

# Effect of Odor Marketing on Consumers' Perceived Experience and Its Digitalizing Application

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The emergence of experience marketing reduces the risk and uncertainty caused by information asymmetry between consumers and enterprises in the traditional retail process. The sensory experience is the most direct and important form of experience for consumers, while the olfactory experience has attracted much attention along with the rapid development of information technology in recent years, and it has been basically mature for the commercialization, digitization and visualization of odor products. Based on the related theory of consumer experience and odor marketing, this paper attempts to analyse and summarize the characteristics of odor digital products and their main application fields, and explores the "intercommunicating and sharing" operation mode of enterprise and consumers in the new retail era, so as to enhance the value of s and create better consumer experiences.

## 1. Introduction

In 2017, the scale of China's e-commerce transactions has grown to 28.66 trillion Yuan, an increase of 24.77% over 2016. Among them, the online retail transaction volume was 7.17 trillion Yuan, and the life service e-commerce transaction volume was 988.6 billion Yuan (China E-Commerce Research Centre, 2018). The steady and fast-growing transaction scale combined with the policy support of "Internet +" indicates that the development of China's e-commerce has entered a new stage. In recent years, based on the Internet, big data, with the support of cloud computing, and artificial intelligence technology applications, the supply chain and physical stores are integrated, and the new retail model adopting online + offline full-channel business mode has gradually been widely applied.

In this new environment, consumers have become more rational about online shopping, paying more attention to high-quality content consumption and focusing on the improvement of consumer experience. Thus, the retailing stores enters the era of super-experience. On the one hand, traditional retail enterprises have opened up online channels, and products have been extended from offline to online; on the other hand, new changes have taken place in the e-commerce model, and O2O has presented many new modes of operation, with deep integration between online and offline. This new channel atmosphere requires enterprises to constantly understand the needs and behaviours of consumers, seek appropriate countermeasures, integrate brands into consumers' living habits and lifestyles, and provide them with an efficient, coherent and enjoyable shopping experience (Kong and Zhao, 2018).

Experience marketing is becoming more and more popular, and the odor has been applied more widely to all aspects online and offline. As we all know, any Starbucks always gives off a tempting coffee fragrance. Its trademark odor has a potential influence on consumers' emotions, memory and even behavioural decisions, thus forming their preferences for specific products or brands and then making a purchase decision (Li, 2009). Another typical case is the rise of the "odor library", which collects a lot of real-life odor, such as plants, weather, food, life details, film plots and other series of physical and non-physical smells (Chen, 2015). In the "Odor library", the surrounding environment and the memory of daily life are stored and sold out, so as to realize the dual purpose of memory continuation and experience marketing.

This paper attempts to explore the feasibility of odor digital operation and its potential application areas based on the related theory of odor marketing and customer experience, and provides decision support and management suggestions for enterprises.

## 2. Odor and odor marketing

For a long time, people knew little about olfaction, relative to other human senses, until in 2004 the winner of Nobel Prize in Physiology and Medicine, Richard Axel and Linda Buck published a series of research results, finding that about 1000 olfactory receptors in the human body form the odor pattern through permutation and combination, and when these odor patterns are transmitted to the brain, the brain will perform more advanced analysis, store them in the brain, and eventually produce physiological responses, such as emotions and cognition (Zhang, 2009). These advances in olfactory science research are of great significance for their commercialization. A study by Bennett (1999) showed that 80% of men and 90% of women have a specific memory and experience associated with particular odor. Krishna (2012) pointed out that the operation mechanism of olfactory information is directly linked to memory, which is different from other senses. These findings provide solid theoretical support for the application of odor in marketing.

Odors are commonly applied in the fields such as advertising, fragrance products, food, virtual electronics, and virtual entertainment products etc. The odor marketing refers to the marketing method that attracts consumers' attention, memory, identity and ultimately consumption through specific odor. It is a stimulus to consumers' taste and smell, which is different from traditional visual stimuli. It is a compensation for the lack of simulation in the previous marketing methods (Li, 2007). The odor is used to stimulate consumers' memories and goodwill for products and brands, which is the thinking innovation in the new marketing environment. Compared with the fatiguing information dissemination to the consumers, odor marketing is more invisible and special. Perhaps inadvertently, a faint fragrance will suddenly bring people some kind of good memories, urging the people to make a good impression on the brand or purchase the product.

Odor marketing is divided into product odor marketing and environmental odor marketing. The former is aimed at those products that have odors themselves, and the odor directly affects consumers' impression on the product itself, while the latter indirectly affects the consumers' impression of the goods or services provided by the environment through their sensory experience in this environment (Mitchell, 1994). In some consuming places, such as shopping malls, restaurants, cafes, etc., consumers' perception of environmental comfort will affect their stay time, and the stay time is often proportional to their consumption. Therefore, odor marketing has high potentials in these fields. In addition, because of the close relationship between smell and memory, many brands strive to develop their own exclusive fragrance, form a "smell mark" and then enhance consumer recognition. These brands include Singapore Airlines, Victoria's Secret, Marriott Hotels, Cadillac, and Rolls Royce, etc. (Linstrom, 2010; Krishna, 2013).

Moreover, with the development of artificial intelligence technology, odors can be replaced by discrete digital sequences, and it's sampled, quantified, and encoded by technical means to obtain the odor digitized and virtualized product. Based on this, personalized experience can be designed (Chen, 2015).

## 3. Odor perception and experience of consumers

The perception and understanding of odor are a complex phenomenon that combines factors such as biological response, psychology and memory (Wilkie, 1995). Benderly (1988) shows in his study that odor can be used as a situational stimulus, which causes olfactory memory to be more permanent than visual memory. This advantage makes it the basic condition for enterprises to provide specialized and personalized services.

Consumers' perceptions and judgments of odors are also consistent with Porter's (1985) consumer perception value theory. Further, Philip and Kevin (2000) proposes the concept of consumer transfer value, in which the total value of consumers consists of four parts, namely product value, service value, personnel value and image value; the total cost of consumers is composed of monetary cost, time cost, physical cost, and spiritual cost. Thus, when the enterprise creates the experience for the purpose of production and service, takes the actual experience of the consumer as the consumer product, and uses the experience state as the quality and obtains the reward accordingly, the experience economy comes in being, which is different from the product economy and service economy. The experience economy is an economic model that regards the consumers' certain physical and mental experience or psychological experience as economic offerings, and provides personalized production and services for making profits (Pine et al., 2008).

Regarding the theoretical study of customer experience, Schmitt's (1999) theory of strategic experience module is most widely communicated. The theory holds that experience is the individual's response to some stimulus, such as some marketing efforts before and after the sale. It consists of five modules: sensory module, emotional module, thinking module, action module and associated module. That is, for the enterprise, the product itself is no longer the focus of marketing, and an unforgettable experience should be created for customers from all aspects. Consumers' perception of odor belongs to the category of sensory marketing, while e-commerce enterprises create environmental incentives for consumers by opening offline experience stores.

In the experiencing process, the consumers' requirements for the brand have not only stayed on the function of the product, but also more on the emotional comfort to people brought by the product. This is in line with Maslow's hierarchy of needs. Under the experience economy, consumers' needs present new characteristics of higher level of diversification, personalization, and emotionality; it's also hoped to achieve the social recognition and respect while acquiring production, services and products. Baker et al. (1986) first proposed a classification framework for store environmental stimuli. In his study, the store environmental incentives include: the design factor, ambience factor and social factor. The ambience factors include the smell, sound and lighting etc. in the store, which are environmental stimuli and have a significant impact on consumers' value perception, experience willingness and shopping behaviour. Baker et al. (2002) in their studies showed that the ambience factor in the store is related to the customer's perception of service quality. Odor as an ambience factor stimulates customers to generate psychological costs and emotional reactions in their consumption process.

In the current environment of new retail development, obviously the traditional retail and traditional marketing methods are unable to meet the needs of consumers. Schmitt (2000) first proposed the basic concept of experiential marketing, which develops the marketing strategy in the five aspects: sense, feel, think, act, and relate of consumers. The odor experience and marketing in this paper belongs to sensory marketing, that is, the experience is established through olfactory; consumers can directly feel the quality and material of different products or the same products through the sense of smell or combination with other sensory experiences. Then, it can affect consumers' perceptions of the brand or certain types of products and services, and even causes their emotional feelings, enhances the purchasing power, and cultivates their brand preferences and loyalty.

#### **4. Online and offline integration of odor experience**

Most of the early odor marketing inspiration came from the olfactory memory of the physical store. Mitchell (1994) believes that odor marketing are mainly applied at two levels: at the first level related to product attributes, such as fragrance products, the businesses can enhance consumers' desire to purchase by optimizing product odor; at the second level related to the sales environment, such as bookstores, hotels and supermarkets, where there is no special fragrance, merchants often create a fragrant shopping atmosphere by diffusing fragrances to enhance consumers' quality perception of products and services. Morrin & Ratneshwar (2003) study shows that there is a significant difference between product evaluations or consumer behaviours in a odored and odorless environment. In a odored environment, the flow experience is intensified, that is, the realization of time distortion, and the consumer's perceived time is less than the actual time; in the odorless environment, the opposite is true, and the perceived time is greater than the actual time. The experimental results of Haberland (2010) indicate that in the three situations of simple odor, complex odor and completely odorless, consumers will invest more money in the simple odor situation, while in complex odor situation and completely odorless situations, there is no significant difference. Thus, odor marketing has great potential, and researchers and managers can use it to enhance consumers' evaluation of the store environment and goods, and increase the added value of specific physical stores.

With the advancement of information technology, the digitization, visualization and networking of odor have been gradually becoming a reality. The augmented reality technology (AR technology) that emerged in 1990 is a technology with the goal to put the virtual world in the real world and make interaction on the screen. AR technology links and integrates online advertising with offline physical stores, filling the gap between online and offline, changing the previous single marketing scenario, and providing solid technical support for O2O model and multi-channel sales. In November 1999, DigiOdors Inc. of the United States first introduced Odor Stream (TM) software and iSmell(TM), claiming to synthesize the human-identifiable odors into a digital language that can be converted into a odor by their invented odor synthesizers iSmell (Zhang J., 2009). In the same year, Taiwan Eurotronic International Co., Ltd. began to design the concept of Dream Smelling Net (Zhang J., 2009). Subsequently, the olfactory stimulation products, odor software and operating system were gradually improved.

The VR experience that has emerged in recent years is to restore real or virtual scenes by simulating sound and light colour signals, and to control the human senses such as sight, hearing, touch and smell, so that people seem to be placed in real scenes. The principle of digital odor technology is to store some basic odor on a chip, and then mix according to different instruction ratios to generate a variety of complex odors. The odor kingdom uses this technology to decode, encode, transmit and release the odors of food, flowers, forests and other substances in life, thus, breaks through the constraints of time and space, and the instant odor transmission is made (Feng, 2017).

Therefore, with the popularity of digital odor products and the enhancement of big data cloud computing technology, the online and offline experience of odor products is deeply combined, and relevant enterprises

can effectively integrate online official malls, offline stores, and experience stores. Based on the new retail model, the customers' shopping experiences can seamlessly interface with the terminal, achieve better consumption conversion, integrate the advantages of online and offline shopping, and achieve the consumer-oriented Omni-channel services as much as possible.

## **5. Application fields of odor digitalized products**

The odor helps to create a sensory experience; the sensory experience helps customers build lasting memories in their minds, so as to establish the brand awareness and create brand impressions. In short-term marketing campaigns, the odor plays a role in attracting consumers' attention; in a long-term strategic plan, odor becomes a unique brand identity.

The odor can awaken the customer's basic cognition and long-term memory of the brand, so, some enterprises intend to associate specific odor with their own brand, the so-called "identifying odor". This odor-related product can also be registered as a legal odor brand by the enterprise, becoming one unique trademark of enterprise. This brand-new trademark can also be used in its marketing strategy and tactics. After that, it is not necessary to use a visual logo, but a combination of multiple sensory signs. Therefore, the odor product is a "blue ocean" under the new retail environment in China. The industries with great development potential in the future are introduced as follows:

### **5.1 Experience and marketing of supermarkets, agricultural products and fresh products**

The digitalizing application of supermarkets and stores has begun to take shape, e.g., the B&T Home Smart Store opened in Shanghai on November 4th, 2017, using advanced technologies such as Ali Big Data, Artificial Intelligence and Internet of Things. Through the display and experience in 3D model, the home goods can be projected into the home with the effect of 1:1 ratio, which enhances the consumer's sense of substitution and shopping experience (Lu et al., 2018). This model can also be used in large-scale integrated supermarkets. However, considering its disadvantages such as high cost, faster replacement, higher operational risk, high technical support, and higher knowledge level for consumers, this model cannot be quickly promoted in the short term. Thus, each brand can use this technology to improve competitiveness according to its actual conditions.

The e-commerce of agricultural products and fresh products have developed rapidly in recent years. Due to the related problems with quality safety, distribution and preservation, and policy support etc., the application and promotion of odor digitalization should be steadily developed. For example, it can start with the product's olfactory experience and then upgrade to the AR/VR experience, so that consumers can feel like being exposed to the plantation area and enjoy more shopping and experience. Especially, the Fresh Hema" of Alibaba has been successfully operated in the fresh e-commerce business; through the business model of the mobile client APP and the offline store, the fresh food, catering and logistics distribution are effectively combined to achieve new consumption experience for the consumers. If combined with the display of odor visualization products, it will attract more customers and franchisees (She, 2018).

### **5.2 Experience and marketing of electronic products, high-tech products and virtual products**

For virtual games, AR technology has a strong penetration and profit margins, such as the rise and spread of Pokémon Go games.

In 2013, researchers at the Tokyo University of Agricultural Technology in Japan released the smelling screen that emitted the smell on the screen display (Cheng, 2016).

In terms of virtual olfactory technology, the "Odor Kingdom" project was officially launched in April 2015, and its products have different parameters and installation methods, which can fully meet the needs of users in different scenarios and achieve the best results; besides, the current design for the VR eye mask is a simple and easy-to-assemble accessory that can be adapted to different eye mask shapes (Cheng, 2016). This conceptual product can adjust the odor release duration, release intensity and working time according to the needs of VR content. This application will become the new economic growth point in the next 5-10 years.

### **5.3 Experience and marketing of odored products**

The "Odor Library" from the United States in 1994 collected more than 800 odor from real life, helping people to retrieve the long-lost olfactory memory, and consumers can mix and match the odors like a costume to achieve a new physical and mental experience (Qi, 2014). The Omni-channel sales of odored products are more commonly applied, where consumers make purchasing decisions based on the smell of the product itself and the odor of the environment.

#### 5.4 Experience and marketing of catering, hotel and tourism services

In the service scenario, odors can enhance the happiness of customers and create a good atmosphere, while also enhancing customer loyalty to the brand. The odor of Vanilla and Clementine allows customers to stay longer inadvertently in the shop and the hotel than in other conditions (Li, 2014). Many hotels in Starwood Hotels Group use a smell of parchment and old books, and only the attentive guests will find that the machine that sprays this aroma is hidden in the hotel lobby (Howard et al., 1969); this reveals that this hotel is set for those pursuing cultural and historical atmosphere.

The odor marketing of catering services can truly achieve the “colour, smell and taste” online and offline. The restaurants can use the odor of products to create and transmit the experience, embody humanization and emotion as much as possible, and effectively stimulate the customer’s sense of smell and taste. In this way, they can enhance their own level, break away from the strange circle of low-price competition, and cultivate their loyal customer base.

Tourist attractions can try to attract tourists through AR technology, increase visitor flow and build product brands.

#### 5.5 Experience and marketing of cultural health services

Through the introduction of AR technology in the children’s book market, the original bland books and cards can be turned into the multi-dimensional stereo image that can be vocalized and visualized (Lu et al., 2018). The information is more intuitive and allows children to feel more fun during the learning process, thus having a deeper understanding of the received information. In addition, digital and visual odor products can be used by the educational institutions in the natural science classes of the school, changing the learning style, traditional textbook form, and teaching methods to achieve the best results in memory and experience.

In the medical field, some patients who have lost their sense of smell and taste will have the opportunity to feel the flavour again through the “digital interface” of VR technology. Besides, the physical reaction to the odor can also be used to control the emotions, achieving the effect of stable pulse and heartbeat.

In summary, through the experience and spread of odor digital products, on the one hand, emotional impact can be produced on consumers, making the consumption process more intuitive, and amusing the consumers; on the other hand, the products and services exceeding consumer expectations are provided, to improve the consumers’ experience quality and the perceived quality. This shall lay a solid foundation for the formation of consumer experience value, satisfaction and viscosity.

### 6. Conclusions and implications

In the environment of experience economy, product homogenization is more serious, and consumers are faced with tens of thousands of sensory information, but only the information stimulating the consumers from the aspects of the senses, the mind and the brain can be left in the hearts of consumers. If enterprises intend to retain customers and gain customer loyalty, they must not only add experience to the products, but also use the service to pass on the experience elements and form a competitive advantage through the provision of services. At this time, enterprises must not only provide consumers with a full-process, all-round service, but also provide personalized, distinctive and branded services; these services can make consumers feel moved and satisfied, and become an unforgettable memory.

With the development of big data and cloud technologies, and also the wide application of AR/VR experience technology, it has been matured to develop the virtual olfactory market. In the online and offline integration environment, consumers’ decision-making behaviour is quite different from that in the traditional environment: the consumers’ purchasing motives and process are characterized by initiative, individualization, and emotionality, and the consumption patterns is more entertainment-oriented. Relative to the odor digital product itself, consumers value the experience of the entire process, which makes it more difficult for enterprises to maintain or improve customer loyalty. In this regard, enterprises need to accurately locate odor products in specific target markets, combine customer characteristics, establish a unique brand culture, and create unforgettable experience experiences for customers, in this way, it can attract new customers and cultivate their loyalty, and then promote the value of the business.

In the Omni-channel retail environment, besides the two-way circulation between offline to offline and offline to online, there are also various forms such as offline to offline to Online or Online to Online to offline, and finally the online and offline become a closed loop. Online interactions and offline entities have their own advantages and disadvantages. Enterprises should consider giving full play to their advantages and creating a marketing model that combines the sense of smell with other sensory experiences. First, customers who consume through different modes should be guided into this closed loop. Secondly, the intercommunication between online and offline channels should be guaranteed to reduce the risk of information asymmetry, obtain a good

shopping experience, and establish good impression of the brand, thus enhancing brand loyalty and promoting repeated consumption.

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