

## Aromatisation and Its Effectiveness in a Food Retail Store

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DOI: <https://doi.org/10.15414/isd2022.s4.02>

### Abstract

*Customers generally prefer not only freshness, quality, convenience, and a wide assortment when shopping, but also the possibility of fast and efficient shopping. At the same time, influencing the customer's senses through the shopping atmosphere is an equally important area for experience shopping. The point of sale is considered to be one of the few communication channels that is not yet saturated and has a relatively large potential in the future. In a challenging competitive environment, building a Unique Selling Proposition (USP) through various forms of in-store communication comes to the fore. Scents as means of influencing the purchase of goods or services has a long history, but aromachology as an area of in-store communication is a matter of the present. This new trend, the importance and use of which has been growing in recent years, has been the subject of much research lately. To increase the effectiveness of these elements, it is essential to become familiar with the factors that affect the customer, whether consciously or subconsciously. The paper deals with the study of the influence of selected aromatic compounds on consumer decision-making when buying food, as well as assessing the effectiveness of their implementation in a food retail store. We conclude with recommendations for efficient and effective space aromatisation, with which the retailer can achieve not only a successful form of in-store communication and a pleasant sales department environment, but ultimately increase the retail turnover of its store.*

**Keywords:** aromachology, business, consumer behaviour, efficiency

**JEL Classification:** M30, M31, M39

### 1. Introduction

Designing the right in-store atmosphere in order to create a valuable customer experience is essential to achieve success for retailers (Grewal, Roggeveen, & Nordfält, 2017). A favourable in-store environment, which is leading to successful and immersive customer experiences (Melia & Caridà, 2020) requires the effective management of many elements, which we can find both inside (e.g., atmosphere, assortment) and outside of the retailer's control (e.g., purpose of shopping, influence of others) (Verhoef et al., 2009). Due to the complexity of the buying process, the in-store communication is now critical to maintain a successful store environment atmosphere, since it presents a strategy that enhances the store atmosphere, displays, service and layout (Fam et al., 2011). The involvement of large-scale retailers (especially in consumer goods markets) led to various changes in the promotion and advertising activities of companies within this sector. As a result, in addition to being a place of purchase, the point of sale increasingly provides an opportunity for customer relationships to be built and developed over time (Riboldazzi & Capriello, 2021). Significant changes in the last ten years therefore resulted in focusing on the multiple dimensions of the in-store atmosphere (Melia & Caridà, 2020).

Retail units are increasingly using scent to differentiate, attract customers, stimulate sales, influence mood and create an overall enjoyable and memorable shopping experience (Madzharov, Block, & Morrin, 2015; Biswas & Szocs, 2019). As the smell as one of the senses cannot be turned off and evokes immediate emotional responses, retailers are beginning to realize its usefulness in communicating with consumers at the point of sale. As a result, consumers have been increasingly affected by ambient scents, which are defined as general fragrances that do not come from the product, but are present as part of the retail environment (Bradford & Desrochers, 2009). In the marketing literature, the scent has so far received much less attention compared to other environmental factors of the store environment – such as colour, temperature, lighting, music etc. (Leenders, Smidts, & Haji, 2019). At the same time, even a relatively small change in the environment, resulting from the addition of proper fragrances, can in some cases have a noticeable positive effect on customers. These elements indicate the great potential for the application of aromachology in various sectors of entrepreneurship, including retail units (Horská *et al.*, 2018).

Over the years, a slowly growing number of academic studies have documented a range of fragrance effects in the retail environment (Table 1). The research context, such as whether the studies are performed in highly controlled laboratory environments or natural conditions, the scent type and the intensity of its use, conscious awareness of fragrances, or other disruptive influences, can significantly affect the final findings (Morrin & Tepper, 2021). The studies show the positive effects of the fragrance on customers' emotional states and behaviour in retail (time spent in store, product selection) and attitudes (intention to purchase, determination to revisit the store). However, the results are inconsistent and an explanation of the impact on customer behaviour is often insufficient (Giacalone, Pierański, & Borusiak, 2021).

**Table 1: Studies about scent effects in the retail environment**

	<i>Research questions</i>	<i>Research main findings</i>
<i>Mattila and Wirtz (2001)</i>	Impact of ambient factors (scent, music) on consumers' evaluations and behaviour in retail store	Pleasant ambient factors can improve the shopping experience but should not be considered in isolation.
<i>Chebat and Michon (2003)</i>	Impact of ambient odours on shoppers' emotions, cognition and spending in a shopping mall environment	Ambient scent affects the positive perception of the shopping mall and indirectly product quality.
<i>Michon, Chebat, Turley (2005)</i>	Effect of ambient odours on shoppers' emotions and perceptions in a shopping mall	Ambient scent has a positive effect on shoppers' perception of the mall environment under certain condition. The effect on shoppers' mood is not significant.
<i>Ward, Davies, Kooijman (2007)</i>	Impact of aroma on retailer image and dwell time	The scented space is perceived differently. Aroma is able to influence dwell time, positively or negatively.
<i>Morrison et al. (2011)</i>	Impact of in-store music and aroma on shoppers' behaviour and satisfaction in a real retail setting	In-store music and odours positively influence shopper behaviour, time and money spent, and satisfaction with the shopping experience.
<i>Doucé and Janssens (2013)</i>	Influence of an ambient scent on customers' affective, evaluative and approach reactions	A pleasant fragrance positively influences consumers' affective reactions, evaluations and intentions to revisit the store.
<i>Jacob, Stefan, Guéguen (2014)</i>	Influence of an ambient scent on consumer behaviour and sales in a florist's retail shop	Scented shop increased the number of customers and sales of plants and flowers.

<i>Helmefalk and Hultén (2017)</i>	Effects of multisensory cues on shoppers' emotions and behaviour in retail settings	Multisensory congruent cues positively affect shoppers' emotions, purchase behaviour and time spent.
<i>Leenders, Smidts and Haji (2019)</i>	Effect of different scent intensity on shoppers' mood, behaviour and evaluations in a real supermarket setting	The scent has a positive effect on shoppers' store evaluations, time spent and sales under high scent intensity condition.
<i>Biswas and Szocs (2019)</i>	Effects of ambient scent on food purchases	Pleasant ambient scent leads to lower purchases of unhealthy foods.
<i>Tri, Kim, Nga (2021)</i>	Influence of an ambient scent on shoppers' behaviour in fashion stores	Ambient scent positively affects intention to revisit the store, consumer spending and time spent in the store.

Source: Authors' elaboration, 2021

The studies cited in Table 1 examined the effects of ambient fragrances on consumer evaluation, whether environmental perception, product evaluation, shopping behaviour or perception of time spent in the retail store. However, the latest test of scent effectiveness in the commercial environment is its impact on sales (Schifferstein & Blok, 2002). Retailers should therefore pay particular attention to the choice of fragrance. In other words, for it to be considered appropriate, it has to be aligned with the store's design, the product categories, and the target consumers (Leenders, Smidts, & Haji, 2019). At the same time, one must pay attention to ensuring that the fragrance does not evoke negative emotions in consumers, i.e., they do not perceive it as a marketing tactic used to influence their behaviour (Lunardo, 2012). Despite the potential risks, retailers should consider incorporating scents into their shopping environment, as this is one of the cheapest techniques to improve ambient perception (Chebat & Michon, 2003).

## 2. Data and Methods

The subject of interest were data on the number of pieces sold and sales within the confectionery subcategories at a food retail store in Nitra. The obtained data were compared from two points of view. The first was a year-on-year comparison of the two periods (2020/2021) during which aromatisation was used in the confectionery department with the same period in the previous year (2019/2020) without aromatisation (see Table 2).

**Table 2: Year-on-year comparison of data**

Period	Dates
<b>With aromatisation</b>	10. 11. 2020 – 31. 01. 2021
<b>Without aromatisation</b>	10. 11. 2019 – 31. 01. 2020

Source: Authors' elaboration, 2021

The obtained data were also compared with a reference store of the same food retailer in Trnava, as according to the company's internal data it is a comparable one in terms of purchasing power, product mix, store layout and sales area, economic indicators, and location. At the same time, periods in which the same seasonal effect on confectionery sales is observed were also compared. In this case, the pre-Christmas period with aromatisation and the pre-Easter period without aromatisation were compared (see Table 3).

**Table 3: Comparison of data with the seasonal effect**

Period	Dates
<b>With aromatisation</b>	10. 11. 2020 – 30. 11. 2020
<b>Without aromatisation</b>	22. 02. 2021 – 14. 03. 2021

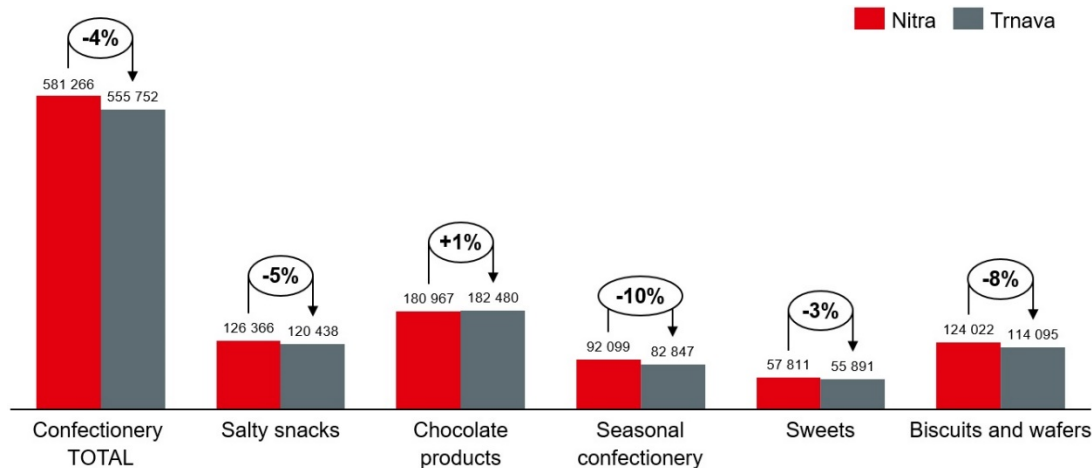
*Source: Authors' elaboration, 2021*

A nougat scent from a German aroma and scent marketing provider was used in the store. At the same time, the consumption of aromatisation filling was recorded in detail in order to calculate the costs of aromatising the space and the related efficiency. Data provided by the food retailer company have been adjusted by coefficients to prevent misuse of sensitive company data. We grouped the obtained secondary data into clearly arranged tables and graphs, which allowed us to compare selected time periods. We also calculated the index of change for some indicators. We applied the index method, the method of grouping into time series, the method of comparison, selection and graphical representation as basic methods of data processing.

### 3. Results and Discussion

In order to verify the effect of aromatisation on selected economic indicators, we examined the impact of the deployed aromatisation not only on the evaluation of the sales department atmosphere, but also on sales and the number of categories of goods sold in the confectionery department.

Due to the situation with the spreading COVID-19 pandemic and after consultation with the Business Intelligence Department of the food retailer, we decided to compare the data recorded in the Nitra store for the same period with the reference store, in which no aromatisation was used in the confectionery department. The main reason for not comparing the data with the same period of the previous year was mainly the potential of significant bias in the results and findings. In this context, data analysts from the company also confirmed changes in consumer behaviour and a significant decrease in turnover in particular product categories, which could fundamentally distort the results of the effect of aromatisation. After careful consideration by the food retailer company, the Trnava store was chosen as the reference one. This has a similar location, sales area, number of visitors, product layout, redesign and, based on internal data from the company, there is also the same purchasing power in the city of Trnava as in Nitra.

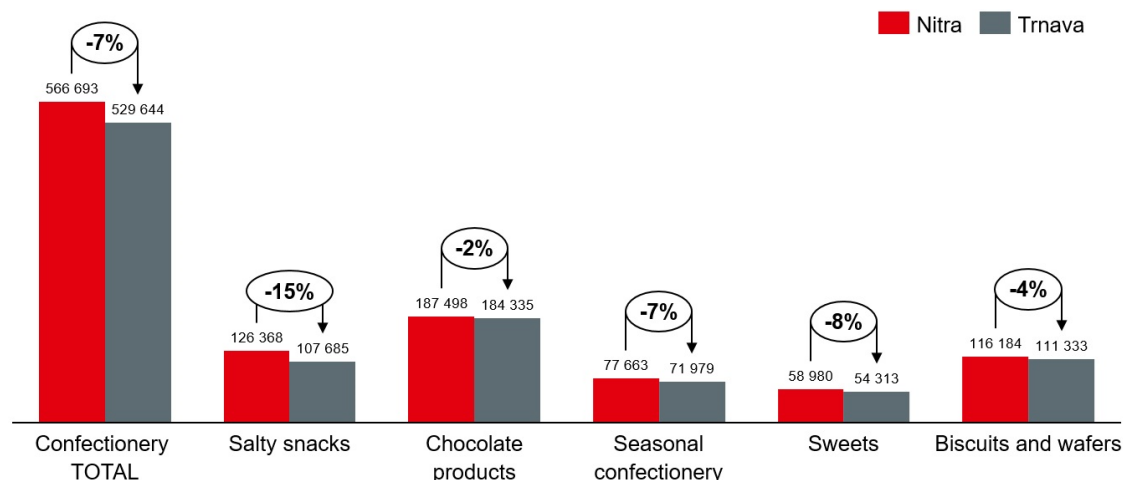


**Figure 1: Turnover at the Nitra and Trnava stores for the entire confectionery category and its subcategories for the period between 10.11.2020 – 31.01.2021**

*Source: Authors' elaboration based on company documents, 2021*

Figure 1 shows a comparison of subcategories in the confectionery department within the period from 10.11.2020 to 31.01.2021, when the nougat scent was used in the confectionery department at the Nitra store. In almost all subcategories of this department, with the exception of chocolate products (1% higher sales in Trnava), we see a higher turnover in the Nitra store. The highest difference (10%) is presented by the subcategory of seasonal confectionery, of which the Nitra store sold 9,252 EUR more. A significant difference (8%) can also be observed in the case of biscuits and wafers, where the difference for the period under review amounts to 9,927 EUR. The total difference in the sales of confectionery in the monitored stores represents the amount of 25,514 EUR (4%) in favour of the Nitra store.

Despite the presented differences in confectionery subcategories in favour of the aromatized department in Nitra, it is not possible to unambiguously attribute this fact to the effect of the nougat scent. Higher sales of confectionery in the Nitra store may also be largely related to the fact that only one store of this food retailer is allocated in Nitra, while there are two in Trnava. Nitra also has almost 12,000 more inhabitants than Trnava. Thus, we decided to compare the previous period without aromatisation in both stores.

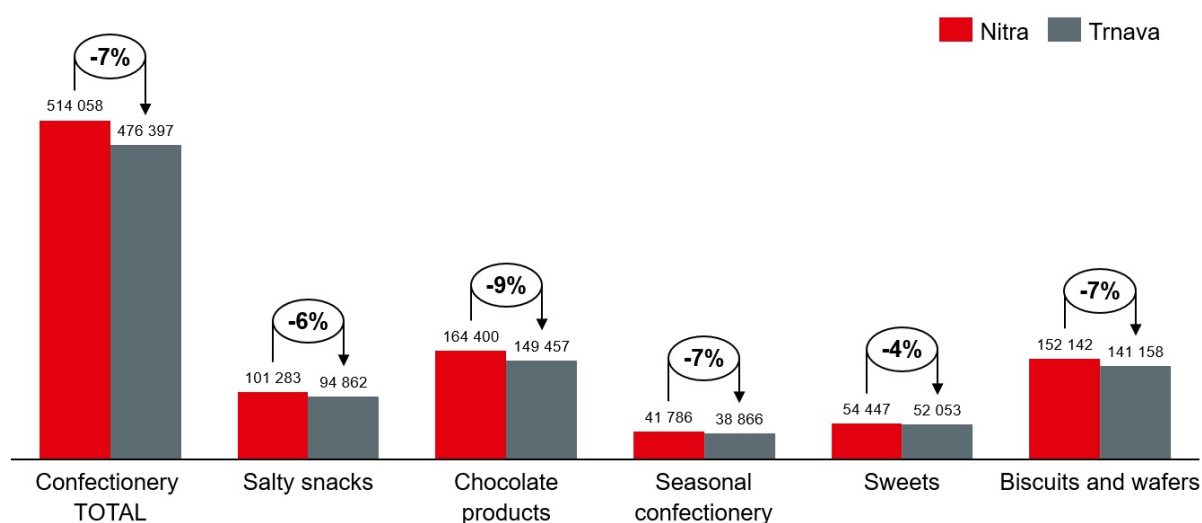


**Figure 2: Turnover at the Nitra and Trnava stores for the entire confectionery category and its subcategories for the period between 10.11.2019 – 31.01.2020**

*Source: Authors' elaboration based on company documents, 2021*

The subject of interest was the period from 10.11.2019 to 31.01.2020. A comparison of the subcategories in Figure 2 shows that the Nitra store generally has a higher turnover (7 %) in the confectionery segment, which represents 37,049 EUR. The largest differences can be seen in the subcategories of salty snacks (15%), sweets (8%) and seasonal confectionery (7%). In the year-on-year comparison (2019/2020), we can see a higher increase (4.9%) in the volume of confectionery sales in Trnava, while in Nitra this increase was at the level of 26,108 EUR, which represents 4.4%.

The above results show that the scent used did not have a positive effect on the sales of goods in the confectionery department. However, it should be emphasized that the results could have been significantly affected by the pandemic situation. In this context, it is possible to consider two major influences. The first is the economic situation of households. Many people lost their jobs as a result of the pandemic, which significantly changed the contents of the consumer basket. Given the high nature of the impulsiveness of this department, it can be assumed that it was in this department that the household saving regime manifested itself the most. The second factor is the face mask wearing and the disinfection of sales areas. Face masks can significantly reduce the sense of smelling aromatic substances and the disinfection can neutralize their effect. Last but not least, the total sales turnover is also affected by various promotions, discounts, hardsell communication, assortment composition (seasonality) as well as the pandemic situation. Due to this, the sale of goods in confectionery subcategories was also of interest.



**Figure 3: Number of pieces sold at the Nitra and Trnava stores for the entire confectionery category and its subcategories for the period between 10.11.2020 – 31.01.2021**

*Source: Authors' elaboration based on company documents, 2021*

Figure 3 shows a comparison of the number of pieces sold in the confectionery department in the Nitra and Trnava stores for the period from 10.11.2020 to 31.01.2021. As mentioned above, the confectionery department in Nitra was aromatised in this period with the nougat scent. The biggest differences in terms of the number of pieces sold is visible in the subcategories of chocolate products (9%), but also biscuits and wafers (7%). The total difference between the number of pieces sold in the Nitra store and the reference store is 37,661 pieces (7%).

**Table 4: Calculation of aromatisation costs**

	Purchase price of the aroma unit	Rental price of the aroma unit per day	Grade of aromatisation [1-20]	Price of consumed filling per day (when using 150 ml)	Price of consumed filling per day (when using 500 ml)	Aromatisation costs per day when renting the aroma unit	Total costs of using the aroma unit per month (excluding VAT)
<b>Aroma Streamer 650 Touch, Bluetooth Wi-Fi</b>	319.20 EUR	0.53 EUR	5	1.16 EUR		1.69 EUR	50.64 EUR
			10	2.31 EUR		2.84 EUR	85.35 EUR
			15	3.47 EUR		4.00 EUR	120.06 EUR
			20	4.63 EUR		5.16 EUR	154.76 EUR
			5		0.60 EUR	1.13 EUR	33.91 EUR
			10		1.20 EUR	1.73 EUR	51.89 EUR
			15		1.80 EUR	2.33 EUR	69.87 EUR
			20		2.40 EUR	2.93 EUR	87.85 EUR
<b>Aroma Streamer 750 Touch, Bluetooth Wi-Fi</b>	479.20 EUR	0.66 EUR	5		0.50 EUR	1.16 EUR	34.90 EUR
			10		1.00 EUR	1.66 EUR	49.89 EUR
			15		1.50 EUR	2.16 EUR	64.87 EUR
			20		2.00 EUR	2.66 EUR	79.85 EUR

Source: Authors' elaboration based on documents from an aroma and scent marketing provider and research at the food retailer, 2021

Regardless of the impact of aromatisation on consumers' shopping behaviour, from an economic point of view, the most important issue is the costs and their return. The three basic factors that affect the cost of aromatisation are the size of the aromatised space (in m<sup>2</sup>), the time of aromatisation and the air flow in the room. The aroma unit itself can be purchased or rented. Most companies dealing with aromatisation of premises provide comprehensive packages of services, which also include regular service and refilling, which in terms of managing a higher number of stores and related costs is beneficial, especially for larger

businesses. As shown in Table 4, with a 10-hour deployment of a rented aroma unit AS650 (for rooms up to 150 m<sup>2</sup>) with a minimum output (grade 5), the daily costs are 1.69 EUR excluding VAT, which represents a monthly expense of 50.64 EUR, excluding VAT.

**Table 5: Price list of aroma units and fillings**

	Purchase price of the aroma unit	Rental price of the aroma unit	Price of the filling	
			150 ml	500 ml
<b>Aroma Streamer 650 Touch, Bluetooth, Wi-Fi</b>	319.2 EUR	15.92 EUR / month	41.65 EUR	71.92 EUR
<b>Aroma Streamer 750 Touch, Bluetooth, Wi-Fi</b>	479.2 EUR	19.92 EUR / month		

*Source: Authors' elaboration based on documents from an aroma and scent marketing provider and research at the food retailer, 2021*

#### 4. Conclusion

In accordance with the above, it should be noted that the direct effect of aromatisation did not have a significant effect on sales and number of pieces sold, but on the other hand, in the store where aromatisation was used in the period under review there was a year-on-year decrease of 4%, therefore a smaller decrease in compared to the reference store (6%). The overall comparison in the period between the 46<sup>th</sup> week of 2019 and the 4<sup>th</sup> week of 2020 presents the turnover within the confectionery product category in the Nitra store higher by 5% and in the period between the 46<sup>th</sup> week of 2020 and the 4<sup>th</sup> week of 2021 by 7%, which represents in comparison with the Trnava store a difference of 37,133 EUR.

At the same time, we decided to compare sales and the number of pieces sold in the Nitra store within the seasons, which are characterized by increased purchases of confectionery. The results of the comparison show that in the pre-Christmas period, when aromatisation was used in the store, the turnover in the confectionery was 26% higher, which represents a difference of 35,140 of these items. This fact may be largely related to aromatisation, as in the same period of the previous year the difference in the seasonal comparison of the volume of goods sold in this section was 11%, which represents an increase of 15%.

It follows that our assumption about the effect of the sales department aromatisation on consumer decisions has been partially confirmed in the form of a 15% year-on-year increase in confectionery turnover in seasonal comparison, but also an overall smaller year-on-year decrease in sales (4%) in confectionery due to the pandemic compared with the reference store (6% decrease).

In terms of cost-effectiveness, it is certainly worth considering using the larger AS750 aroma unit, as it has a larger aromatisation filling, which is cheaper (see Table 5) and also needs to be supplemented less often. At the same time, the unit's more powerful compressor can disperse more fragrance particles in a shorter period of time, which translates into lower consumption. The result is a daily cost of 1.16 EUR excluding VAT, which represents a monthly expenditure of 34.90 EUR excluding VAT, with a 10-hour deployment of a rented AS750 aroma unit (for rooms up to 300 m<sup>2</sup>) with a minimum output (grade 5).



Furthermore, in addition to air quality and fragrance compounds, which are released into the environment naturally (e.g. in the case of fresh products), but also in a targeted way through aromatisation, also play a significant role in assimilating the store's environment, which is a major factor for consumers. The issue occurs when there is mixing of odours and incorrect matching of aromatisation with air quality conditions. It is primarily a matter of setting the right dosage intensity, while respecting the working conditions of employees, but also the selection of specific aromas depending on the type of goods sold and other quality factors, including compliance with air conditioning.

### **Acknowledgements**

This paper was created within the research project APVV-17-0564 “*The Use of Consumer Neuroscience and Innovative Research Solutions in Aromachology and its Application in Production, Business and Services*” (NEUROSMELL) and the grant KEGA 030SPU-4/2021 “*Implementation of New Technologies in the Content Innovation of the Course "E-commerce" within the Field of User Experience (UX) and User Interface (UI)*” solved at the Faculty of Economics and Management of the Slovak University of Agriculture in Nitra, Slovakia.

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