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# Sensory Marketing

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## Abstract

The issue of sensory marketing is a relatively new concept in managerial science. Due to the competitive environment of the global market, companies are confronted with the constant need to find effective approaches that will allow them to maintain a competitive advantage in the fight for the customer. One such approach is the application of sensory marketing tools to brand-building processes. The aim of the chapter is to bring the issue of sensory marketing closer to the general professional public. The chapter also focuses on the pointing out the fact that only by taking into account the specifics related to sensory marketing, the process of building a brand becomes holistic and sustainable. The theoretical framework describes the basic foundations of the issue. The empirical part presents a description of the selected experiment from a series of five experimental investigations performed to verify the theoretical assumptions in practice. From the point of view of the findings, it can be stated that targeted stimulations of the senses have a significant impact on the overall experience of individuals. Through the synthesis of theoretical and practical knowledge, it was possible to compile a model for the application of knowledge to business practice.

**Keywords:** senses, smell, touch, taste, hearing, sight, consumer behavior, innovation, competitive advantage

## 1. Introduction

The issue of sensory marketing is relatively new concept in managerial science. Especially when we consider that marketing as we know it today has its roots in the first half of the twentieth century [1]. The first signs of sensory marketing can be seen in times of transformation of marketing from its production to product form. Product marketing analyzes suggest that the comprehensive change in approach was largely initiated by the increase in economic prosperity in the 1970s.

The year 1970 cannot only be described as a year of a sharp increase in the popularity of branded goods but also as a year of the beginning of the transformation of marketing strategies. Businesses have gradually discovered that it is the product brand that can be a source of profit, and so all marketing attention has shifted to building brand identity. The sensory aspects of the products were taken into account only insignificantly. The full integration of sensory marketing into the portfolio of product managers did not occur until the arrival of the new millennium [2]. In the professional literature [3], we encounter the statement that within the strategy of differentiation, marketers began to use new tools that quite surprisingly disrupted traditional schemes. These tools have greatly improved product perception while enhancing the brand's memorability in the minds of customers.

According to Boček et al. [4], sight, touch and taste have long been an integral part of product marketing. However, the term “sensory” or “multi-sensory”

marketing did not appear until the time when brand owners and marketers focused on the action of the other two senses, and thus smell and hearing. For a long time, a strict increase in turnover was one of the main priorities of companies interested in sensory marketing. However, it is different today. For many businesses, it is just as important to create a consumer relationship with the brand as to simply be able to stimulate their purchases. Thanks to sensory marketing, the factor of human perception and its subjectivity appears in the business strategy of companies. Sensory marketing focuses mainly on customer experiences. It is based primarily on practical knowledge, in which the experience of the brand (product or service) is perceived holistically. The human senses play an important role in consumer behavior and are therefore at the heart of marketing activities that emphasize the creation of sensory experiences [5]. Kovanda [6] defines sensory marketing as a subdiscipline within marketing, which focuses on building a brand by targeted stimulation of the consumer's senses through the application of various procedures and technologies. Randhir et al. [7] see sensory marketing not only as a tool for measuring and clarifying consumer emotions but also as an opportunity to take advantage of new market challenges that help to ensure the long-term success of a product. According to Nízka [8], it is important to affect all the human senses. This is the only way to create a differentiated perception of the product in the customer's mind compared to the competing product. By this procedure, it is possible to significantly contribute to building a product's psychological competitive advantage in the market. The main task of sensory marketing is therefore to monitor how the individual senses of the customer affect his/her shopping behavior and to what extent they influence his/her purchasing decisions [2].

The aim of this chapter is to present the issue of sensory marketing from the point of view of its theoretical, but also practical applications. In the following sections, the human senses will be introduced as the factors in sales promotion. Based on this theoretical overview, practical applications of the issue will be presented through selected results of qualitative research, conducted in the form of simple experiments. Based on theoretical and practical knowledge, the basic model of application of sensory marketing tools to business practice will be presented at the end of the chapter.

The presented research is carried out as a part of an extensive study of the issue of reputation management to examine the relevant factors that affect sustainable brand development.

## **2. Senses as factors in the promotion**

The senses allow people, as well as all living beings, to know the world around them from the very beginning of their existence. They also accompany them throughout their lives. That is why stimulating the senses can be an effective way to influence customer behavior. However, it is important to understand that how the individual senses work. In the next part of the chapter, we will briefly discuss all five senses, focusing in particular on their meaning and the role they play in people's lives. For each of the senses, we will then approach its application within the processed topic.

### **2.1 Smell and the scent marketing**

The smell can be considered as the first-developed sense. According to various studies, after birth, the baby perceives his/her mother primarily by smell, based on which he/she can identify her [9]. According to Hultén et al. [5], the smell was

considered to be the least researched human sense. The studies of the Nobel Prize winners in physiology or medicine in 2004, Richard Axel and Linda Buck, brought considerable scientific progress. In addition to new knowledge, Axel and Brooks have discovered that people can distinguish and remember more than 10,000 different scents. Their scientific studies have for the first time identified olfactory receptors in the human body. More importantly, they have shown that humans have innate about 1000 different genes that help to encode individual olfactory receptors [2].

Krishna further argues that the uniqueness of smell in comparison with other senses lies in its direct connection with memory. This physical, as well as nervous proximity of the systems, is the primary reason that we can keep the information gained by the smell in our memory much longer than we can keep in our memory the information we obtain through other sensory sensations. Lindström [10] considers smell to be one of the most important and most sensitive senses. He believes that up to 75% of human emotions are generated by smell. Whether a scent evokes positive or negative emotions in a person depends primarily on his individual memories, which are associated with the scent. These memories are based on previous experience, which can make a scent pleasant for one person and not for another.

Within the marketing of the senses, the smell is represented by scent marketing. According to Pajonk and Plevová [11], scent marketing is also known as aroma marketing or olfactory marketing. It is also one of the latest trends in general marketing. From the point of view of support processes, it is a series of events in which it is possible to stimulate customers' shopping behavior through the influence of appropriately selected scents. The fragrance has been a marketing tool since ancient times, even though it was initially a by-product of another activity. Only over time did the scent begin to be used in a targeted way to evoke emotions in the target customer. A person who is in a state of a pleasant mood is subsequently more affected by such stimulation [12]. As aroma has a relatively strong effect on subliminal perception, it is important that the customer's subconscious mind combines a perceived scent with something positive and motivating. According to Vesecký [13], this is exactly the whole essence of scent marketing. According to Boček et al. [4], the presence of a fragrance that matches the theme and the products in the store has both a positive effect on the evaluation of the place itself, as well as on the evaluation of the products sold in the place. Some studies even confirm that the diffusion of the scent can affect the time spent in the store. Vesecký [13] also states that in principle the use of aroma marketing can be divided into two basic categories. The first is the product use of the fragrance, which can directly influence the customer's purchase decision. According to Krishna [14], these are products that have their own specific scent. However, often it is not just about the scent of the product as such, but rather about associating the scent with a specific brand, thanks to which the brand can build its own identity and thus differentiate itself from the competition. Lindstrom [10] mentions the aroma of marketing in the product used as an example of car manufacturers and their "new car scent". Many people consider this fragrance to be one of the most joyful aspects of the purchase itself. The smell is even perceived as a much greater manifestation of a novelty than the shine and purity of the vehicle. In reality, however, there is no such thing as the smell of a new car. It is just an artificial idea or a successful marketing ploy that is directly played with the human senses and imagination. This fragrance of novelty can also be found in an aerosol sprayer, through which the interior of the vehicle is impregnated before it leaves the production line. The second category focuses on spatial use, the main task of which is to create a pleasant environment for the customer and thus increase his willingness to perceive the offer or new impulses from the trader [13]. Vysekálová and Mikeš [15] cite as an example

of spatial use of marketing old Viennese cafes, in which every morning before opening the floor of the room are sprinkled with freshly ground coffee, which is then swept into cracks and gaps in the floor, thanks to which the first-morning guest is welcomed by the delicious aroma of fresh coffee. Krishna [14] adds another category for the use of fragrance in marketing, namely, the use of promotional items. In the case of cooperation between Starbucks and Omni hotels, it is about placing fragrant stickers in local newspapers that hotel guests receive every day. The stickers contained the scent of blueberry muffins. The goal is to motivate customers to buy muffins, thereby increasing their sales at the Starbucks coffee shop, which was located directly on the hotel premises. Another example is the insertion of fragrances into direct mails through microencapsulation processes that are activated when the mail is opened.

## **2.2 Touch and the tactile marketing**

The importance of touch has already been demonstrated in many studies. One of the best known, however, is Harry Harlow's experiment to find out if a child wants more from a mother's touch or nutrition. Macaque cubs were used for the research, which had to choose between two monkey imitations of the mother. One was made of wire, but provided the young with food, while the other was covered with a terry cloth, pleasant to the touch, but unlike the first, it had no milk. However, the results were unambiguous, the examined pups preferred to stay close to the cloth mother [2]. According to Grunwald [16], touch is an integral part of the healthy development of every youngster, but it does not lose its importance even in adulthood. It can be considered as the core of perception and the basis of communication with the world around. This most intimate sense accompanies people throughout their lives.

Hultén et al. [5] summarize academics' knowledge that touch can be felt through tactile receptors located in the skin. At any touch, these receptors send signals to a specific area of the cerebral cortex. This in turn allows human beings to feel and recognize heat, cold, roughness, smoothness, pain, or many other feelings.

Within the marketing of the senses, touch is represented by tactile marketing. Hultén [17] states that the aim of the strategy of using touch is primarily to strengthen the identity and image of the brand. This is done through the physical and mental interaction of the brand with the customer. Touching the products makes them easier to remember. This act also raises the expectation that customers will develop a positive relationship with the products. The possibility of touching products can even lead to impulsive purchases. At the same time, this fact is one of the answers to the question why some products are much more difficult to sell without physical contact and thus, for example, via the Internet, compared to products that can be caught or tested [18]. Gallace and Spence [19] state in their work that this is due to the "need for touch". Individuals with a higher need for touch are less likely to prefer shopping online than those with a lower need for a touch scale. Peck and Wiggins [20] distinguish between the instrumental and self-serving need for touch. They found that the effect of touch affects some people more than others. The fundamental difference lies in the individual preferences of customers, especially in the acquisition and subsequent use of information obtained directly through touch. Some customers prefer to evaluate products through physical contact and are even more frustrated if they cannot touch the product during shopping. Based on this, the mentioned need for touch is divided into two dimensions, namely instrumental and self-serving. For people with a higher instrumental need, touch is an opportunity to obtain relevant product information that they cannot obtain in any other way. For example, by reading the package leaflets or by visual inspection. Conversely, people with a high self-serving need tend to touch

products only because it provides them with a degree of enjoyment. These people focus more on the sensory aspect of touch than on its very meaning. Boček et al. [4] consider the touch of the product and its grasp as a very important gesture in the purchasing process. The possibility of contact brings the customer closer to the product. This relatively new trend is leading manufacturers to constantly look for new efficient and impressive materials. Consistently selected materials that are used for a given product must arouse the consumer's desire to grasp the product and then use or consume it. One example is Microsoft, which has created a set of computer mice and keyboards with an imitation leather surface that is much more pleasant to the touch than a regular plastic surface.

### **2.3 Taste and the taste marketing**

According to Krishna [2], human beings distinguish five basic tastes, namely sweet, sour, salty, bitter and umami. However, to be able to accurately distinguish between different tastes, we must involve all five senses. Therefore, when we cannot smell the food or see it, we can hardly recognize an apple from a potato or a red wine from a coffee. One of the reasons for this limited ability is the similarity of tastes. Based on this, it can be said that taste is largely dependent on other senses.

Taste is perceived primarily through the taste buds on the tongue. Research shows that the best taste capacity is found in newborns, in whom the taste buds are even on the inside of the cheeks. An adult has about 10,000 different taste receptors that register and send information to nerve cells. These then transmit individual signals directly to the brain [5].

Within sensory marketing, the taste is represented by taste marketing. The aim of taste-based marketing is to increase the quality of the product perceived by consumers and thus create new sources of inspiration that will affect the imagination and taste experience of the consumer [4]. Dani and Pabalkar [3] argue that food and drink tend to be strongly associated with happy or positive memories and that is why the taste aspects of marketing should not be neglected. Randhir et al. [7] consider taste marketing to be effective and relatively often used to influence customers through samples and tastings. Customers are more willing to buy a product they have already tried and tasted, rather than one they do not know. Taste marketing, therefore, of course, primarily concerns food products and their continuous improvement. Whether it's refining the natural scent or creating new taste harmonies. The current trend is to explore very subtle nuances and non-traditional connections in terms of flavor and composition of food products. An example is the French festival Chaumont-sur-Loire, where the menu presented an original and creative taste combinations of ice cream sundaes, such as mint with spruce, rose with lychee, apricot with ginger and the like [4]. According to Hultén [17], taste as one of the sensory strategies represents, as in previous cases, much more than just the taste itself. It is a symbiosis of all five senses. What the product looks like, smells like, sounds like how it is felt, it all merges into a concept called taste. For this reason, taste is often associated with the multisensory perception of the customer, which builds on the aforementioned interplay and synergies between different senses. Boček et al. [4] cite as an example sparkling candies that crack in the mouth, thereby stimulating the perceptions and feelings of the consumer. Or lightweight, aerated chocolate that evokes a feeling of lightness. This is where the impact of tactile marketing can be seen. Martin [21] adds that the synthesis of touch and taste is a bit stronger. It is based on the case of Mondelez, which launched a wave of criticism by deciding to change the classic rectangular shape of "Cadbury's Dairy Milk" chocolate products to slightly curved. However, the original chocolate recipe has been preserved. Nevertheless, many customers complained that the newly shaped chocolate

tasted too sweet. Another proof of the interaction of two different senses is Professor Charles Spence's experiment, in which participants had to assess whether the tasted potato chips are more or less crunchy, as well as whether they are more or less fresh. Participants were given headphones, through which the sounds of crunching were gradually released during consumption, in various frequencies and intensities. Most volunteers agreed that potato chips taste different. Chips in which volunteers heard louder, higher and more penetrating crunching were in most cases rated as fresher compared to those in which the sound of crunching was much softer. In fact, it was the same product, the only difference being the different sounds, which evoked different characteristics in the minds of consumers [22]. Randhir et al. [7], in turn, mention the importance of linking flavors and colors, which plays an important role, especially in the product packaging design process. Researchers have found that there is a relationship between taste and color. People associate certain tastes such as sweet, sour, hot and salty with shades of red, green, blue or yellow. The case of Coca-Cola also shows how significant the color of a product's packaging can be on the perception of its taste. The company has created a limited edition of white cans. However, customers did not welcome this change with enthusiasm. Many even claimed that the company had changed the drink's recipe.

## **2.4 Hearing and the audio marketing**

Richtáriková [23] classifies hearing among the sensory organs that develop first in humans. As early as the twelfth week from conception, the child can distinguish between individual vibrations and resonances, even though the ears are not yet formed during this period. Human life is full of sound information to which a person is exposed every day.

Sounds activate the emotional part of the brain, which in turn creates feelings and emotions, forming a person's mood. It is a process that takes place subconsciously and continuously 24 h a day [24]. Thus, according to Hultén et al., the sense of hearing is constantly active and cannot be switched off. Human beings live in symbiosis with sound and through it largely determine the individual dimensions of their lives. They are even able to memorize certain sounds for a long time and then recall them in conjunction with memories that relate to the moment of the initial hearing.

Within sensory marketing, the sound is represented by audio marketing. Marketers have been using sound for quite some time to increase the power of point-of-Sale enjoyment. From the pulsating music of teen stores to the soothing sounds of running water in luxury spas, the sound is at the heart and an important part of experiential shopping [2]. Kovanda [6] refers to an article in the *Journal of Applied Psychology* in which its authors have shown that typical French and typical German music has a significant influence on consumer behavior. If French music is currently playing in the supermarket, customers are more likely to buy French wines. If there are any German songs, customers prefer German products without realizing the influence of music on their choice. According to Siekela [9], properly chosen music in the store can lead to a strengthening of the overall atmosphere and also promotes the feeling that the customer belongs to the environment. Krishna [2] also argues that music also affects the perception of the time customers spend in the store. If they like the music playing in the background, they feel like they have spent less time in the store. However, the opposite is also true, and so if the music is unpleasant for customers, they tend to say that they spent more time in the store, even though they were only in the store for a short time. The tempo of the songs has a similar effect on the perception of time. Kovanda [6] justifies this by the fact that fast music increases the number of heartbeats per minute, which can arouse the

body. This excitation can be explained as the acceleration of the operation of the “inner mental clock” compared to the perception of the passage of objective time. It is also important to choose the volume of the scenery or the distribution and intensity of the music. For example, in fitting rooms, the music should play quieter than in the sales area. While loud music can create a pleasant atmosphere in a store and encourage customers to buy, in fitting rooms such music can be distracting [9]. Batey [25] adds that in addition to creating a sales atmosphere or increasing sales, music is also used as part of the brand identity or audio logo. The use of sound or music tracks as part of the product affects the perception of the brand and also helps to increase its recognizability. Compared to visual instruments, music is judged to be more effective and more memorable. While customers may not be able to draw a brand’s logo from memory, they will probably be able to sing a few tones from its audio logo. A successful, albeit a largely specific example of linking music to brand identity, is Unilever, which has decided to invest in packaging redesign under its Ax/Lynx brand based on research confirming the effect of aerosol sound on the perception of the pleasure or power of deodorants. The aim was to change the entire nozzle technology, with the result that today the sound of the Ax/Lynx spray intended for young men sounds much louder when applied than the soft sound of women’s deodorant Dove [22].

## **2.5 Sight and the visual marketing**

Hultén et al. [5] argue that vision is something we must learn. In fact, a newborn baby looks at the world upside down because it takes quite a long time for the brain to learn to turn the image right up.

Dani and Pabalkar [3] consider sight to be the strongest of the five senses, as up to 80% of the information is obtained through it. The connection between the brain and the eyes is very fast. Human beings need only 45 ms to visually identify an object standing in their field of vision.

Within the marketing of the senses, sight is represented by visual marketing. Randhir et al. [7] state that visual marketing strategies focus on the meaning of sensory expressions such as color, light, theme, graphics, but also spatial arrangement. Together, they participate in the creation and evaluation of the identity of the brand. From these sensory expressions, Pajonk and Plevová [11] subsequently define two primary aspects, namely color and light. Marketers pay increased attention to this aspect in visual marketing. Both aspects perform several functions. It is, for example, an effort to arouse the customer’s interest, optimize the conditions of purchase, or achieve compliance between the offer and consumer expectations. In the professional literature, we also encounter the statement that the perception of colors is given by the prehistoric period of harvesting and hunting when women needed to distinguish the shades of ripe and unripe berries. At present, human beings follow certain established codes and thus stop at red, green means safety, yellow and black mean risk. Everyday activities are based on color signals [15]. According to Pajonk and Plevová [11], consumers are aware of colors based on subliminal perception. The human mind creates color associations and thus models opinions before one realizes what he is really looking at. Based on this, it can be stated that colors play an important role in shaping perception. Dannhoferová [26] states that the color image that the visual system conveys to people does not correspond exactly to reality. It is not only affected by the quality of vision, but also by the experiences of individuals themselves. The perception of colors is different for each person and changes throughout life. Last but not least, colors also have a symbolic meaning associated with a certain cultural environment, which is, with certain exceptions, permanent. Properly chosen colors can positively affect the

identity of the company and the brand. The aim is to ensure that colors evoke positive feelings in customers while making it easier to identify the brand [5]. Nagy [27] cites the Financial Times, which has been printed on salmon-colored paper since 1893, as an example of brands for which color is an integral part of their corporate identity. This helps them to differentiate themselves from the competition. Another example of how a company can express its values in color is Google, which has chosen to use playful rainbow colors for its logo. However, the order of colors is interrupted by the green letter L, which brings a message to the logo that the company does not follow the prescribed rules, but brings something new. Boček et al. [4] point to the fact that colors can also affect other sensory perceptions. There are associations between color and specific scent, and any deviation creates inconsistencies. For example, the combination of vanilla with a blue-green color. Another example is linking colors with sounds. It has been shown that a certain degree of illumination in a color environment partially attenuates unpleasant sound frequencies. Therefore, in a noisy environment with sharp tones, it is advisable to use darker colors, and vice versa, lighter colors in an environment with lower sound frequencies. Similarly, it is possible to work in connection with other senses, when individual tastes correspond to certain colors, or when colors can affect the perception of weight, area or volume. Another important factor in visual sensations is the intensity of light. Pajonk and Plevová [11] claim that the light is used in the store primarily to facilitate orientation, thanks to a sufficient level of brightness and contrast. Furthermore, it should contribute to the creation of a pleasant atmosphere that will have a positive effect on the psyche of customers. Its task is also to draw attention to the goods and thus increase its attractiveness. Palfiová [28] divides lighting in the store into basic and accent. The task of basic lighting is primarily to achieve the required level of light in the room, according to basic hygiene and safety standards. Accent lighting is given by the specific requirements of the store, but also by the type and nature of the exhibited goods. Emphasis is also placed on the angle of illumination, intensity and color shade of light.

### 3. Experiment: the influence of sight on the perception of product value

Whether as academics or as practitioners, we are now increasingly encountering applications and the use of senses in marketing. However, the issue as such still provides considerable scope for discovering new contexts [29–31]. This part of the chapter will present a partial output of a series of experiments that, based on qualitative research, produced empirical material for the development of a basic model for the application of sensory marketing tools to business practice. The main goal of the series of experiments was to identify the influence of human senses on customer behavior. By decomposing the given goal, it was possible to define 5 sub-goals dedicated to clarifying the influence of:

- scents to perceive the purity of the environment,
- texture of the material to perceive the specific situation,
- taste to perceive the performance evaluation,
- sound to perceive the price of the product,
- sight to the perceive of the product value.

As part of the presentation of selected findings, we will approach both the process and the results of the experiment. The present experiment focused on the evaluation and quantification of the influence of sight on the perception of the product value. Sight is considered to be the strongest of all the senses, as up to 80% of information is obtained through sensory perception.

3.1 Characteristics of the research sample

The research sample consisted of university students of the bachelor’s study program focused on business and entrepreneurship in the age range from 17 to 25 years. In such a specific group, the passivity of sensory perception is eliminated, which gradually worsens with age in most human senses. The possibility of the thematic incompatibility from the point of view of the composition of the experiments is also eliminated. For the purposes of the experiment, the students were divided into three groups, namely two experimental samples (in this case 2 separate series of images) and one control group. The total number of participating students was 47. The number of tested persons within individual groups was given by the spatial and procedural possibilities of the experimenters.

3.2 Characteristics of the course of the experiment

The experiment was carried out in the sequence of projection of sensory-stimulating presentation and a subsequent reference video. Within the two experimental samples, participants were stimulated based on two different presentations shown in the preview of the following **Figure 1**.

The purpose of the presentations was to stimulate the perception of the participants in the experiment. Each presentation consisted of a group of fourteen different images thematically defining the nature of the stimulation.

The first set of images in **Figure 1a** is based on the Paris theme and it aimed to evoke in the participants of the experiment feelings associated with luxury or a higher standard of living.



**Figure 1.**  
*Visual stimulation: (a) luxury; (b) poverty. Source: [32].*

The second presentation is shown in **Figure 1b** showed the poor part of an undefined Indian city, thematically it was supposed to evoke diametrically different associations. Subsequently, the participants of the experiment were shown a reference video, which took the form of a virtual tour of the model apartment.

The control group was shown a reference video without prior sensory stimulation. A preview of the video can be seen in the following **Figure 2**.

For the purposes of the experiment, the experimenters tried to present a neutral product for subsequent evaluation, which in this case represented an empty apartment. Apart from the kitchen unit and the basic bathroom equipment, the apartment did not contain any other disturbing elements. As the intention of the composition of the reference video was to eliminate as much as possible the influence of the apartment equipment on the overall perception of its value.

After a short virtual tour of the apartment, the participants of the experiment had to use a scale to evaluate how the apartment affected them (on an 11-degree Likert scale ranging from very cheap (−5) to very luxurious (+5)).

### 3.3 Methods used for processing the results of the experiment

Verification of the set goal was carried out by evaluating two research hypotheses, namely:

**RH<sub>1</sub>:** *We assume statistically significant differences in the evaluation of individual experimental groups at the level of the mean value, resp. distribution function.*

**RH<sub>2</sub>:** *We assume statistically significant differences in the evaluation of the experimental groups and the control group at the level of the mean value.*

The research hypotheses were statistically verified by a set of 3 tests, namely:

- Mann-Whitney test (Eq. (1)):

$$U' = n_y n_x \frac{n_y(n_y + 1)}{2} - R_y, \text{ pričom platí } U = n_y n_x - U'. \quad (1)$$



**Figure 2.**  
Reference video. Source: [32].

where  $n_x$ —number of observations, resp. the extent of the  $x$ th file;  $n_y$ —number of observations, resp. the extent of the  $y$ th file;  $R_y$ —the sum of the order of the  $y$ th file;  $U, U'$ —test statistics.

- Kruskal-Wallis test (Eq. (2)):

$$Q = \frac{12}{n(n-1)} \sum_{i=1}^I \frac{T_i^2}{n_i} - 3(n+1) \tag{2}$$

where  $n$ —number of observations, resp. file range;  $n_i$ —number of observations in the  $i$ th group;  $T_i^2$ —the total number of orders in the  $i$ th group.

- Kolmogorov-Smirnov test (Eq. (3)):

$$D_{n_1, n_2} = \sup_{-\infty < x < \infty} |F_{1, n_1}(x) - F_{2, n_2}(x)| \tag{3}$$

where  $F_{1, n_1}(x)$ —empirical distribution function of the first choice;  $F_{2, n_2}(x)$ —empirical distribution function of the second choice.

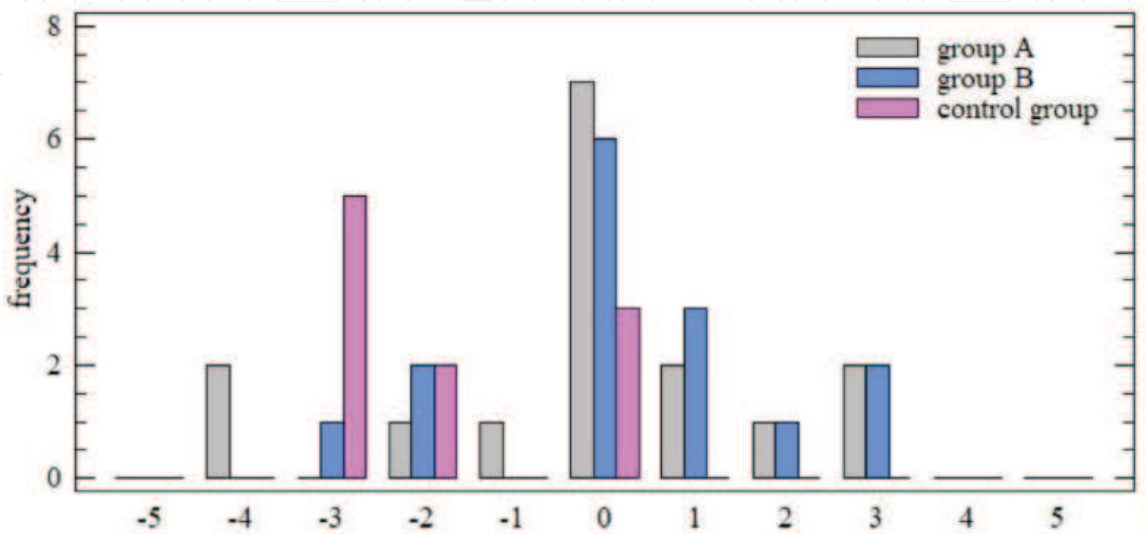
All analyzes and calculations were realized in MS Excel, Statistica 13.4 and Statgraphics XVIII.

#### 4. Experiment evaluation

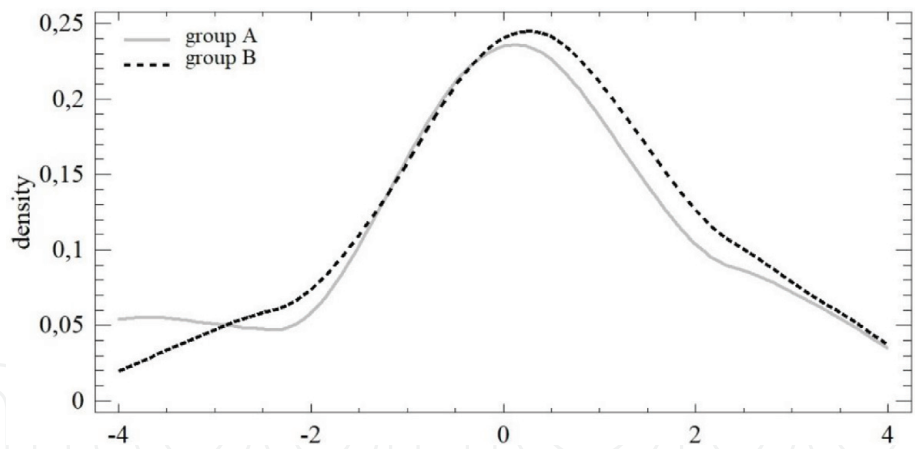
The results of the performed experiment are characterized using basic moment characteristics and subsequently statistically verified using the apparatus of methods identified in the previous section. The following **Figure 3** shows the response rates of each group of experiment participants.

As can be identified from **Figure 3**, we observe the largest number in the mean value of the presented scale, which is at the same time in the case of both experimental groups their mode ( $\hat{x}_A = \hat{x}_B = 0$ ).

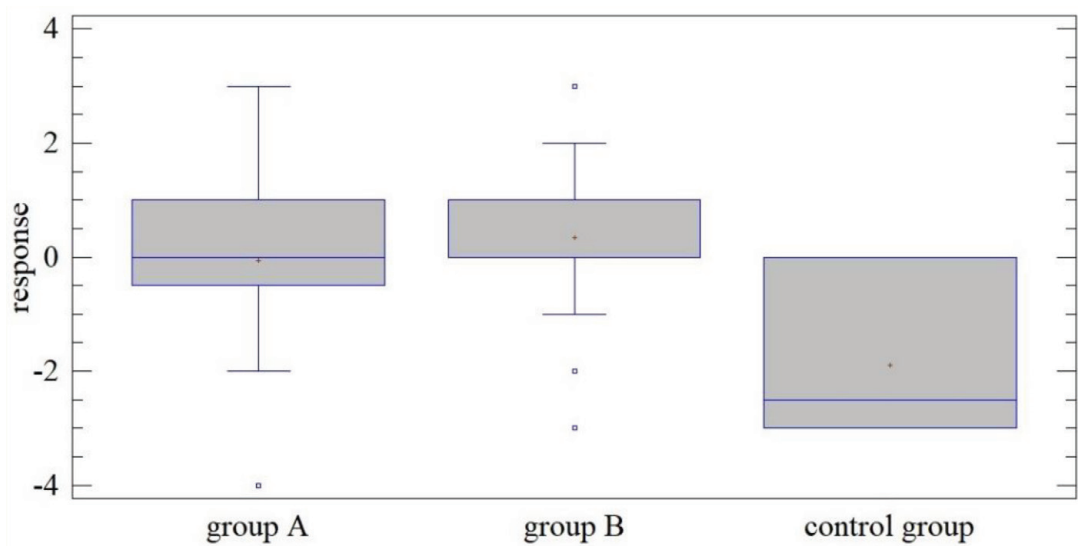
In the case of the control group, the most numerous scales selected is  $-3$ . The agreement in the case of experimental groups is also monitored at the level of variance ( $R_A = R_B = 4$ ).



**Figure 3.**  
Frequency of responses of individual groups of experiment participants. Source: own calculations.



**Figure 4.**  
*Comparison of the distribution function of experimental groups. Source: own calculations.*



**Figure 5.**  
*Box plot answers of each group of experiment participants. Source: own calculations.*

**Figure 4** shows the distribution function within the experimental groups as follows:

As can be seen in **Figure 4**, the differences in the distribution functions of the two experimental groups are minimal, resp. none ( $K-S = 0.487$ ;  $p = 0.051$ ).

At the same time, we monitor compliance at the level of mean values ( $W = 132.5$ ;  $p = 0.620$ ).

We state that the set of presented images in **Figure 1a** and **b**, namely, luxury and poverty visual stimulations does not have a statistically significant effect on the subsequent evaluation.

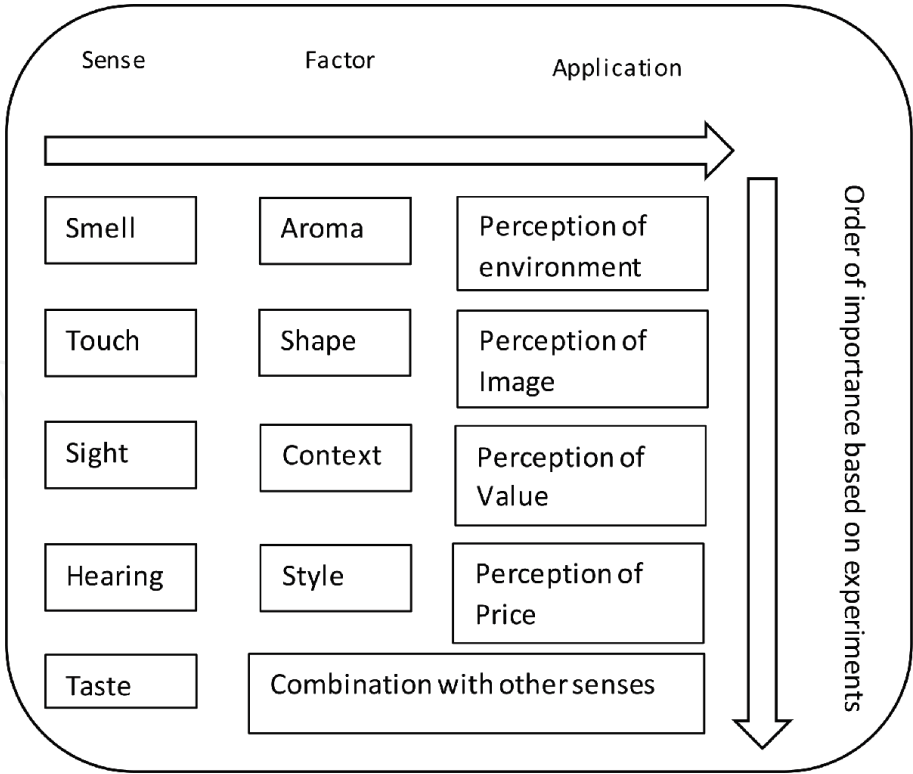
Research hypothesis **RH<sub>1</sub>** is *rejected*.

The conclusions resulting from the evaluation of frequencies (**Figure 3**) are reflected in the structure of the results captured by the box graph (**Figure 5**) as follows:

We observe the already confirmed relationship between the two experimental groups and their statistically significant difference compared to the results of the control group ( $Q = 9.049$ ;  $p = 0.011$ ).

Research hypothesis **RH<sub>2</sub>** *cannot be rejected*.

The set of presented images in **Figure 1**, regardless of their nature, influenced the subsequent evaluation of the reference video. Thus, the influence of sight on the perception of the value of the product was confirmed.



**Figure 6.**  
*Model of application of sensory marketing tools. Source: own processing based on [32].*

### 5. Model of application of sensory marketing tools

Based on a theoretical examination of the issue and subsequent empirical verification of the effectiveness of sensory stimulation to influence consumer behavior, it was possible to compile a basic model of the application of sensory marketing tools in business practice. The model is formed by the investigated senses arranged on the basis of the order of their proven effectiveness in the experiments.

The model shown in **Figure 6** can be seen as a basic qualitative concept of variables, the correct application of which can effectively stimulate consumer behavior.

The smell was identified as the most effective sense of stimulation, given the theoretical assumptions identified in the literature study, this finding was largely expected. As this is a sense that has been dominant since the very beginning of human existence, much of the stimulation takes place against the background of active perception. By actively stimulating this perception, it is possible to achieve a behavior change oftentimes without realizing the stimulus of the stimulation itself. The result of the stimulation thus appears to the object as its natural decision.

The second in the order of the dominant senses that responded to stimulation is touch. Again, this was not a surprise, as in the case of smell, in the case of touch it is a basic sense that produces perceptions predominantly in the subliminal form.

The senses generating stimuli of a conscious nature are arranged in the sequence of sight, hearing and taste. In the case of stimulation of these senses, it is necessary to use more sophisticated procedures, because due to the nature of the senses themselves, the perception of the stimulus is literally conditioned by increased levels of attention. Especially in the case of taste, combined stimulation across multiple senses is necessary.

## 6. Discussion of theoretical and empirical findings

The experiments performed by us confirmed to a large extent the assumptions that were defined based on a study of the literature. The fundamentals of the issue can therefore be summarized as follows.

### 6.1 Smell

The smell is one of the first developed senses. People can distinguish and remember more than 10,000 different scents. The uniqueness of smell in comparison with other senses lies in its direct connection with memory. This physical as well as nervous proximity of the systems are the primary reason that people can keep the information gained by the smell in memory for much longer than that which they obtain through other sensory sensations. It is one of the most sensitive senses, up to 75% of human emotions are generated by smell. Whether a scent evokes positive or negative emotions in a person depends primarily on his/her individual memories. Within sensory marketing, smell is represented by scent marketing. The use of scent marketing is divided into two basic categories:

- product utilization of the fragrance, which can directly influence the customer's purchase decision;
- spatial use of the scent, whose task is primarily to create a pleasant environment for the customer and thus increase his willingness to perceive the offer or new impulses from the trader.

In our experiments, smell turned out to be the most dominant of the senses for application in sensory marketing.

### 6.2 Touch

Touch can be considered the core of perception and the basis of communication with the outside world. This is the most intimate sense that accompanies human beings throughout their lives. Touch can be felt through tactile receptors located in the skin. When touched, receptors send signals to a specific area of the cerebral cortex, which in turn allows human beings to feel and recognize heat, cold, roughness, smoothness, pain or many other feelings. Within the marketing of the senses, touch is represented by tactile marketing. The aim of the strategy of using touch is primarily to strengthen the identity and image of the brand. This is done through the physical and mental interaction of the brand with the customer. Touching the products makes them easier to remember. The need for touch in marketing is divided into two dimensions, namely:

- Instrumental—for customers with a higher instrumental need, touch is an opportunity to obtain relevant product information that they cannot obtain in any other way.
- Self-serving—customers with a higher self-serving need tend to touch products to get some enjoyment. Such customers focus more on the sensory aspect of touch.

Touch, right after the sense of smell, occupied the second place in terms of importance in the results of research into the influence of the senses on consumer

behavior. Although it is not primarily a conscious stimulant, it undoubtedly plays an important role in consumer behavior through the subconscious.

### 6.3 Sight

Sight is the strongest of all five senses. Up to 80% of information is obtained through it. The connection between the brain and the eyes is very fast, human beings only need a few milliseconds to visually identify a particular object. Within the marketing of the senses, sight is represented by visual marketing. Visual marketing strategies focus on the meaning of sensory expressions such as color, light, theme, graphics and spatial arrangement. It is possible to designate primarily two sensory expressions, namely:

- Color,
- Light.

The human mind creates color associations by which it models opinions before the individual realizes what he/she is really looking at. Based on this, it can be stated that colors play an important role in shaping perception. There is an association between color and specific scent, where any deviation creates a discrepancy. We can also find a connection between colors and sounds in the literature. It has been shown that a certain degree of illumination in a color environment partially attenuates unpleasant sound frequencies. The light serves in the space primarily to facilitate orientation through the level of brightness and contrast. The literature calls this purpose basic lighting. The role of lighting is also to create a pleasant atmosphere or directing customers' attention to specific goods. The literature also refers to this purpose as accent lighting. In the case of the presented experiment, both colors and light were taken into account in the visual stimulation composition of the research sample. The experiment clearly confirmed the influence of sight on the perception of the value of the product. As it was directly influenced by the factors of color and light, we cannot determine exactly. But even here the proven rule of architecture applies that luxury is defined by light and space.

### 6.4 Hearing

Hearing, along with the smell, is one of the first developed senses. Human life is full of sound information to which a person is exposed every day. Sound activates the emotional part of the brain, which in turn creates feelings and emotions. This forms a person's mood. It is a process that takes place continuously and subconsciously. Human beings live in symbiosis with sound and through it largely determine the individual dimensions of their lives. They are even able to memorize certain sounds for a long period of time and then recall them in conjunction with memories that relate to the moment of the initial hearing. Within sensory marketing, the sound is represented by audio marketing. Music influences, among other things, the perception of time spent by customers in the store. Perception is affected as follows:

- If the customer likes the music, they feel that they have spent less time in the store;
- If the customer is uncomfortable with the music, he feels that they have spent way much time in the store.

The pace of the music itself has a similar effect on the perception of time. It is also important to choose the volume of the scenery, or the distribution and intensity of the music. The use of sound or a music track as part of a product affects the perception of the brand and also helps to increase its recognizability. Compared to visual instruments, music is judged to be more effective and more memorable. In our experiments, we demonstrated the connection between the genre of music and the perception of price. It is a well-known fact that sound is the core of experiential shopping.

## 6.5 Taste

Taste is perceived primarily through the taste buds on the tongue. An adult has approximately 10,000 different taste receptors. For people to be able to accurately distinguish between different tastes, they must involve all five senses. Therefore, when we cannot smell the food or see it, we can hardly distinguish an apple from a potato. Taste is thus largely dependent on other senses. Within sensory marketing, the taste is represented by taste marketing. The goal of taste marketing is to increase the quality of the product perceived by consumers and thus create new sources of inspiration that will affect the imagination and taste experiences. Taste is often associated with the multisensory perception of the customer, which builds on the interplay and synergies between different senses. In the literature, we encounter the following combination of senses:

- Synthesis of touch and taste,
- Synthesis of hearing and taste,
- Synthesis of taste and sight (colors), which plays an important role especially in the process of product packaging design.

In our experiments, we confirmed the need to combine taste with other senses. This is the only way to maximize the application possibilities that taste marketing offers.

## 7. Conclusion

The highly competitive environment of the global market is forcing companies to look for increasingly efficient approaches that will allow them to maintain an advantage in the fight for the customer. One such approach is the application of sensory marketing tools to brand-building processes. The issue of using the senses as a means of stimulating and influencing consumer behavior adds a whole new dimension to marketing. This is especially the dimension of building emotional relationships with customers. In this way, companies, through their brands, strengthen their corporate identity and memorability with their customers. At the same time, they provide customers with a unique shopping experience. Compared to traditional marketing, sensory marketing is much more sophisticated. It requires a much more individual approach and perfect knowledge of the market. Many well-known companies have already mastered this secret of sales success and have built their sales-support strategy precisely on stimulating the individual senses of their customers. However, the diversity of this concept provides considerable scope for discovering new unexplored areas and ways of applying the issue both in the field of science and in business practice. The chapter aimed to bring the issue of sensory

marketing closer to the general professional public while pointing out the fact that by applying sensory marketing tools to the general marketing portfolio, it is possible to embark on the path of sustainable brand development and holistic approach to business. The theoretical basis of the chapter defined the basic foundations of the issue. Through the presentation of a selected part of the results of a series of experiments aimed at examining the possibility of influencing consumer behavior by stimulating the senses, an empirical knowledge base was subsequently created for further research. From the point of view of the findings, it can be stated that targeted stimulation of the senses has a significant impact on the current perception as well as on the overall experience of individuals in the process of influencing consumer behavior. Through the synthesis of theoretical and practical knowledge, it was possible to compile a basic model for the direct application of knowledge to business practice.

From the point of view of the limitations of the research presented within the chapter, it is necessary to point out mainly the qualitative nature of the data. A thorough quantitative examination would be needed to confirm the relationship on a significant sample. The outlined trends identified based on the implemented qualitative research create the necessary knowledge base for such research.

From the point of view of the further direction of research, it is necessary to mention that the presented research is carried out within an extensive study of the issue of reputation management to examine the relevant factors that affect the sustainable brand building. Especially at a time of economic recovery after the end of the COVID-19 pandemic, it will be necessary to apply holistic approaches to sustainable development across the whole spectrum of (not only) management science.

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