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PLACING OF AROMA COMPOUNDS BY FOOD SALES PROMOTION IN CHOSEN SERVICES BUSINESS

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ABSTRACT

There are several ways to get higher sale involving human senses too. One of the options is a security of stimulating atmosphere of sale/ business environment. In addition to equipment, design and staff, the lighting, sound (noise), and last ones but not least smell, respectively air quality significantly take part on that. Aroma is the element that inherently belongs to the visual merchandising tools. It can influence not only emotions, memory, but total customers´ satisfaction and preferences as well as spending time in that place. In this context, it is important to find right compromise when choosing the aromatic compounds for various products, in the process of their application (intensity, process of aromatization) and security of sufficient air quality, because everybody perceives the odours with different sensitivity. Properly chosen smell and factors of air quality bring for business operators (services trades) many advantages; from staff, who more relax and friendly behave to the guests until making of various associations and stimulations of customers, who spend time inside of service. Fragrance or air quality looks like based on of present researches as the most important factor directly on point-of-sale, while aroma acquires the importance in case of memory too. On the one side, the thinks, which are seen or heard by customers, could be memorized by them few days or weeks, so on the second side, the thinks which are smelled, could be memorized by guests many decades. Except this, the Scientifics studies show, that over 75 % of all emotions are generated based on scent´ perception. The main aim of this paper is a research, how aroma influences customer purchasing decision (preferences) in chosen service provider through the tracking of daily sales of baked baguettes (Paninis) with using of aroma equipment; Aroma Dispenser.

Keywords: food sales promotion; aroma compounds; services business; consumer behaviour

INTRODUCTION

The consumer perceives the store environment with all of his five emotional organs. This perception was more described by **Solomon et al. (2006)**, who present that perception is a process in which the people choose, organize and interpret the information from outside **(Benda Prokeinová and Hanová, 2016)**.

Such as taste, a smell is a chemical sense too. Specialized receptors in the nasal cavity detect incoming molecules which enter to the nose with air flow and they bind to receptor cells. Olfactory receptors located too high in the nasal cavity send electrical impulses for processing into olfactory bulb *(bulbus olfactorium)* in the brain of limbic system. It is nervous structures of forebrain by vertebrates which involves for the smell/ odours feeling and in fact, it is the gateway to the brain **(Carter et al., 2014)**.

In according to **Neumann (2011)** smell is considered to the strong emotional trigger. It´s second most important sense directly behind sight. The research of this sense is confirmed by the study done in Paderborn (Germany). It was focused on that, the smell in 85% influences customer´ meaning about offered goods. But the willingness to shopping increases thanks to smell in 14.8% and approximately in 15% increase the time, which the customer spends in a shop. Growth by 19% was described **Michon, 2003)**. Scent marketing is not merely „a child" of the 1990s and was already used in ancient day. For instance with general interest for product and willingness to communicate. **Sikela (2014)** presents, that aroma or odour are associated from history and are partially related to memories.

Vysekalová (2014) publishes, that smell is a sense, which significantly can influence customer at point-of-sale. This is not, of course unpleasant odours, but attention is given mainly to specific smells like the smell of fresh bread or sausages. In choice of fragrance, the goal that traders want to achieve with using of aroma is too important. Suitable intensity of scents might arouse positive emotions among customers and even increase the relic of purchase.

Guéguen and Petr (2006) present, scents appear to be relevant to two forms of consumption: a) product evaluation (scent products) and b) sale´s environment (ambient aroma). Scents have an influence on restaurant customers' behaviour **(Paluchová, et al., 2015)**. The study found that both length of time and the amount of money spent were positively affected by lavender. However, the lemon aroma was found to have no effect on either the above two variables. The positive effect that the lavender scent had on the length of time spent in the restaurant was caused by its relaxing effect. One of the first study's drawing attention to the significance of scent within the marketing industry occurred in 1932 **(Chebat and**

Alain Corbin speaks of an „olfactory revolution" in the eighteenth century, which was influenced by the French

Revolution and a new standing of hygiene. Today scent marketing is intensifying the relevance of olfactory perception and is compelling us to learn about the perception of odours once more **(Müller, Alt and Michelis, 2011)**. Scent marketing relies on the neuropsychological processing of olfactory stimuli in the human brain **(Emsenhuber, 2009; Tarczydło, 2013)**. Within this category we define two types of ambient scents. The first is objective ambient scent, which we define as the application of ambient scent technology with the application of ambient scent technology with the intention of affecting the attitudes and behaviour of consumers for the benefit of the retailer **(Bradford and Desrochers, 2009)**.

From the day, we are born we experience food odours during anticipation and consumption of food. The smell of freshly baked bread entices people to buy and eventually eat a loaf **(Boesveldt et al., 2016)**. Olfactory food cues presented in the anticipatory phase of eating are found to increase the appetite for congruent products and decrease the appetite for incongruent products. This phenomenon is referred to as sensory-specific appetite **(Rybanská et al., 2014)**. Besides product-specific effects found that savoury odours) increased the appetite for (other) savoury foods and decreased the appetite for sweet foods, and vice versa **(Ramaekers et al., 2014)**. In earlier research, exposure to food odours (pizza, cookies) increased appetite, liking and craving for the food that was smelled in restrained eaters **(Fedoroff, Polivy and Herman, 2003)**. Moreover, **Gaillet et al. (2014)** found that non-attentively perceived odours in the environment affected food choice. Participants placed in a waiting room with pear odour, chose fruity desserts more often compared to participants that had been waiting in an unscented room. Brief exposure to the smell and sight of pizza increased prospective intake for pizza and other savoury foods, but not for sweet foods **(Ferriday and Brunstrom, 2011)**.

In this time, in the world exist many studies which use neuroimaging and biometric methods in order to show the influence of odours on brain activity **(Lorig, 2000; Pinto et al., 2014; Berčík, et al., 2015)**, as well as the research about influence of fragrances on emotions from the perspective of mood and physiology **(Warrenburg, 2005)**. This research of emotions was expanded for physical peace and performance the presence of mock ambient odour **(Knasko et. al., 1990)**.

Facts and myths about aromatherapy, analysis of odour effects on mood, physiology and on behaviour were also examined **(Herz, 2009)**. Detailed knowledge about brain processes influenced by aroma was presented by one study thanks functional magnetic resonance fMRI, which was realized in real conditions **(McGlone, Österbauer, Demattè and Spence, 2013; Kleinová et al., 2015)**. It is needed to emphasize, that almost none of the studies don´t take into account the quality of the air in the environment and changes of preferences, for example with influence of weather, wherein almost all they are limited to the laboratory conditions.

Alankin (2016) published, the aroma marketing services may include: a) creation of a scent logo/corporate aroma; b) distributing bioactive fragrance compositions indoors (the method of scent space), considering the given industry specificity, and consequently special composition for; c) influencing the customer behaviour in the point of sale, reaching out to the customer´s consciousness and sub-consciousness, creating emotions; d) atomising fragrance compositions related to the brand of the product during events influencing the customer´s sense of wellbeing, creating atmosphere and therefore facilitating friendly communication, e) using scent in an advertising campaign (scent advertisement).

MATERIAL AND METHODOLOGY

The object of research is an influence of aroma compounds on consumers 'purchase behaviour in chosen pub restaurant „SPORTPUB BREZNO". On base of implementation of aroma equipment - Aroma Dispenser, this is made on the principle of micro-particles atomization in real conditions in pub restaurant. We tried to research the influence of aroma on consumer preferences by selling of baked baguettes (Panini). In primary research, we monitored daily sale (amount) of baked baguettes without using of aroma stimulus and then we placed two kinds of fragrances inside of pub restaurant "SPORTPUB BREZNO" (Table 1).

Table 1 Used Aroma Compounds.

Aroma filling	Aroma type	Producer	Volume
Crunchy bread	Aerosl spray	Reimarom	250 mL
Chicken soup	Aerosl spray	Reimarom	250 mL

Table 2 Determination of dummy variables.

Without aroma	0
With aroma	1

Both aroma fillings are mostly made from natural ingredients and they are produced under strictly view of IFRA – International Fragrance Association (www.ifraorg.org). The observation was realized on March and April 2016. First month (March, 2016), there were used any fragrances and then in second month (April, 2016), aroma of *„Crunchy bread"* was exercised in first two weeks and after this, last two weeks, fragrance of *„Chicken soup"* was tested. The research, how sale and purchase behaviour were changed, was realized in pub restaurant SPORTPUB BREZNO. In this service provider is non-smoking space. Interior is designed in higher visual standard in the comparison with other pub restaurants within mentioned region (see Figure 1). Opening time in this SPORTPUB BREZNO is daily from 1pm until 11pm (weekly) and from 1pm until 2am (at weekend).

The aroma dosage in second phase of research (second month, April 2016) was done daily in 20 second intervals in time from 3pm until 11pm. Aroma compounds were placed in the middle of pub restaurant SPORTPUB BREZNO (Figure 2).

Primary data processing was done through descriptive statistics (frequencies, averages and standard errors), as well as through inductive statistics (regression statistics). This test verifies a dependence of quantitative symbol on one quantitative symbol or on more quantitative symbols **(Ostertagová, 2012)**. Because of qualitative variables presence, we choose dummy variables (Table 2).

Figure 1 Interior design in SPORTPUB Brezno.

Figure 2 Setting and positioning of diffuser.

Subsequently, we tested an influence of qualitative variable (dummy variables) on quantitative one. This was done through regression, while we tested, if quantitative variable (quantity sale of baked baguettes) depends on qualitative variable (each aroma).

We determined these hypotheses:

- H0: Quantity sale (nzmber of baked baguettes) without placing of specific aroma = quantity sale (number of baked baguettes) with placing of specific aroma; it means that aroma doesn´t influence the quantity sale (number of baked baguettes)
- H1: Aromatic compounds have an impact on the quantity sale (number of baked baguettes).

The test we realized through the statistical supplement "Data analysis" in Microsoft Excel, we had chosen Regression. We focused on the Significance F value (Figure 7) and based on a comparison with a significance level $\alpha = 0.05$, the hypothesis was accepted. The obtained values of the average number of sold baguettes have been grouped into clearly arranged figures that allow us to compare the effect of odours on changes in shopping preferences.

RESULTS AND DISCUSSION

The most important fact whether aroma application supporting an appetite in a hospitality services oriented to restaurant influences the sale of baked banquettes. Figure 3 illustrates the average of two-month observation of baked banquettes´ sale. Total comparison of period in research realization (first month without aromatization and second month with aromatization) is possible to state, that in case of aroma compounds application was achieved the total higher sale by 2.6% in April 2016.

As can be seen from the Figure 3, higher sale of Paninis was including the influence of aroma only in certain days within the observation period. The biggest change in baguettes selling on the basis of average values occurred on Sunday, where sale increased by 200% during the application of aerosol sprays. The same situation can be observed on Wednesday, where was an increase by 100% and also on Fridays (an increase of almost 17%). The opposite effect is based on an average of eight weeks demonstrated in the case of Saturdays, where sale decreased by 60%, then on Monday a decrease by 33% and also on Tuesday, a decline of 50%.

Any change occurred during the research time only on Thursdays, which could be due to the fact that this was the last day before the supply of which is related to the smallest selection (most preferred flavours/ types of baguettes, they were no longer in offer). The average sold quantities (Figure 3) can be greatly distorted by seasonal factors and because in the month of March was the Easter time, when we could expect some changes in customer habits (a lent), and also the fact that during the Easter Monday, SPORTPUB was closed.

Except tracking of the number of sold pieces of baguettes, object of research interest were customer preferences by choosing of different types of baguettes too. On Figure 4 can be seen the average that in case of non-application of odour stimulus, guests prefer these kinds of Paninis.

In first month, customers mainly preferred a flavour of bacon and ham. Other flavours within offered portfolio of semi-finished products were consumed at relatively the same level in 15%.

After implementation of aromatic diffuser, that first two weeks an aroma of *„Crunchy bread"* was activated and then last two weeks of the month, on April 2016, an smell of *„Chicken soup"* was placed. On Figure 5 are seen preferential changes by choosing of baked baguettes.

During aroma dosage, guests greatly preferred the flavours of Paninis: bacon and egg (35%), and ham and cheese (25%) in comparison with other flavours. This 15% growth in case of bacon flavour could largely relate with Eastern holiday (for example, in lent time at the end of March 2016, customers preferred tuna baguettes). On the contrary, lower interest was in sale of tuna, chicken kebab flavours (decrease by 5%) and totally lowest with prosciutto (decrease by 10%).

In comparison of period (second month) within which different fragrances were applicate (two weeks aroma of *„Crunchy bread „and* two weeks smell of *„Chicken soup"*). We determined on based of average values of sold quantities some differences too (Figure 6). Although the general comparisons, in the case of smell of *"Crunchy bread"* were sold by 5% baguettes more than in the case of aroma of *"Chicken soup"*. Figure 6 shows that up to three days in week were sold more baguettes during implementation of *"Chicken soup"* fragrance (on Saturdays, Tuesdays and Thursdays) while in case of *"Crunchy bread"* smell just two days (on Fridays and Sundays).

Part of this paper focuses on the gaining of knowledge about whether the sold quantities of baguettes dependent on aroma stimulus and subsequently to provide recommendations for pubs and restaurant providers. The nature of this research requires the statistical evidence about the effects of aromas on total sale of baguettes. Based on aggregate data, we realized regression (Figure 7) and we obtained following results: $\alpha >$significance F, $0.05 > 0.028$. The value of Significance F is less than the Significance level α, therefore null hypothesis was rejected and we accepted the alternative hypothesis that the effect of specific odour has an influence on total sale of Paninis. There is a dependency between variables; the model is statistically significant and useful for demonstrating the impact of one variable on another. The effect of smells on the sale of snacks (baguettes) is statistically verifiable.

Except seasonal effects impact, the research results could be different because of fact, that in SPORTPUB did not ensure adequate air exchange, because over-limit values of individual factors of air quality (e.g. an amount of CO_2 particles, temperature, humidity) can significantly eliminate stimulating effects of aromatic compounds circulation in this pub restaurant. Finally, the results also reflected the fact that an area of 120 m^2 was due to the financial performance used only one diffuser, which is determined based on the recommendations of the manufacturer to the spaces with an area of 30 m^2.

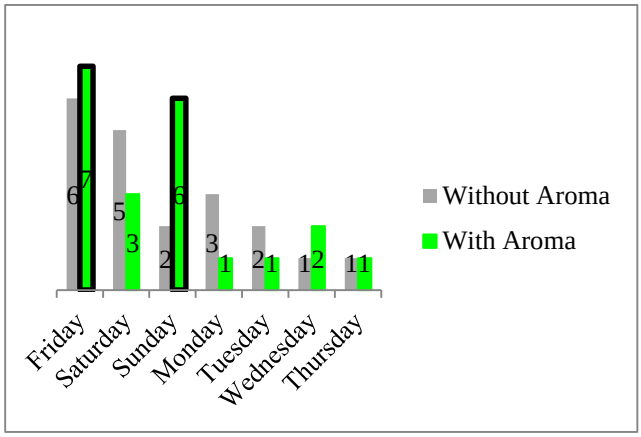

Figure 3 Average daily sales of baked baguettes during first month.

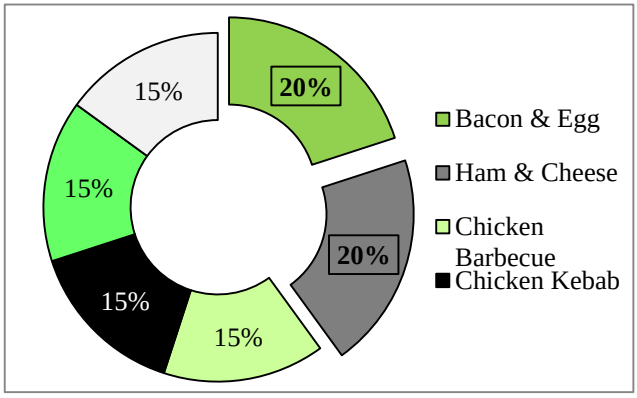

Figure 4 Average consumer preferences before implementation of aromatic diffuser.

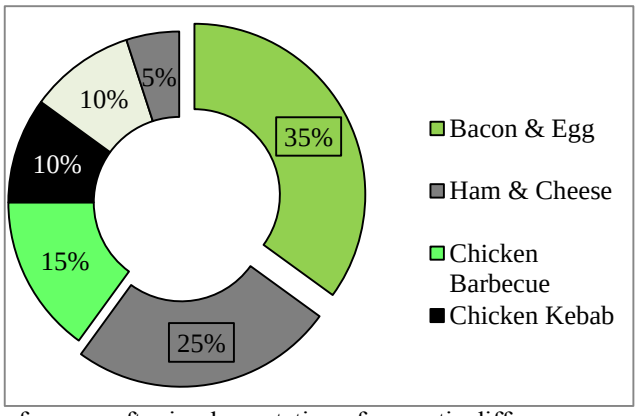

Figure 5 Average consumer preferences after implementation of aromatic diffuser

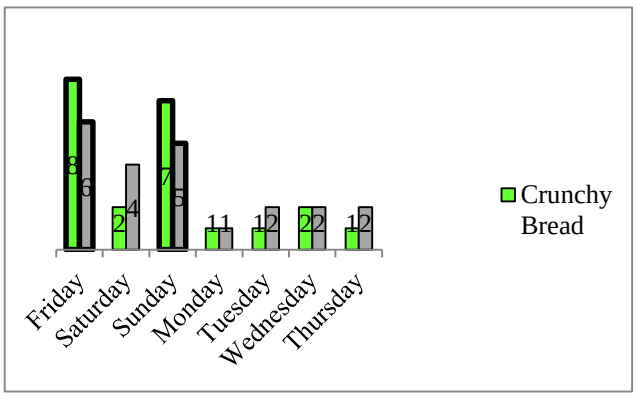

Figure 6 Average daily sales of baguettes with placing of aromatic compounds consumer preferences after implementation of aromatic diffuser.

Regression Statistics	
Multiple R	0.582239583
R Square	0.339002932
Adjusted R Square	0.283919843
Standard Error	1.860743290
Observations	14

ANOVA

	df	SS	MS	F	Significance F
Regression	1	21.3087557603687	21.3087557603	6.15439219165928	0.0289154083805951
Residual	12	41.5483870967742	3.46236559139		
Total	13	62.8571428571429			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	1.225806451	0.779301028905 03	1.57295628537	0.1417108300011	-0.47214	2.92375753156406	-0.47214	2.92375753156406
X Variable 1	0.548387096	0.221052099116 38	2.48080474678	0.028915408380 5952	0.0667559471945426	1.03001824635384	0.06675594719	1.03001824635384

Figure 7 Output from regression through dummy variables.

CONCLUSION

The acquired values about realized sale of baked baguettes in chosen period including aromatic stimulus, as a forms of sales promotion provide only a minimal effect. Nevertheless, we have shown through statistical test the effect of specific odour on total sale of Paninis, while we would like to state, that in this case only a small increase, which cannot be considered as economically efficient. The higher baguettes´ sale by 2.6% not covers the costs for the acquisition of aroma equipment and of the aromatic compounds. In this case, it is necessary to highlight certain facts that it could significantly affect the overall results of the experiment.

Firstly, it was used only one diffuser (aromatic compound designed for space with an area of 30 m^2) in pub restaurant SPORTPUB in real condition of 120 m^2. There is most modern method based on the principle of nebulization (aroma particles in 1 000 times smaller in comparison to conventional aerosol freshener). During all research time, in SPORTPUB was not constant quality of the air (e.g. the amount of CO_2 particles, temperature, and humidity), as well as the measurement of various parameters too. It can be assumed that an over-limit or under-limit values can significantly eliminate the stimulating effect of the aromatic compounds spread in this pub restaurant. Within the period, seasonal effect reflected and related to the period of Easter holiday (e.g. lent time and changes in preferences).

The favourable atmosphere supporting sale through olfactory stimulation within the sale/business service assumes the choice of optimal aroma compound that is consistent with offered product, ensure a certain level of air quality and, last but not least, the rational method of application (intensity, dose, timing). In the world with a lot of visual stimulus, it can be expected that over time will become the olfactory stimulation as a form of sales promotion common part of each business unit, which returns back not only in the form of satisfied customers, but also in the form of higher profits of sales.

In the future, we plan to realize a similar research with three aroma compounds (smell streamer), which operate on the principle of nebulization. Research will be conducted six months, while we will respect air quality in the environment (because ensuring the constant conditions would be difficult in external environment). In addition to tracking sale also we aim to test the impact of aromatics compounds on consumer emotions, current research methods are in today modern world of technology deficient. We are insufficient focus on the use of biometrics and neuroscience methods. The most commonly used research methods in studying of smell effects on emotions humans used electroencephalography, which will be with olfactometry a part of a continuing research.

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