

Sîrbu, Mirela Octavia; Săseanu, Andreea Simona; Ghiță, Simona Ioana

Article

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CONSUMERS' PERCEPTION ON THE USE OF INNOVATIVE TECHNOLOGIES IN CREATING STORE ATMOSPHERE

Mirela Octavia Sîrbu ^{1*}, Andreea Simona Săseanu² and Simona Ioana Ghiță³
¹⁾²⁾³⁾ Bucharest University of Economic Studies, Romania

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Abstract

The increase of competitiveness in retail sales generates the diversification of purchase options, increase of consumers' demands and, implicitly, the change of their purchasing behaviour. In this context, the selection made by consumers regarding the stores where to purchase from represents a complex decision-making process, conditioned upon the functional and psychological characteristics, among which store atmosphere plays a special part. Moreover, in order to obtain some competitive advantages within an environment that generates specific emotional effects on the buyers, the sellers allocate significant investment resources aimed at implementing some innovative technologies to create store atmosphere. Starting from these considerations, our research aims to identify consumers' perception of the use of innovative technologies in creating store atmosphere. This paper was performed on the basis of an original questionnaire and, for the specialty literature in Romania, it represents the first research elaborated on this subject. The direct research has been conducted by means of a questionnaire-based survey to which 492 persons answered during September-November 2014. The research intended to establish the criteria for stores selection and the role atmosphere plays in this choice, as well as the identification of interest and level of knowledge of some innovative technologies in this field. The research results emphasise the fact that over 75% of respondents have a positive perception on the use of innovative technologies in order to generate a pleasant atmosphere and they are interested in the advantages they bring to the purchasing process.

Keywords: atmosphere in the store, innovative technologies, purchasing behaviour, consumer perception, show store, image of the store

JEL Classification: C13, M21, M31

* Corresponding author, Mirela Sîrbu - mirela.sirbu@com.ase.ro

Introduction

Perceived through the human senses, store atmosphere is intended to attract and make consumers be loyal to the respective stores, and it customizes the store, conveying specific messages intended to encourage sales. Therefore, the constructive ambiance, the set up of the selling surfaces, the music, the olfactory ambiance, as well as the enhanced product visibility represent factors that determine shoppers to return to the store, thusly increasing sales (Vişean, 2004). As regards the markets in Romania, considering the Romanian culture as well, a significant influence on buyers is exerted by the human variables proposed and studied by Berman and Evans (1995) and Turley and Milliman (2000): crowded spaces, consumers' features, employees' features, the company employees and their appearance, behaviour of sales force towards buyers.

The methodological framework used for this research was designed starting from the current context characterized by the access into Romanian markets of large chains of stores as a result of market globalization. The retailers' need to obtain some competitive advantages in this field of activity has generated some strategies that would help them stand out and create a specific, customized and innovative atmosphere in their stores. Consequently, the assessment of consumers' interest in new technologies used for creating atmosphere in stores generates a specific impact on purchasing behaviour and represents the main objective of this paper.

The questionnaire was designed closely correlated with the theoretical (Mehrabian and Russell, 1974; Kumar and Kim, 2014) and practical aspects emerging from literature dedicated to store atmosphere and from the relevance of specificities of SOR (Stimulus-Organism-Response) and PAD (Pleasure-Arousal-Domination) models. In selecting the advantages of innovative technologies included in the research, the authors aimed at emphasising the main components of atmosphere, with a special focus on virtual technologies.

1. Literature review

Introduced by Kotler, the concept of store atmosphere reflects "the effort to create the environment that generates emotional specific effects on the buyer, effects which increase the probability of the buyer to purchase" (Kotler, 1973, p.50). During the years, the literature regarding store atmosphere (Kotler, 1974; Markin et al., 1976; Milliman, and Fugate, 1993) has developed, through its studies, several concepts that define store atmosphere, such as: store ambiance; atmosphere specific to the field of services; virtual atmosphere; psychology of the environment. Another specific term is the "show store", which describes the commercial premises as an attractive permanent or occasional environment based on decorations and accessories adapted to specific events and on organizing promotional, cultural actions, etc.

The researchers Turley and Milliman (2000) identified 58 variables specific to store atmosphere, this being considered as the most comprehensive classification, which includes, naturally, the most frequently studied variables of atmosphere: colour, lights, smell, and music.

In order to estimate how store atmosphere impacts the customers' behaviour in terms of approaching and/or avoiding the store, the researchers have used variables specific to store

atmosphere in terms of: time spent in the store, amount of money spent, intention to return to the store, intention to recommend the store, communication with the staff in the store, assessment of products offered, satisfaction regarding the store (Turley and Milliman, 2000; Berman and Evans, 1995). Concerning the generic variables of store atmosphere, recent approaches grant special emphasis to the influence of external variables, as well as human variables (Pantano and Di Pietro, 2014; Shankar et al., 2011).

Starting from these assumptions and from the existence of the direct connection between emotional status and consumers' behaviours, the literature has come up with several models to assess how the purchasing process is influenced by store atmosphere. Thus, Donovan and Rossiter (1982) introduced the S-O-R (Stimulus Organism-Response) model, studying the impact of store atmosphere on the consumers' purchasing behaviour. According to this model, the S (Stimulus) represents the variables of store atmosphere influencing the emotional status, O (Organism) represents the so-called PAD (Pleasure-Stimulation-Domination) that influences the consumers' behavioural responses, and R (Response) represents the behaviour of approaching/avoiding the store. Generally, the response obtained through the S-O-R model refers to the buyer's behaviour regarding the following aspects: more time spent in store; spending more money than planned; assessing the degree of attractiveness of store atmosphere for buyers; exploring the store; intention to return and to recommend the store; communication with the staff in the store (Donovan and Rossiter – 1982; Donovan et al., 1994).

Another representative model, developed by Mehrabian and Russell (1974) refers to consumers' emotional responses when they are exposed to the variables of store atmosphere. The model presented by the two researchers represents three emotional states known as PAD (pleasure-displeasure; stimulation-non-stimulation; predomination-submission).

The conceptual model designed by Kim (2006); Chebat and Morrin (2007) presents the connection between store atmosphere and emotions, respectively, the relation between emotions and the approaching/avoiding behaviour, which determine the reasons for shopping accompanied by the fulfilment of a task, be it for utility reasons or for relaxation, pleasure.

The role of atmosphere in the purchasing process is increasing and developing the more so as the qualitative differences between the purchased or consumed products are lower and lower. The focus on the use of innovative technologies in order to create store atmosphere in the purchasing process refers mainly to the impact of a set of stimuli of store atmosphere, which influence the consumers' behaviour. Among the most famous innovative technologies there are: lights and colours, volume and rhythm of the music, perception of the smell felt in the store. Other researchers have demonstrated that the window displays influence the buyers' decision to enter the store and sometimes the decision to purchase (Oh and Petrie, 2012; Mower et al., 2012; Cornelius et al., 2010).

Apart from these innovative technologies, many researchers (Baker, 1986; 1994; Bitner, 1992) also insist on the social factors that can influence the volume of sales in stores. Thus, employees' attitude towards the buyers and crowded stores represent components that determine the approaching/avoiding behaviour concerning the store.

Nowadays, researchers in the field of innovative technologies employed to create store atmosphere focus on technologies specific to the virtual environment, characterized by a strong interactivity with consumers and by a customisation of the purchasing process (Shankar et al., 2011; Kumar and Kim, 2014).

2. Research methodology

This research aimed to establish the consumers' perception regarding the use of innovative technologies in the creation of store atmosphere. In order to gather the data necessary for the analysis of consumers' interest in the new innovative technologies used to create store atmosphere, a survey-based statistical research was organized. The research included direct interviews with the persons selected, which were conducted during September-November 2014. The survey was conducted face to face, by intercepting the respondents in three intensely busy areas in Bucharest. The statistical population of interest was made up of consumers from Bucharest, the sample being made up of 492 persons residing in Bucharest. The limit error was of $\pm 4.42\%$ for a 95% likelihood of guaranteed results. The sample size was determined depending on the argument of probability function z , on the sample variance and margin of error $\Delta_{\bar{x}}^2$, according to the relation: $n = (z^2 \cdot s^2) / \Delta_{\bar{x}}^2$. The type of surveys used was based on quotas – as the sampling frame is unknown, but what is known is the relative frequency distribution of the total population based on some key characteristics (gender, age, education and income) and this is a way to ensure that the sample is representative, a method largely used in socio-economic research. The sample is representative for the stable population in Bucharest, from the point of view of the above-mentioned variables. Thus, 48.78% of the respondents are men and 51.22% are women, similar to the structure of the population in Bucharest, according to the data provided by the National Institute of Statistics. The sample distribution by income is positively skewed, with small values being quite predominant (the sample distribution being similar to the population distribution). Referring to the levels of education, 56.1% of the respondents graduated from high-school or post-high-school studies, while only 14.58% of them graduated from higher education. Comparatively, according to the data provided by the National Institute of Statistics, 59.16% of the employed population in Romania graduated from secondary level of education while 17.57% had an higher education level (National Institute of Statistics, 2014). The non-response rate was low (2.4%) and it did not affect the representativeness of the sample.

The goals of the research were the following:

- to identify consumers' purchasing habits in terms of store profile where purchases are made and frequency of visiting these stores depending on the motivation: information, purchasing, entertainment;
- to establish the importance that consumers attach to the main features at the basis of store selection and to the value of store atmosphere and its components in the purchasing process;
- to assess the level of knowledge and interest in the innovative technologies used in creating store atmosphere;

- to establish consumers' perception over the usefulness of advantages brought by the digital interface shelves for product display, the LED technologies used for lighting, the panoramic digital window displays and holograms;
- to establish the correlations between the segmentation variables and the factors that influence the choice of stores (image, atmosphere and show store);
- to model the purchasing behaviour depending on the importance of store atmosphere and of the innovative technologies used.

In close correlation with the research objectives, the following hypotheses emerged, which were subjected to testing:

- the type of preferred and most frequently visited stores for shopping is the proximity store.
- 2. most of the respondents consider that the atmosphere, its olfactory component in particular, has an important impact when choosing the place where to shop;
- the innovative technologies employed in order to create store atmosphere have a great influence over the purchasing process;
- consumers have a positive perception of the advantages brought by the innovative technologies analyzed in terms of product visibility and attractiveness of the point of sale;
- there are significant correlations between the "show store" as a factor that influences the choice of the store and variables such as age, gender and level of education;
- the impact of store atmosphere on the decision to purchase and the importance of the new technologies applied to produce store atmosphere have a significant influence on the shopping frequency.

According to the goals set, the research was structured on three parts and it included 16 questions. The first part of the research (questions 1-6) was intended to identify consumers' purchasing habits regarding the store profile where they currently shop, store visit frequency depending on motivation (information, purchase, entertainment), ranking of the main features at the basis of store choice and assessment of the role atmosphere has in store selection. The second part of the questionnaire (questions 7-13) was intended to assess the level of interest and awareness with respect to the innovative technologies that generate store atmosphere. The respondents were questioned on how they appreciate the usefulness of implementation and advantages of the following innovative technologies: shelves with digital interface for product display, LED lighting technologies, panoramic digital windows and holograms. The above-mentioned technologies were selected based on the documented research conducted by the authors in order to identify some representative technologies for the commercial activity in terms of innovation and which directly influence store atmosphere and, implicitly, consumers' behaviour (Shankar et al., 2011; Sorescu et al., 2011; Kumar and Kim, 2014; Pantano and Di Pietro, 2014).

The last part of the questionnaire (questions 14-17) included the variables for the identification of interviewed persons: age, education, income and gender, variables necessary for modelling the purchasing behaviour depending on the importance of store atmosphere and innovative technologies used.

The SPSS 20 programme was used for information processing, by applying a diverse range of scaling methods, nonparametric tests for analysing the association between the segmentation variables and the criterion for store selection, and the ordinal logistic regression model with conditioned probabilities, based on proportional odds, for the impact of atmosphere and new technologies on the purchasing process.

3. Results and discussions

In what follows, the paper presents the results of the research, which was conducted based on the following structure: (a) presentation of the survey outcomes (b) study of the association between the segmentation variables and the criterion of store selection and (c) purchasing behaviour modelling based on the importance of store atmosphere and the innovative technologies used.

3. 1. Main survey outcomes

In order to meet the objectives proposed in the first part of the questionnaire an introduction was prepared aimed at identifying consumers' preferences and interest for certain types of stores and a distinct section, which assesses the impact of atmosphere and of these components on the purchasing process.

As regards the type of stores where they usually purchase from, most of the respondents indicated to almost an equal extent (30%), the variants of the "proximity store" and the "supermarkets". And only slightly over 6% indicated that they usually make their purchases in malls (figure no. 1).

According to the research outputs, the first hypothesis (the type of preferred and most frequently visited stores for shopping is the proximity store) is validated. Consumers' preference of proximity stores, but also of supermarkets represents the consequence of store location in the vicinity of consumers' residence or places they habitually visit. The prevalence in the offer of products currently in demand and the quickness of the shopping process also explain why consumers prefer proximity stores.

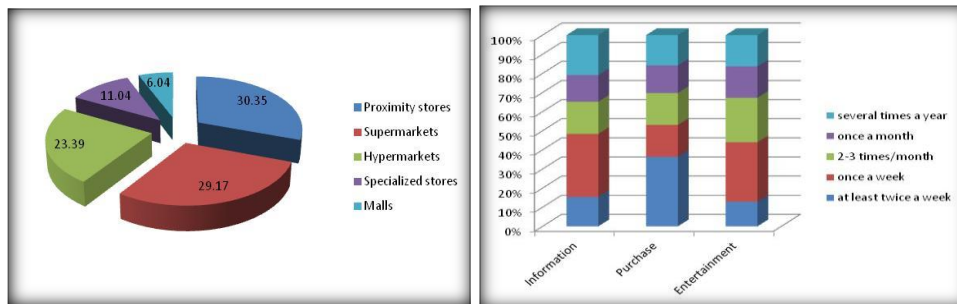


Figure no. 1: Profile of stores where the respondents usually do their shopping

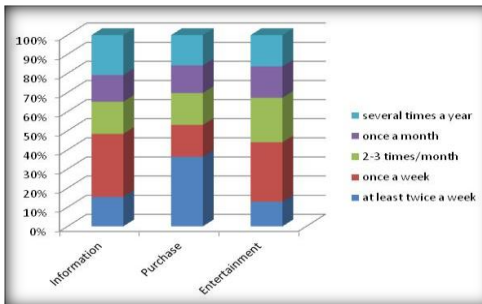


Figure no. 2: Structure of respondents based on the frequency of store visits, depending on motivation (%)

In the case of the question regarding the frequency of store visits depending on motivation (figure no. 2) we notice a bipolarization of the respondents. Thus, 33% of them visit the store on a weekly basis for information purposes and 31.1% of them visit the stores for entertainment purposes (in particular during the weekends).

The results obtained as a consequence of the participants' ranking of the main features, which substantiate their store choice, revealed that the most important feature for choosing a store is product diversity followed by product quality and the store location. Therefore, figure 3 shows that the highest total score, granted to the features important in the choice of the store, was obtained by "Diversity", followed by "Product quality", while the lowest total score was given to "Store atmosphere".

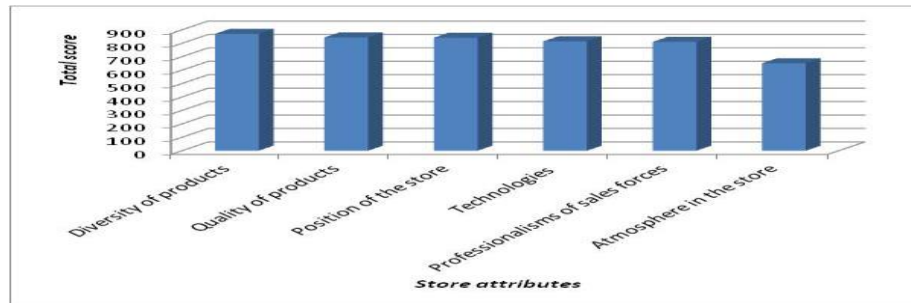


Figure no. 3: Total scores given to the features used by consumers in order to chose stores

The research took into account the following factors, which influence the choice of stores: image of the store, store atmosphere and the show that it can offer. The first two factors were almost equally relevant according to the respondents (figure no. 4). Hence, according to more than one third of respondents (37.85%), store image highly influences store selection. Similarly, almost 35% of respondents have considered that store atmosphere highly influences their choice of stores.

The show inside the store was appreciated by the respondents as being important (for almost 36% of them) and of average importance (by 28.2% of the respondents).

The role of atmosphere in store selection was assessed in order to obtain information regarding the extent to which respondents' behaviour is influenced by store atmosphere. To this end, consumers expressed their agreement or disagreement with the following assertions regarding the impact of atmosphere on the purchasing process: (a) store atmosphere plays an important part in choosing the stores where I go shopping; (b) store atmosphere encourages me to spend more time in the store; (c) store atmosphere helps me make the decision to purchase; (d) store atmosphere contributes to the increase of impulse-based purchases; (e) store atmosphere makes me return to the store. Following the processing of answers, it resulted that over 40% of respondents agree that store atmosphere influences their choice of the stores where they shop, while almost 37% of them agree that store atmosphere plays an important role in encouraging the client to spend more time in the store (figure no. 5).

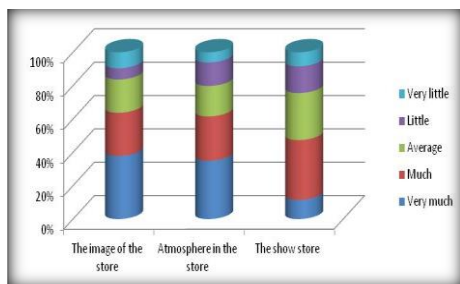


Figure no. 4: Factors influencing the choice of stores where to purchase from

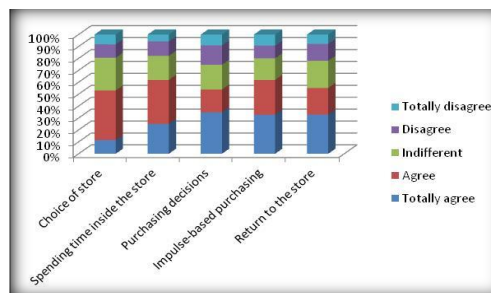


Figure no. 5: Structure of respondents based on their opinions regarding the impact of store atmosphere on the purchasing behaviour

The five components of store atmosphere have been ranked (figure no. 6) according to their importance for shoppers. This ranking shows the highest score was obtained by the olfactory ambiance, followed by the constructive one.

The second hypothesis was validated as a consequence of information processing and result interpretation: most respondents consider that atmosphere, especially its olfactory component, has an important impact on store selection. The results obtained can be explained by the fact that atmosphere inside stores generates emotional effects on buyers. Particularly, consumer attraction depends on the olfactory sense, which influences customers' state of mind.

The second part of the questionnaire was intended to assess the buyers' level of interest in the advantages of innovative technologies used to generate store atmosphere and to determine the influence of technologies on the purchasing process. Another objective was to assess the level of knowledge and the usefulness of implementing these technologies, as well as the advantages of the innovative technologies selected based on the methodology presented. The results obtained are presented below.

The relaxation/entertainment function, which is to be provided by the innovative technologies used in order to generate store atmosphere, was rated by over one third of respondents as being highly interesting (figure no. 7). Adversely, respondents showed very little interest in the advantage of obtaining additional information regarding the products displayed in the store (40.76% of respondents), while only slightly over 5% of respondents were very interested in this respect. Similar results were obtained for the advantage of an increased interaction provided by new technologies in the store.

The respondents had a clear opinion on how the technologies used in order to generate store atmosphere influence the purchasing decision: thus, almost three thirds of respondents consider that technologies have a high or very high influence on the purchasing process and over half of respondents consider the influence of technologies as being very high (figure no. 8). The analysis of the results obtained validates the third hypothesis: innovative technologies employed in order to generate store ambiance have a massive influence on the purchasing process. The importance granted by respondents to innovative technologies represents a natural consequence of the changes in the consumers' lifestyle, including in the purchasing process, mutations especially based on technological aspects. The modern innovative technologies most known by the respondents referred to the digital interface shelves (24%), panoramic digital window displays (23%) and holograms (22%). Less than 20% of respondents stated that they

knew the LED lighting technologies and 12% of them indicated other technologies such as the personal shopping assistant and the smart shopping cart (figure no. 9).

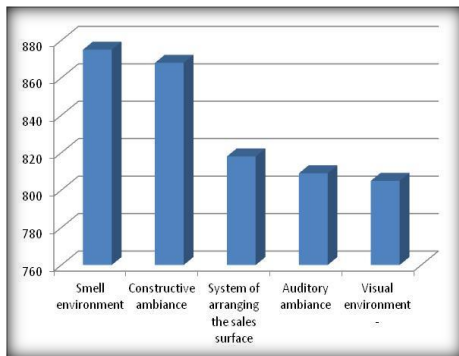


Figure no. 6: Total score assigned to components of store atmosphere

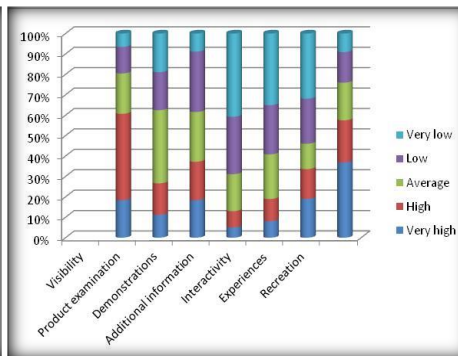


Figure no. 7: Buyers' level of interest in the innovative technologies used to generate store atmosphere

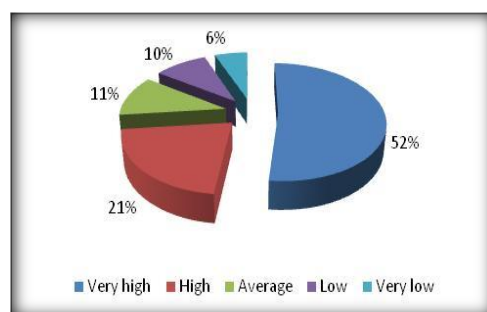


Figure no. 8: Structure of respondents by the opinion on how the current technologies used to generate store atmosphere influence the purchasing process (%)

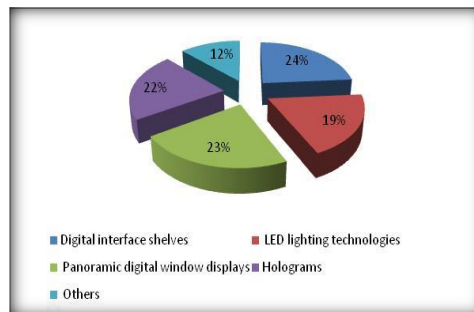


Figure no. 9: Structure of responses by the opinion regarding the known innovative technologies

The next part of the research investigated consumers' opinions regarding the level of interest consumers expressed by in the main advantages of the following innovative technologies used for store atmosphere: digital interface shelves for product display, LED lighting technologies, panoramic digital window displays and holograms. Consumers' perceptions regarding the advantages of each of these technologies are presented in figures no. 10, 11, 12, and 13. The information processed reveals that 84.64% of respondents see the product presentation through a virtual interface as being useful or very useful. Moreover, most respondents considered that the differentiated lighting of shelves was highly useful (62.39%). As regards the advantages of panoramic digital window displays, 62.4% of respondents considered that the possibility to enhance the level of product attractiveness was as very useful or useful; and around two fifths of respondents consider it is useful or very useful to dismiss mannequins, shelves or other displaying facilities as a result of using holograms. The respondents' opinions regarding the innovative technologies

mentioned in the questionnaire reflect the existence of different perceptions as to the usefulness brought forth by the advantages of digital interface shelves for product display, LED lighting technologies and panoramic digital window displays. In case of holograms, however, the respondents' opinions are more evenly divided compared to the previous questions, no clear polarization being visible around any variant of answer.

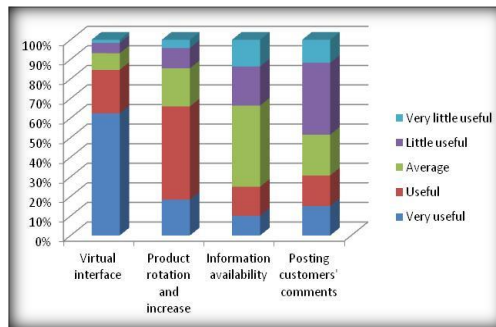


Figure no. 10: Usefulness of main advantages of digital interface shelves used for product display

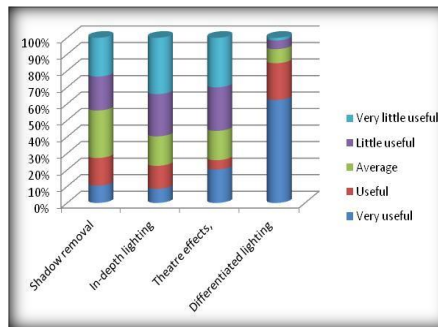


Figure no. 11: Usefulness of the main advantages of the LED lighting technologies used in stores

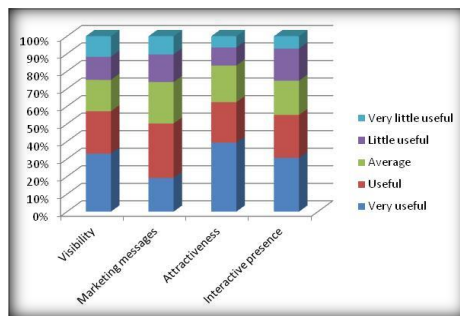


Figure no. 12: Usefulness of main advantages of panoramic digital window displays

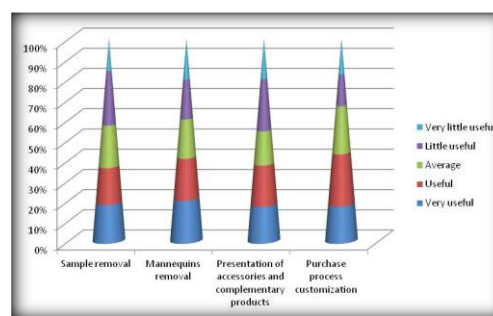


Figure no. 13: Usefulness of main advantages of holograms

According to the results obtained, the fourth hypothesis is validated: consumers have a positive perception of the advantages brought forth by technologies meant to enhance product visibility and point of sale attractiveness. The prevailing interest shown by consumers towards the aforementioned advantages is generated by the practical functions and promotional role of innovative technologies that produce store ambiance. However, the analysis has certain limits caused by the level of knowledge regarding the technologies examined.

3.2. Study of the association between the segmentation variables and the store selection criterion

Among the factors influencing the choice of the store, neither store image, nor store atmosphere are correlated with the segmentation factors of interest (buyers' age, gender, education level), without significant differences in terms of choosing the store based on the

image criterion, the atmosphere between the different categories of identification variables. Alternatively, the way the potential buyers perceive the “show store” concept and its influence vary depending on the three criteria mentioned.

The extent to which the “*show store*” concept influences the choice of the store is an ordinal qualitative variable, with codified variants: 1 – the highest level of influence and 5 – the lowest level of influence. After applying the Chi-square test, the result showed that the two variables: age-show store are not independent and that there is an association of average intensity between them. The Kendall coefficients used to measure the intensity of the association between ordinal variables have lower values, indicating a pretty weak association between the variables (table no. 1).

Table no. 1: Nonparametric correlation coefficients

		Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	,496			,000
Ordinal by Ordinal	Kendall's tau-b	,307	,051	5,921	,000
	Kendall's tau-c	,299	,050	5,921	,000
N of Valid Cases		323			

The analysis of the association between the gender and the store selection criterion reflects the fact that women have different opinions than men in terms of the extent to which the *show store* influences the decision of choosing the place where to shop from (table no. 2). The application of the Kruskal-Wallis tests and the Median test for comparing k independent samples (table no. 3 and 4), revealed a significant difference in the perception of the show store, among the respondents’ different levels of education (for a very low significance level, close to zero).

Based on the results obtained by applying nonparametric statistical tests, the fifth hypothesis related to the association between the “show store” concept and the segmentation variables is validated. Therefore, in the case of all applied tests, there were not sufficient arguments found in order to accept the null hypothesis, according to which there are no significant differences between the opinions of the various categories of consumers, according to the aforementioned segmentation variables with respect to the „show-store” concept.

Table no. 2: Kolmogorov-Smirnov Test

Test Statistics ^a		Mag_spect
	Absolute	,145
Most Extreme Differences	Positive	,052
	Negative	-,145
Kolmogorov-Smirnov Z		1,605
Asymp. Sig. (2-tailed)		,012

Table no. 3: Kruskal-Wallis Test

Test Statistics ^{a,b}		Mag_spect
Chi-Square		23,722
df		4
Asymp. Sig.		,000

Table no. 4: Median Test

Test Statistics ^a		Mag_spect
N		317
Median		3,00
Chi-Square		18,050 ^b
df		4
Asymp. Sig.		,001

3.3. Modelling the purchasing behaviour depending on the importance of store atmosphere and innovative technologies used

The variables presented in table no. 5 below were selected in order to apply the regression model used.

Table no. 5: Variables of the regression model applied for modelling the purchasing behaviour depending on store atmosphere and the innovative technologies used

Variable name	Variable type	Variable symbol	Measurement scale
Frequency of visiting the stores for shopping	Dependent variable	FRECV_CUMP	Ordinal variable with 5 variants of response
Impact of store atmosphere on the decision to purchase	Independent variable	ATM_MAG	Dichotomous ordinal variable (value 1 if the respondents consider the impact of store atmosphere as being high or very high and 0 if this impact is average, low or very low)
Influence of technologies used to generate store atmosphere on the purchasing process	Independent variable	TEHN	Dichotomous ordinal variable (value 1 if the respondents consider the role of new technologies as being high or very high and 0 if otherwise).

In order to include the above-mentioned variables in the regression model the two predictor-variables have been transformed from ordinal variables with five variants into dichotomous ordinal variables, through *dummy recoding*. The regression model applied is a model of ordinal logistic regression with conditioned probabilities based on proportional odds (through the SPSS Polytomous Universal Model PLUM procedure). The FRECV_CUMP explained variable (ordinal categorical, with five variants of response) was transformed into a *logit*-type variable, as follows:

$$\Theta_j = \text{prob}(\text{score} \leq j) / \text{prob}(\text{score} > j) = \text{prob}(\text{score} \leq j) / (1 - \text{prob}(\text{score} \leq j)); j = \overline{1,4}$$

The ordinal logistic regression model was as follows:

$$\ln \left(\frac{\text{prob}(\text{score} \leq j)}{1 - \text{prob}(\text{score} \leq j)} \right) = \alpha_j + \beta_1 \cdot \text{ATM_MAG} + \beta_2 \cdot \text{TEHN} \tag{1}$$

All the logistic variables had different interception parameters (α_j), but the same β_1 și β_2 regression coefficients, meaning that the effect of the independent ATM_MAG and TEHN variables over the dependent variable is the same for different *logit* functions. In developing the model, the authors started with analysing the graph of cumulative probabilities for the explained variable, separately from the two groups set up based on the ATM_MAG explanatory variable, and then based on the TEHN variable. In both cases, the authors notice that the cumulative probabilities for the purchasing frequency are higher in case of the first group compared to those for the second group.

In order to apply the cumulative odds ordinal logistic regression with proportional odds the following hypotheses were checked: the explained variable measured on an ordinal scale; the explanatory variables are numerical continuous, ordinal or categorical variables; the lack of multicollinearity among the explanatory variables; the existence of proportional odds (by applying the test of parallel lines). The results of verifying the assumptions above are shown in tables no. 6 and 7.

Table no. 6: Test of Parallel lines

Test of Parallel Lines ^a				
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	75,287			
General	62,697	12,590	6	,055

Table no. 7: Model adequacy test

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	12,970	10	,225
Deviance	13,661	10	,189

The examination of the estimated parameters (table no. 8) reveals that both the impact of store atmosphere on the decision to purchase and the importance of new technologies used to generate store atmosphere on the purchasing process have a statically significant importance over the shopping frequency. Both coefficients values are positive, meaning that the persons who consider store atmosphere to be important in supporting the decision to purchase go shopping more frequently; compared to the persons who consider that store atmosphere is not too important. Moreover, the persons who consider that modern technologies used to generate store atmosphere have a major influence on the purchasing process visit the stores more frequently in order to shop than the persons who disagree with this statement.

Table no. 8: Assessment of the model parameters

Parameter Estimates								
		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[frecv_cump = 1]	,556	,180	9,541	1	,002	,204	,908
	[frecv_cump = 2]	,559	,182	9,427	1	,002	,202	,916
	[frecv_cump = 3]	1,358	,197	47,427	1	,000	,971	1,744
	[frecv_cump = 4]	2,506	,242	107,130	1	,000	2,031	2,980
Location	[atm_mag=0]	,557	,219	6,442	1	,011	,127	,987
	[atm_mag=1]	0 ^a	.	.	0	.	.	.
	[tehn=0]	,742	,237	9,787	1	,002	,277	1,207
	[tehn=1]	0 ^a	.	.	0	.	.	.

The proportional odds ratios and their confidence intervals were calculated for a 95% probability (table no. 9). This indicates that for the increase by one unit of the values of the ATM_MAG explanatory variable (from 0 to 1 – i.e. the passage from the group of those who do not consider store atmosphere as being too important for the purchasing decision into the group of those who consider it as being important or very important), the odds for the respective persons to visit the store at least twice a week for shopping purposes, compared to the odds for these persons to visit stores more rarely are 1.745 times higher, if the other independent variable (TEHN) remains unchanged. The odds would be higher for a

number of times ranging between 1.135 and 2.684 (*Lower 95%* and *Upper 95%*). Moreover, if the value of the TEHN independent variable increases by one unit (moving from the category of persons considering that technologies used to generate store atmosphere does not highly influence the purchasing process, into the group of persons who consider that these technologies have a high impact on the purchasing process), then, the chances for those persons to visit stores at least twice a week for shopping compared to the chances for those persons to visit stores more rarely for this purpose are 2.101 higher, if the value of the ATM_MAG variable remains unchanged (in this case the odds increase between 1.319 and 3.345 times).

Table no. 9: Calculation of the proportional odds ratios

Predictor Variables		Exp_B	Lower (95%)	Upper (95%)
<i>Description</i>	<i>Variable Name</i>			
Importance of store atmosphere on the purchasing decision	ATM_MAG	1.745	1.135	2.684
Influence of current technologies used in order to generate store atmosphere on the purchasing process	TEHN	2.101	1.319	3.345

Due to the assumption regarding the odds ratio proportionality, the same increase of the odds ratio by 1.745 times will also occur in the case of those who visit stores at least once a week compared to those who visit stores more rarely than that (for the first criterion) and by 2.101 times (for the second criterion).

In conclusion, following the application and validation of the logit cumulative model with proportional odds it has resulted that the sixth hypothesis is confirmed, which refers to the influence store atmosphere and new technologies employed in order to generate atmosphere have on the frequency of going shopping. One can infer that it is possible to enhance the shopping frequency through an increase in the interest exhibited by store managers regarding the enhancement of store atmosphere, by implementing modern technologies.

Conclusions

As a result of the validation of all the hypotheses indicated in the established methodological framework, the research outcomes allow the authors to draw some conclusions that are useful both for sellers and for the research in the field of innovative technologies in this sector of activity.

Among the factors that influence the choice of stores where we go shopping, around 60% of respondents perceived the influence of the store atmosphere and image as being high and very high. Most of the respondents consider that atmosphere, in particular its olfactory component, has an important impact on the choice of the place where they go shopping.

The interest in the implementation of innovative technologies in stores was confirmed by the fact that most respondents considered the technologies used in the sales process are the most important feature when choosing the store. Therefore, over three quarters of

respondents consider that the technologies employed in order to generate store atmosphere have a very important or important impact on the purchasing behaviour.

The analysis of the correlations between the sample segmentation criteria has reflected the differentiated perception of how potential buyers perceive the “show store” concept, while store image and atmosphere are not correlated with the buyers’ gender, age or level of education. These conclusions, together with the analysis of the motivation for visiting the stores for shopping and entertainment purposes, confirm the perception that stores are places that combine usefulness (purchase) and pleasure (entertainment, i.e. show store) where the innovative technologies play a key part.

Another conclusion refers to the fact that, statistically speaking, the shopping frequency is heavily influenced by store atmosphere and the implementation of innovative technologies. Therefore, after using the regression method, we learnt that respondents, who think that store atmosphere and modern technologies used to generate atmosphere have a major influence on the purchasing process, visit stores more frequently.

Last, but not least, the interest expressed by consumers for certain advantages of innovative technologies (in particular regarding the product visibility and store attractiveness) represent useful aspects in the process of their implementation as well as in the process of designing new innovative technologies, information that can be used in order to establish the coordinates for further research.

This paper identifies the advantages of implementing innovative technologies in store ambiance and it, therefore, allows merchants to understand the opportunity of investing in this respect.

By means of the methodology designed, this research was limited to investigating consumers’ perspective regarding the use of innovative technologies in order to create store ambiance. Future research directions are aimed at studying the efficiency of implementing these technologies from the merchants’ perspective. Another limit of the research refers to the extent to which there is an understanding with respect to the advantages of using innovative technologies with an impact on the purchasing process, which leads to the opportunity of conducting in-depth interviews with the merchants in the future. Furthermore, since technology is constantly evolving, an objective of future research might be updating the questionnaire in accordance with the new trends.

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