 1(4), 295-316. <https://doi.org/10.1007/s11628-006-0018-3>
- Warden, C. A., & Chen, J. F. (2009). When hot and noisy is good: Chinese values *renao* and consumption metaphors. *Asia Pacific Journal of Marketing and Logistics*, 21(2), 216-231. <https://doi.org/10.1108/13555850910950040>
- Xiao, J., Tait, M., & Kang, J. (2020). Understanding smellscape: Sense-making of smell-triggered emotions in place. *Emotion, Space and Society*, 37, 100710. <https://doi.org/10.1016/j.emospa.2020.100710>
- Yang, L.-C., & Chen, K.-N. (2015). Cosmetic scents by visual and olfactory senses versus purchase intention. *International Journal of Market Research*, 57(1), 125-144. <https://doi.org/10.2501/IJMR-2014-039>
- Yousem, D. M., Maldjian, J. A., Siddiqi, F., Hummel, T., Alsop, D. C., Geckle, R. J., Bilker, W. B., & Doty, R. L. (1999). Gender effects on odor-stimulated functional magnetic resonance imaging. *Brain Research*, 818(2), 480-487. [https://doi.org/10.1016/S0006-8993\(98\)01276-1](https://doi.org/10.1016/S0006-8993(98)01276-1)
- Zaltman, G. (1997). Rethinking market research: Putting people back in. *Journal of Marketing Research*, 34(4), 424-437. <https://doi.org/10.1177/002224379703400402>
- Zaltman, G., & Coulter, R. H. (1995). Seeing the voice of the customer: Metaphor-based advertising research. *Journal of Advertising Research*, 35(4), 35-51.



## Appendix

**Table 3.** Review articles with more than 30 citations

Sl. No.	Name of paper	Authors	Name of the journal	Year of publication	No. of citations
1	2	3	4	5	6
1	Ambient scent as a mood inducer in supermarkets: The role of scent intensity and time-pressure of shoppers	Leenders, Smidts, & El Haji	<i>Journal of Retailing &amp; Consumer Services</i>	2019	98
2	Congruency of scent and music as a driver of in-store evaluations and behavior	Mattila & Wirtz (2001)	<i>Journal of Retailing</i>	2001	1662
3	The effect of ambient scent on consumers' perception, emotions, and behaviour: A critical review	Teller & Dennis	<i>Journal of Marketing Management</i>	2012	118
4	Effects of ambient odors on slot-machine usage in a Las Vegas casino	Hirsch	<i>Psychology &amp; Marketing</i>	1995	432
5	Gender-congruent ambient scent influences on approach and avoidance behaviors in a retail store	Spangenberg, Sprott, Grohmann, & Tracy	<i>Journal of Business Research</i>	2006	373
6	Odors and consumer behavior in a restaurant	Guéguen & Petr	<i>International Journal of Hospitality Management</i>	2006	243
7	Multi-sensory congruent cues in designing retail store atmosphere: Effects on shoppers' emotions and purchase behavior	Helmfalk & Hulten	<i>Journal of Retailing &amp; Consumer Services</i>	2017	181
8	Impact of point-of-purchase olfactory cues on purchase behavior	Kivioja	<i>Journal of Consumer Marketing</i>	2017	37
9	Impact of ambient odors on mall shoppers' emotions, cognition, and spending: A test of competitive causal theories	Chebat & Michon	<i>Journal of Business Research</i>	2003	1177
10	The signal function of thematically (in)congruent ambient scents in a retail environment	Schifferstein & Blok	<i>Chemical Senses</i>	2002	118
11	The presence of a pleasant ambient scent in a fashion store: the moderating role of shopping motivation and affect intensity	Doucé & Janssens	<i>Environment &amp; Behavior</i>	2013	148

**Table 3 cont.**

1	2	3	4	5	6
12	The power of simplicity: Processing fluency and the effects of olfactory cues on retail sales	Herrmann, Zidansek, Sprott, & Spangenberg	<i>Journal of Retailing</i>	2013	166
13	In-store music and aroma influences on shopper behavior and satisfaction	Morrison, Gan, Dubelaar, & Oppewal	<i>Journal of Business Research</i>	2011	474
14	Can ambient scent enhance the nightlife experience?	Schifferstein, Talke, & Oudshoorn	<i>Chemosensory Perceptions</i>	2011	68
15	Product scent and memory	Lwin, Morrin, & Krishna	<i>Journal of Consumer Research</i>	2010	262
16	Odors enhance visual attention to congruent objects	Seo, Roidl, Müller, & Negoias	<i>Appetite</i>	2010	119
17	Does age attenuate the impact of pleasant ambient Scent on Consumer Response?	Chebat & Morrin	<i>Environment &amp; Behavior</i>	2009	80
18	There's something in the air: effects of congruent or incongruent ambient odor on consumer decision making	Mitchell, Kahn, & Knasko	<i>Journal of Consumer Research</i>	1995	698
19	Ambient odors of orange and lavender reduce anxiety and improve mood in a dental office	Lehmer, Marwinski, Lehr, Jöhren, & Deecke	<i>Psychology &amp; Behavior</i>	2005	572
20	Ambient odor of orange in a dental office reduces anxiety and improves mood in female patients	Lehmer, Eckersberger, Walla, Pötsch, & Deecke	<i>Psychology &amp; Behavior</i>	2000	409
21	Negative effects of ambient scents on consumers' skepticism about retailer's motives	Lunardo	<i>Journal of retailing &amp; Consumer Services</i>	2012	56
22	Olfaction and the retail environment: Examining the influence of ambient scent	Ward, Davies, & Kooijman	<i>Service Business</i>	2007	74
23	It's beginning to smell (and sound) a lot like Christmas: The interactive effects of ambient scent and music in a retail setting	Spangenberg, Grohmann, & Sprott	<i>Journal of Business Research</i>	2005	495
24	The impact of ambient scent on evaluation, attention, and memory for familiar and unfamiliar brands	Morrin & Ratneshwar	<i>Journal of Business Research</i>	2000	419
25	The sweet smell of success: Olfaction in retailing	Davies, Kooijman, & Ward	<i>Journal of Marketing</i>	2003	165