

NEUROMARKETING TECHNIQUES AND TOOLS APPLICABLE IN RETAIL

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Abstract—For companies and society, the impact of neuromarketing is significant because it can uncover automatic decision-making processes, how and why consumers make a certain decision, and this reveals important information about consumer behavior. Retail is changing considerably and the evolution of the market presents many opportunities in the online environment. Online retailers identify purchasing patterns by using consumer neuroscience. The choices a consumer makes are largely from the subconscious mind. Neuromarketing is a new field that studies what's inside a consumer's mind, what drives their decisions, what appeals to them, and what they don't like.

In this sense, we carried out a quantitative marketing research with the theme “Opinions and attitudes of Romanians regarding their participation as volunteers in neuromarketing research to observe their buying habits”. The results of the research can help consumers to analyze their buying behavior, retailers to improve their product and promotion techniques, and marketing specialists to learn about the types of consumers and their way of acting in the buying process.

Index Terms—neuromarketing, marketing research, retail.

INTRODUCTION

The way of presenting a product has evolved, advertisements are now better or maybe more aggressive. The consumer bears all these changes; and, depending on how they receive the information, they will make their choices.

By incorporating neuromarketing techniques, retailers aim to create a shopping environment that is more appealing, engaging and conducive to making purchasing decisions, ultimately increasing sales and customer satisfaction.

The consumer has a very important role in the retail market; therefore, knowing their behavior is essential.

A new field, which allows for a deeper study of consumer behavior, is neuromarketing. Neuromarketing, as a term, refers to the description of a brain activity under the effect of marketing stimuli. Companies use EEG (electroencephalograph) technology to research the activity of the brain when it notices a certain brand.

Certain physiological indicators, such as skin temperature or eye movement, are measured to observe how people respond to advertisements or at the sight of a product.[1].

Neuromarketing is built upon at least three basic scientific fields that together form the science of the brain. They are: Neuroscience, Social Psychology and Economic Behavior. [2].

The methods used in neuromarketing go far beyond traditional data collection techniques because they focus on interpreting the changes in neurological, physiological and biological aspects to various marketing stimuli.

The techniques used in neuromarketing focus on studying emotions and understanding the consumer's brain.

People cannot approximate their level of attention when reading a message, because this attention is below the level of awareness. "Neuromarketing techniques are designed to show whether a message has captured any form of attention, whether conscious or subconscious, automatic or intentional, which makes a huge difference in the ability to create a successful message" [3].

In retail, neuromarketing tools are used to study the buying behavior of consumers, but also to optimize the shopping experience. Researchers have identified the following neuromarketing tools: Eye-Tracking Technology; Brain Imaging; Facial Expression Analysis; Biometric Feedback; EEG studies (Electroencephalography); Implicit Association Tests; Heatmaps and Hot Zones; Sensory Marketing; Virtual Reality (VR); Augmented Reality (AR) [2] [4] [5].

In this context, we found it very interesting and useful to carry out a quantitative marketing research in which to study the opinions and attitudes of Romanians regarding their participation as volunteers in neuromarketing research, for the observation of the buying behaviors.

Literature Review

Neuromarketing is a new direction in marketing that uses brain research, neuroimaging, in order to study consumer behavior. In fact, this is one of the tools of customer relationship management (CRM), built upon the fundamental understanding of how the nervous system mechanism works [6] [7].

Regarding the influence of neuromarketing in retail, we appreciate that stories are what sell products or services. They are a surefire way to grab attention and stir emotions. For the best story, it is necessary to create a world with sensory details that make people feel connected to it [8].

Consumers' brains are constantly forming associations, and once they are firmly established, they will be hard to change. If a consumer is consistently satisfied with a product or service, the pleasant experience will become attached to the brand, just as the bad experiences with a brand. [9].

Assessing consumer preferences and how they make decisions by means of neuromarketing techniques is most beneficial for customers and marketing. According to Zurawicki, more than 90% of information is processed by the subconscious mind. Neuromarketing research reveals reality much better than traditional methods of analysis based on questionnaires and interviews.

For companies and society, the impact of neuromarketing is significant because it can uncover automatic decision-making processes, how and why consumers make a certain decision, and this reveals secret information about consumer behavior. Retail is changing considerably, and market evolution presents many opportunities in the online environment. Online retailers identify purchasing patterns using consumer neuroscience. Emotions play an important role in retail trade, and retailers may be able to better respond to consumer needs. It is necessary to create a whole experience for the consumer so that they act through the prism of emotions; thus, it will remain in his/her memory [10].

Lluís Martínez-Ribes, an expert in retail innovation, stated at the “Retail Revolution” conference that neuromarketing is important in retail due to the fact that most decisions (between 85 and 95%) are made without conscious involvement. He also stated that you can only stay on the market if you are part of the consumer’s life, so you have to provide consumers with information according to their habits. [11].

Retail brands need to realize that by knowing consumers and what they want they can achieve success. Through neuromarketing tools and techniques, retailers can “read” the consumers’ minds and find out what really catches their attention. [12].

METHODOLOGY

Within this paper, a study was carried out that is part of a quantitative marketing research. The ultimate goal of the research is to identify the opinions and attitudes of Romanians regarding their participation as volunteers in neuromarketing research, in order to observe the buying habits.

The main research objectives were the following:

- O1 To identify the reasons why respondents *want* to participate in a neuromarketing research as volunteers;
- O2 To identify the reasons why respondents *do not want* to participate in a neuromarketing research as volunteers;
- O3 To determine the importance of the following aspects: full information on the conduct of neuromarketing research; transparency regarding the purpose for which such research is conducted, and personal data protection for respondents;
- O4. To determine the Romanians’ level of awareness regarding the fact that certain advertisements influence their purchasing behavior;
- O5. To determine the Romanians’ level of awareness regarding the fact that certain advertisements are aggressive;
- O6. To identify the Romanians’ degree of willingness to participate in neuromarketing research conducted by retailers in order to help them improve their product or advertising.

In order to achieve these objectives, the data were collected by means of a questionnaire, which was drawn up after thoroughly researching the specialized literature, the existing studies, complemented with the author’s professional experience.

The questionnaire was pretested on 50 respondents, because it was intended to rule out the probability of ambiguities. It includes 24 questions, of which 8 are of a socio-demographic nature. The questionnaire was created in Google Forms, and its link was distributed on the social networks; the duration of filling it out being approximately 15 minutes.

Citizens living in Romania, regardless of ethnicity, gender or social status, participated in this survey. The collection of answers took place between June 1st and July 31st, 2023. These respondents were invited to fill out the questionnaire through the link provided by e-mail. These respondents were invited to fill out the questionnaire via the link provided by email. Subsequently, these participants were requested to provide details of other individuals who would be interested in joining. Through this sampling method, the survey questionnaire was sent to approximately 2,000 subjects. [12]

The obtained data were processed by means of the software IBM SPSS Statistics 20 [13] resorting to various data analysis methods.

TABLE I
DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE

		Frequency	Percent (%)	
Gender	Male	388	48	
	Female	420	52	
Age	20-30	512	63.3	
	31-40	172	21.3	
	41-50	48	6	
	Over 50	76	9.4	
Income*	Below 1000 RON	248	30.7	
	1000- 2500 RON	308	38.1	
	2501- 4000 RON	192	23.8	
	Over 4000 RON	60	7.4	
Education	High school degree	500	61.8	
	Bachelor's degree	308	38.2	

Author's own processing

The authors organized and fully supervised the research process, during the development and implementation of the analysis on the data in the questionnaire. Thus, 808 respondents, residents from all over Romania, both male and female, with various pursuits and different levels of graduated studies, answered this questionnaire.

Results and discussions

The results are presented and grouped according to the research objectives, and the performed analyses are presented in a logical sequence, which allows obtaining relevant results.

O1 Identifying the reasons why respondents want to participate in a neuromarketing research as volunteers

Asked if they would be interested in participating as volunteers in a marketing research aimed at analyzing their own buying behavior, 84.65% of the respondents answered that they would accept to participate.

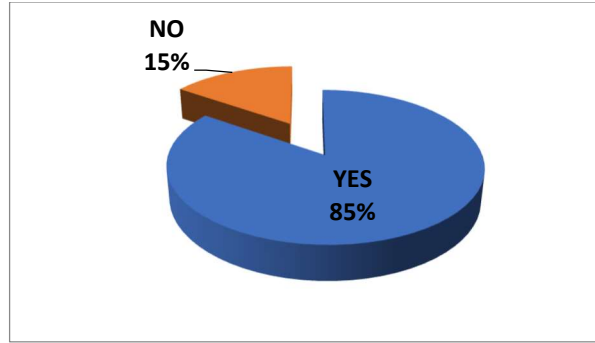


Fig. 1. Agreement to participate as a volunteer in neuromarketing research
Author's own processing

The reasons why the respondents, in a significant percentage, stated that they would participate in a research of this kind can be found in Table 2.

TABLE 2
REASONS FOR PARTICIPATING IN THE RESEARCH

Reasons for participating in the research		Frequency	Percent	Valid percent	Cumulative percent
Valid	To observe how a neuromarketing research is conducted	304	37.6	44.4	44.4
	To find out what kind of buying behavior I have	380	47	55.6	100
	Total	684	84.7	100	
Missing		124	15.3		
Total		808	100		

Author's own processing

After analyzing the results obtained, it can be seen in the table of frequencies that 55.6% of the respondents stated that they wanted to participate in the research in order to find out their type of buying behavior, whereas 44.4% chose to participate in order to observe how a neuromarketing research is usually conducted. Accordingly, the general hypothesis “Most of the respondents want to participate in this type of research in order to have their purchasing behavior determined” is accepted.

We analyzed the relationship between the respondents’ age and their desire to participate as volunteers in a future research and obtained the following results, which can be found in table 3.

TABLE 3
THE LINK BETWEEN THE RESPONDENTS’ AGE AND THEIR AGREEMENT TO PARTICIPATE AS VOLUNTEERS IN A FUTURE RESEARCH

What age group do you belong to?						
		20- 30 years	31-40 years	41- 50 years	Over 50 years	Total
Would you be interested in volunteering for neuromarketing research aimed at understanding your buying behavior?	yes	424	152	44	64	684
	no	88	20	4	12	124
Total		512	172	48	76	808

Author's own processing

We find that among the 85% respondents who declared that they would participate as volunteers, approximately 62% are aged between 20-30 years, 22% fall between 31-40 years old, which denotes that people in the age range of 20-40 years want to know their own consumer behaviors when they are influenced by different stimuli. Moreover, they are interested in finding out how neuromarketing research is conducted and what it consists of.

O2 Identifying the reasons why respondents do not want to participate in a neuromarketing research as volunteers

Given the percentage of 15% of respondents who stated that they did not want to participate in such a study, the reasons why Romanians do not want to participate as volunteers in such research were also studied. See Table 4.

TABLE 4
REASONS FOR NOT PARTICIPATING IN THE RESEARCH

Reasons for not participating in the research		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not interested	20	2.5	16.1	16.1
	Not to be trusted	32	4	25.8	41.9
	I don't have enough information	24	3	19.4	61.3
	I don't find it useful for me	4	0.5	3.2	64.5
	I have no time	44	5.4	35.5	100.0
	Total	124	15.3	100.0	
Missing		684	84.7		
Total		808	100		

Author's own processing

The results show that the main reason for non-participation would be the fact that the respondents do not have time (35.5%), but also that they do not trust such research (25.8%).

O3. Determining the importance of the following aspects: full information on the conduct of neuromarketing research; transparency regarding the purpose for which such research is conducted, and the protection of personal data for respondents

In order to achieve this objective, we analyzed the importance of 3 aspects that the respondents can consider if they agree to participate in the research. See table 5.

The importance of the following aspects: full information on the conduct of neuromarketing research, transparency regarding the purpose for which such research is conducted, and personal data protection for respondents will be determined on a scale from 1 to 5, with 1 being “completely nonimportant”, and 5 - “completely important”.

TABLE 5
ASPECTS OF PARTICIPATION IN NEUROMARKETING RESEARCH

		Complete information on conducting neuromarketing research	Transparency regarding the purpose for which such research is carried out	Protection of personal data
N	Valid	684	684	684
	Missing	124	124	124
Mean		4.0409	4.0819	4.5263
Median		4.0000	4.0000	5.0000
Mode		4.00	5.00	5.00

Author’s own processing

We notice that fairly close scores were recorded for the 3 aspects analyzed. These scores range between 4 – “important” and 5 – “completely important”. Accordingly, the respondents take into account to a very large extent these 3 aspects that they consider important.

O4. Determining the Romanians’ level of awareness regarding the fact that certain advertisements influence their purchasing behavior

TABLE 6
THE EFFECTS OF ADVERTISEMENTS ON BUYING BEHAVIORS

The effects of advertisements on buying behaviors		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	572	70.8	83.6	83.6
	NO	48	5.9	7.0	90.6

	I don't pay much attention to this aspect	64	7.9	9.4	100.0
	Total	684	84.7	100.0	
Missing		124	15.3		
Total		808	100.0		

Author's own processing

For the objective “*Determining the Romanians’ level of awareness regarding the fact that certain advertisements influence their purchasing behaviour*”, the question “Are you aware that certain advertisements, announcements, and more, have certain effects on your brain, respectively on your purchasing behavior?”

Analyzing the answers, we notice (table 6) that most of the respondents believe that advertisements influence their buying behavior, even leading to the purchase of unnecessary objects or services. (See Fig 2) A significant percentage of Romanian respondents stated that they bought unnecessary products, under the impulse of advertisements.

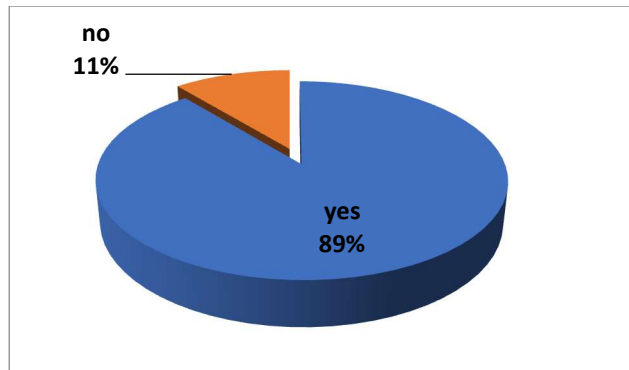


Fig. 2. Buying unnecessary products

Author's own processing

O5. Determining the Romanians’ level of awareness regarding the fact that certain ads are aggressive

The analysis has shown that a significant percentage (89.47%) of the respondents are aware and consider the ads to be aggressive. The percentage of respondents who stated that they buy products without needing them (89%) is very close to the percentage of respondents who consider advertisements to be aggressive. (88.4%).

Furthermore, the respondents were asked to express their opinion regarding the following statement: “Using imaging methods and techniques to monitor brain activity violates ethical norms”. The analysis of the answers has resulted in the following: 32.2 % chose the neutral option (Neither agreement / Nor disagreement), 23.3% disagree with this statement. 12.4% are in total disagreement with the statement; and, at the opposite pole, only 3% of the respondents believe that

using neuromarketing methods and techniques violates ethical norms. We considered the option (1 - strongly disagree, 5 – strongly agree – Likert scale).

From the table of descriptive statistics, it has emerged that both the modal value and the median have the value 3 on a scale from 1 to 5. The average score is 2.655 points out of a total of 5 points, the variation is 1.05 points, and the standard deviation is 1.025 points on a scale of 1 to 5.

O6. Identifying the Romanians’ degree of willingness to participate in neuromarketing research conducted by retailers in order to help them improve their product or advertising

Regarding the data analysis on the identification of Romanians’ willingness to participate in neuromarketing research conducted by retailers to help them improve their product/advertisement, it has been found that 56.1% of the respondents chose the option 4 “agree”, whereas 32.2% chose option 5 “strongly agree”.

TABLE 6
PARTICIPATION IN NEUROMARKETING RESEARCH CARRIED OUT BY RETAILERS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally disagree	8	1.0	1.2	1.2
	Disagree	20	2.5	2.9	4.1
	Neutral	52	6.4	7.6	11.7
	Agreement	384	47.5	56.1	67.8
	Totally agree	220	27.2	32.2	100.0
	Total	684	84.7	100.0	
Missing		124	15.3		
Total		808	100		

Author's own processing

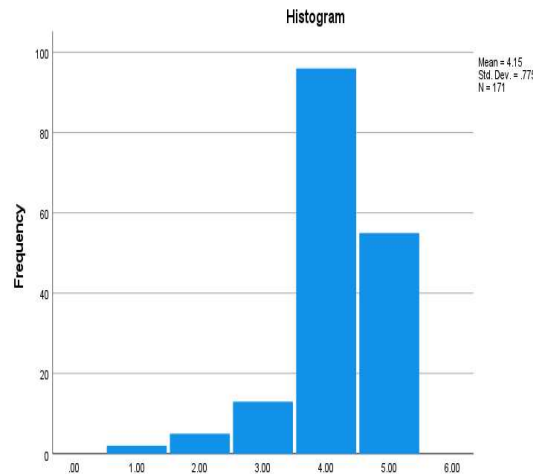


Fig. 3. Participation in neuromarketing research carried out by retailers

Author's own processing

According to the result of the descriptive statistics, it has turned out that both the modal value and the median have the value 4 on a scale from 1 to 5. The average score has 4.152 points out of a total of 5 points, the variation is 0.6 points, and the standard deviation is 0.7748 points on a scale from 1 to 5.

Conclusions

The retail market has evolved a lot over time, from barter to a simple click on the mobile phone. What is keeping this market alive? The consumers. They are the most important component of this market; therefore, knowing them is essential. What makes them buy? What is behind their purchase decision? Consumer minds can be easily read through neuromarketing techniques and tools.

Neuromarketing is a new field, which is in continuous development, but which promises many things. By means of medical devices, neuromarketing can build a fairly well-defined consumer profile. The concept of neuromarketing refers to the description of brain activity under the influence of marketing stimuli. So-called physiological indices such as: skin temperature or eye movement can be measured to see how people respond to certain advertisements. These techniques, which neuromarketing focuses on, are based on the knowledge of the consumer's brain and the study of emotions. Emotions are most important when a consumer makes a certain purchase because in most cases purchases are made from the subconscious mind. Consumers form associations between brand and product, and if a product is not to their liking, then they will attach a negative image to that brand, which they will find difficult to change.

Through neuromarketing retailers can improve their product to market exactly what consumers want to see. They can avoid aggressive or boring advertisements and provide a more pleasant in-store experience for consumers.

Economy and lifestyle have impacted retail. And not only that, but the government too. Traders must comply with certain safety laws and health regulations.

One of the most important conclusions after completing this research is that Romanians want to participate in a neuromarketing research to find out what type of buying behavior they have, what exactly influences them in their purchase decision and what they could do about it.

Following the results of the research "Opinions and attitudes of Romanians regarding their participation as volunteers in conducting neuromarketing research in order to observe their buying habits" we found that 84.7% of the 808 respondents are willing to participate as volunteers in neuromarketing research that aims to study their purchasing behaviors. Those unwilling to participate mentioned either not having time or not having enough information. And those willing to participate want it in order to learn what kind of buying behavior they have, or to observe how a neuromarketing research is conducted. Many of the respondents consider advertisements to be aggressive and have purchased items under the influence of ads.

The results of the research can help consumers to analyze their buying behavior, retailers to improve their product and promotion techniques, and marketing specialists to learn about the types of consumers and their way of acting in the buying process.

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