

**ETHICAL ISSUES in NEUROMARKETING: PERCEPTIONS of UNIVERSITY STUDENTS\*****Asst. Prof. Gulcin BILGIN TURNA <sup>1</sup>, Lale BABUS <sup>2</sup>**<sup>1</sup> Recep Tayyip Erdogan University, Faculty of Economics and Administrative Sciences, Rize, Turkey.ORCID: 0000-0003-1684-6548 [gulcin.turna@erdogan.edu.tr](mailto:gulcin.turna@erdogan.edu.tr)<sup>2</sup> ORCID: 0000-0002-8784-0381 [babuslale@gmail.com](mailto:babuslale@gmail.com)**ABSTRACT**

Changing economic conditions, technology and consumer expectations have brought new perspectives to marketing. Marketers have turned to new research methods such as “neuromarketing” that can explain the underlying reasons for purchasing decisions that cannot be explained by traditional methods. Neuromarketing is a science that examines the subconscious reactions of human brain’s responses to a marketing stimuli such as advertisements, music, brand names and slogans. Neuroscience research uses brain images obtained by connecting medical devices to the participants’ body. Based on the assumption that individuals’ statements may be misleading, neuroscience is utilized to study the biological responses of the brain. Most of our behaviors are governed by the brain below humans’ level of consciousness. Consumers do not make a purchase decision about a product simply because it is good quality or price since the brain does not always act according to rational decisions. The neuromarketing approach mainly deals with irrational and subconscious part helping producers to create brand value in accordance with consumer preferences. Today, many companies benefit from neuromarketing methods especially in politics, advertising, entertainment, logo and product design. The most important advantage of neuromarketing research over traditional research techniques is that it demonstrates the difference between the consumers’ declaration and what they actually think. Neuromarketing allows to monitor what is actually going through people’s minds which leads to mutually beneficial relationships. However, there is a disagreement about whether neuromarketing is ethical and the medical devices used on humans are healthy or not. Some neuroscientists are in favor but some are against using neuromarketing techniques in marketing. The techniques are costly and violation of the privacy is an ethical concern despite the fact that the results are meant to be beneficial to humanity.

The aim of this study was to determine the perceptions of university students about neuromarketing. A questionnaire was created to measure three dimensions about neuromarketing: knowledge and awareness, interest and willingness to participation, and ethical issues. It was applied to the university students (n=346) in 2018 in Rize/Turkey. According to the results, students’ perspectives on neuromarketing do not differ according to their gender or income. Majority of the participants have heard the concept of neuromarketing, they have knowledge about it and believe it is a scientific technique. They find the techniques very exciting but they are undecided about being a participant in such research because of the ethical issues and possible side effects of the medical devices.

**Keywords:** Marketing, Neuromarketing, Neuroethics.

**INTRODUCTION**

The human body is full of systems. Some protect us. Other nourish us or keep us moving. But there is one system that controls all the others. And it might be the one that truly makes you you: the nervous system. To put it simply, it perceives the world and tells you how to react to it. Should you jump? Run? Eat? Shiver? Cry. It makes all of those split-second decisions, and it also creates emotions, ideas, and memories. Altogether, it’s one incredible machine that never stops reacting. Nervous system is an astonishing universe that lives right inside our bodies to uncover the systems that make us human. It sits inside the skull in total darkness. Three pounds of grayish-white matter. It’s more than 80% water, with a little fat and a little protein: the brain. It is the mission control of the human body and the nervous system. It’s in charge of how we react to everything. The brain is pure processing power, connected to a giant network of nerves and fibers that work in perfect synergy to turn data to action (Human, The World Within, React, Netflix series). It is the brain that is responsible for all our actions as well as the consumer behavior. Although the brain is only 2% of our body mass, it burns about 20% of our energy. Most of the functions we need to spend a day are governed by the brain below humans’ level of consciousness. This explains why almost 80% of brain energy

\* Adapted from Lale Babus’s master thesis.

is necessary to maintain the state of rest or presumed mode, so people use only 20% of their brains consciously (Morin, 2011).

Consumers do not buy something just because it is good quality or at a reasonable price. Neuromarketing deals with irrational and subconscious part of human brain for the purpose of helping producers and marketers to create brand value in accordance with consumer taste. Today, many powerful companies benefit from these methods (Renvoise and Morin, 2010: 15-16). Commercials, political speeches, advertising, music, logo and product design are just some of the areas in which neuromarketing is mostly used.

With the convenience of the Internet, the fast access to information has created concerns about how consumers make decisions in a highly competitive environment. Thus, marketers have turned to new research methods such as neuromarketing. It explains the reasons underlying reasons for purchasing decisions that cannot be explained by traditional methods through neuroscience. Irrational decisions that affect the purchasing decision can be examined. "Neuromarketing is a science that examines the subconscious reactions of human brain's responses to a marketing stimuli" (Suomala et al., 2012:12; Senior et al., 2007) such as specific brands, slogans, and advertisements (Phan, 2010:14).

Neuroscience research connects medical devices to the participants' body. Thus, there is a disagreement about whether neuromarketing is ethical and the medical devices used on humans are healthy or not. Some neuroscientists object to the use of these techniques in marketing. Since neuromarketing is a relatively new field, there is a need to make a contribution to the related literature. In this study, general information about neuromarketing, application areas, neuromarketing techniques and the advantages and disadvantages of neuromarketing are given. Then, participants' perceptions on neuromarketing are evaluated. At the end of the study, managerial implications and recommendations are stated.

The most important advantage of neuromarketing research over traditional research techniques is that it eliminates the difference between the consumers' declaration and what they actually think. When the participants try to make a different impression with the effect of the environment they are in, they will fail to tell their true feelings. In such case, market research will be no more than cost and time loss. Therefore, businesses focus on neuromarketing to create the best product and marketing strategies in a faster way (Kaya, 2009: 17). Neural activity images combined with conventional tools might produce more effective marketing practices (Fugate, 2007).

Neuromarketing claims that subconscious factors are more effective when consumers make decisions during purchase. When the conscious and subconscious come into conflict, the subconscious always wins. In this situation, traditional methods are insufficient for marketers, and neuromarketing comes into play with the benefits of neuroscience. Neuromarketing analyzes the data declared by the brain, not according to the statements of consumers, with the help of devices used in the field of neuroscience. This method, which can be considered new, focuses on solving the decision-making mechanism of the consumers' brain.

## LITERATURE REVIEW

Brain scanning devices used in neuromarketing research have been used especially by psychologists and some experts since 1980s. The neuromarketing approach is based on the neuroscientist Antonio Damasio's claim that people make decisions by using emotional parts rather than rational parts of their brains. The concept of neuromarketing was first introduced by Harvard University in the 1990s. The concept of neuromarketing has been developed as a science since then (Tuzel, 2010).

US companies such as Brighthouse and SalesBrain, were first to provide neuromarketing research and consultancy services in the field of cognitive neuroscience. The first neuromarketing research was conducted by Read Montague, a professor of neuroscience at Baylor College of Medicine in 2003 and published in 2004 under the name "neuron". The ethical dimension of neuromarketing research came to the fore in 2002; the term "neuroethics" was first used by William Safire who is an American journalist and presidential speechwriter (Sebastian, 2014).

The aims of neuromarketing can be: sell more accurate products, determine in advance what kind of package, label, advertisement or advertisement will be affected according to the personal characteristics of the people, establishing a link between the attractiveness of an object and the desire of the person to obtain it, advertisers

to measure people's interest in products from neuron mobility in their brain in advance, to conduct lower-cost marketing activities (Hatip, 2008).

The methods used neuromarketing are "fMRI (Functional Magnetic Resonance Imaging), SST (Steady State Topography), EEG (Electroencephalography-Elektroensefalografi), MEG (Magnetoencephalography-Manyetoensefalografi), TMS (Transcranial Magnetic Stimulation), Eye-Tracking, SPECT (Single Photon Emission Computed Tomography), FACS (Facial Action Coding System), Galvanic Skin Response, PET (Positron Emission Tomography) (Lee et al., 2006; Ahlert et al., 2006; Knutson et al., 2007; Koenigs and Tranel, 2008; Bozkurt, 2014: 41).

Ariely and Berns (2010) suggested that marketers are excited about brain imaging for two main reasons: they hope that "neuroimaging will provide a more efficient trade-off between costs and benefits" and they hope "it will provide an accurate marketing research method that can be implemented even before a product exists". Ariely and Berns also proposed a product development cycle by using fMRI in two places: before and after design the product. Neuromarketing monitors what really is going through people's minds and that leads to mutually beneficial inter-organizational relationships (Ural, 2008). Despite the fact that "results are beneficial to humanity", neuromarketing methods are costly. What's more, "violation of the privacy" is an ethical concern (Bayir, 2016: 51) (Ozyer and Azizoglu, 2010:62).

Many universities in the USA and Europe are actively conducting research in the field of neuroscience. In neuroscience lab at the Copenhagen Business School students are provided with an environment where they can do their own research. Pepsi, Coca-Cola, Campell's Soup, Gerber, Fritolay, Paypal, Google, Microsoft, Hyundai, Facebook and Vodafone are some global companies that benefit from neuromarketing research. Buyology, EmSense, Gallup & Robinson, Innerscope Research, MindSign, NeuroFocus and Sands Research provide consulting services in the USA in the field of neuromarketing. MindLab International, Mindmetic and NeuroSense are companies in the UK. Neuroconsult and Thinkneuro operate in Turkey (Cakar, 2011). Applications in the field of neuromarketing, which is a relatively new subject in Turkey, are usually for commercial purposes. Due to the high cost of studies, insufficient information about the experimental stage and ethical concerns, the number of applied studies is quite low. Neuromarketing has also generated controversies concerning the involvement of medical professionals, namely for the field of psychiatry (Fisher et al., 2010). Wilson et al. (2008) suggest that the "potential restriction of free will and privacy invasiveness" enabled by neuroimaging technology requires attention by governmental and academic constituencies. Neuromarketing Science & Business Association (NMSBA) developed the code of ethics, which provides guidelines on conducting neuromarketing studies ethically.

Hensel et al. (2016) created a guideline called "Ethical Guideline in Neuromarketing" (EGNM): "fair level of incentives, restriction of stealth marketing, protection and participation of vulnerable groups, debriefing of participants, disclosure of tools/measurement scales and accurate communication of the results". A year later in 2017 Hensel et al. decided to refine and improve the EGNM guideline. They conducted a qualitative study by interviewing 10 experts and identified five ethical aspects: "a sufficient sample size for neuromarketing studies, the need for a specific quality check of neuroscientific data, no neuromarketing studies for optimizing "unhealthy" products, e.g. tobacco or alcohol industry, especially with respect to youth customers, and particularly the problem of using non-scientific tools and methods in neuromarketing". Murphy et al. (2008) came up with some recommendations regarding stealth neuromarketing: "protection of research subjects; protection of vulnerable niche populations from marketing exploitation; full disclosure of goals, risks, and benefits; accurate media and marketing representation; internal and external validity."

## RESEARCH METHODOLOGY

This study is limited to the students of Recep Tayyip Erdogan University Institute of Social Sciences and Faculty of Economics and Administrative Sciences in Rize province of Turkey. In the first part of the questionnaire, there are 5 questions about the demographic characteristics of the participants (gender, age, marital status, education level, and monthly individual income). In the second part of the questionnaire, the scale by Eser et al. (2011) and Kesek (2017) is used. There are 13 questions with 3 dimensions (knowledge and awareness about neuromarketing; interest and participation in neuromarketing applications; and thought of whether neuromarketing is ethical). The 5-point Likert (Strongly disagree, disagree, undecided, agree,

strongly agree) type scale was used to determine the level of participation. The questionnaire is presented in Annex.1.

390 students were reached during the course and a brief explanation was made about neuromarketing by means of collective bargaining and a questionnaire was requested. 44 of the questionnaires obtained were not evaluated because they were filled out incorrectly. The remaining 346 questionnaires were evaluated.

## DATA ANALYSIS

As the questionnaire was applied to the students, the variables of marital status and educational status were not included in the hypotheses and were shown only in the frequency tables. Thus, main questions to be answered are as follows: Do consumers' perceptions on neuromarketing differ according to their gender and income? Are three dimensions of neuromarketing scale correlated to each other?

The frequencies of the demographic data are given in Table 1. After analyzing the validity and reliability of the data, nonparametric tests were performed because the data did not show normal distribution.

**Table 1 - Frequencies of Demographic Data**

	N	%
<b>Gender</b>		
Female	227	65,6
Male	119	34,4
<b>Age</b>		
18 - 25	310	89,6
26 - 35	33	9,5
36 - 45	3	0,9
<b>Marital status</b>		
Single	326	94,2
Married	20	5,8
<b>Education level</b>		
Undergraduate	319	92,2
Graduate	1	0,2
Master student	22	6,4
PhD student	4	1,2
<b>Monthly individual income</b>		
\$100 or less	262	75,7
\$101 - \$250	59	17,1
\$251 - \$300	18	5,2
\$301 - \$350	2	0,6
\$351 or more	5	1,4

Table 1 shows that most of the students were female aged 18 to25, with a monthly individual income of \$100 or less.

**Table 2 - Neuromarketing Scale Frequencies, N (%)**

«knowledge and awareness» Mean = 3,39	1 Strongly disagree	2 Disagree	3 Undecided	4 Agree	5 Strongly agree	Mean ± St.dev.
1. I have heard about neuromarketing.	51 (14,7)	43 (12,4)	18 (5,2)	135 (39)	99 (28,7)	3,54 ± 1,40
2. I am knowledgeable about neuromarketing.	77 (22,3)	70 (20,2)	52 (15)	103 (29,8)	44 (12,7)	2,90 ± 1,38
3. Neuromarketing is a new and scientific technique in consumer research.	19 (5,5)	28 (8)	95 (27,5)	154 (44,5)	50 (14,5)	3,54 ± 1,02
4. Neuromarketing research is costly.	13 (3,7)	20 (5,8)	146 (42,2)	84 (24,3)	83 (24)	3,59 ± 1,03
5. Neuromarketing gives better results compared to traditional marketing research.	15 (4,3)	22 (6,4)	172 (49,7)	91 (26,3)	46 (13,3)	3,38 ± 0,94
<b>«interest and participation» Mean = 3,16</b>						
6. Neuromarketing techniques can be an exciting experience for the participants.	43 (12,4)	25 (7,2)	101 (29,2)	125 (36,2)	52 (15)	3,34 ± 1,19
7. I would like to be a part of a neuromarketing research.	66 (19)	40 (11,6)	102 (29,5)	88 (25,4)	50 (14,5)	3,05 ± 1,31
8. Neuromarketing research provides valuable information.	16 (4,6)	14 (4)	139 (40,2)	132 (38,2)	45 (13)	3,51 ± 0,93
9. I know some brands that use neuromarketing techniques.	104 (30,1)	78 (22,5)	94 (27,2)	46 (13,3)	24 (6,9)	2,45 ± 1,24
10. Neuromarketing will attract more attention in the future.	27 (7,8)	17 (4,9)	130 (37,6)	103 (29,8)	69 (19,9)	3,49 ± 1,10
<b>«thinking of whether neuromarketing is ethical» Mean = 3,17</b>						
11. Companies that use neuromarketing techniques make consumers buy things they don't need.	32 (9,2)	38 (11)	179 (51,7)	69 (20)	28 (8,1)	3,07 ± 1,00
12. Neuromarketing techniques are ethical.	19 (5,5)	32 (9,2)	198 (57,2)	69 (20)	28 (8,1)	3,16 ± 0,90
13. Medical devices used in neuromarketing research have side effects.	15 (4,3)	20 (5,8)	214 (61,8)	46 (13,3)	51 (14,8)	3,28 ± 0,94

As shown in Table 2, according to the results of the five statements evaluated within the scope of “knowledge and awareness” of the neuromarketing scale; it was concluded that half of the participants did not express a clear opinion. There were participants who were not as knowledgeable as the participants who had

knowledge. Neuromarketing is perceived as as a newer and scientific technique which is costly and gives better results compared to traditional marketing techniques. On the other hand, it was found that the participants expressed moderate and high levels of positive opinion. According to the results of the next five statements which were scored within the scope of “interest and participation” of the neuromarketing scale; the participants find neuromarketing techniques exciting. 39,9% of the respondents want to participate in a neuromarketing research. They think that the information obtained by neuromarketing is valuable, they do not know about the brands that use neuromarketing and they think that neuromarketing will attract more attention in the future. According to the results of the last three statements marked within the scope of “thinking of whether neuromarketing is ethical”; the students think that neuromarketing techniques are effective on consumer decisions, and they do not express a clear opinion about the side effects of the medical devices used.

**Table 3 – Normality Test for Neuromarketing Scale**

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistics	sd	p	Statistics	sd	p
<b>Neuromarketing</b>	0,071	346	0,000	0,989	346	0,013

Statistically significant at the 0,05 level

According to the reliability analysis of the neuromarketing scale, the Cronbach’s Alpha value is 0.874, which is at a high level of reliability. The results of the normality test for the selection of analysis methods are shown in Table 3. Since the data did not show normal distribution ( $p < 0.05$ ), the analyses were made using non-parametric tests.

**Table 4 – Mann Whitney U Test**

N (mean  $\pm$  standard deviation)

Dimensions of neuromarketing	Female	Male	Total	P
knowledge and awareness	227 (3,43 $\pm$ 0,90)	119 (3,31 $\pm$ 0,95)	346 (3,39 $\pm$ 0,92)	0,264
interest and participation	227 (3,20 $\pm$ 0,86)	119 (3,10 $\pm$ 0,89)	346 (3,17 $\pm$ 0,87)	0,174
thinking of whether neuromarketing is ethical	227 (3,17 $\pm$ 0,56)	119 (3,16 $\pm$ 0,6)	346 (3,17 $\pm$ 0,58)	0,849

Statistically significant at the 0,05 level

Do consumers’ perceptions on neuromarketing differ according to their gender? According to the findings in Table 4, the answer is no. It is concluded that the differentiation in sub-dimensions of neuromarketing approach according to gender is not statistically significant [ $p > .05$ ].

**Table 5 – Kruskal Wallis Test**

N (mean  $\pm$  standard deviation)

Dimensions of neuromarketing	\$100 or less	\$101 or more	Total	P
knowledge and awareness	262 (3,34 $\pm$ 0,91)	84 (3,60 $\pm$ 0,96)	346 (3,39 $\pm$ 0,92)	0,134
interest and participation	262 (3,18 $\pm$ 0,85)	84 (3,15 $\pm$ 0,97)	346 (3,17 $\pm$ 0,87)	0,488

thinking of whether neuromarketing is ethical	262 (3,16 ± 0,57)	84 (3,18 ± 0,54)	346 (3,17 ± 0,58)	0,932
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Statistically significant at the 0,05 level

Do consumers' perceptions on neuromarketing differ according to their monthly individual income? According to the findings in Table 5, the answer is no. It is concluded that the differentiation in sub-dimensions of neuromarketing approach according to their monthly individual income is not statistically significant [ $p > .05$ ].

**Table 6 – Spearman Correlation**

Dimensions of neuromarketing	knowledge and awareness	interest and participation	thinking of whether neuromarketing is ethical
knowledge and awareness	-	$r=0,70$ : $p=0,000^*$	$r=0,39$ : $p=0,000^*$
interest and participation	$r=0,70$ : $p=0,000^*$	-	$r=0,38$ : $p=0,000^*$
thinking of whether neuromarketing is ethical	$r=0,39$ : $p=0,000^*$	$r=0,38$ : $p=0,000^*$	-

Table 6 demonstrates the results of the Spearman Correlation test to find out if there is a correlation between the dimensions of neuromarketing. Do the dimensions of neuromarketing correlate with each other? Yes. The highest correlation is found to be between “knowledge and awareness” and “interest and participation” ( $r=0.70$ ). Once knowledge and awareness about the neuromarketing increases, respondents' interest and willingness towards participation in neuromarketing research increases. As the knowledge increases, respondents tend to think that neuromarketing is ethical.

## CONCLUSION

The neuromarketing perspective does not differ according to gender or monthly individual income. Dimensions of neuromarketing are correlated to each other. The majority of the participants have heard about neuromarketing before and have knowledge about it. Although they think neuromarketing is a scientific technique and it is exciting to participate, the majority do not want to be a participant in neuromarketing research. They think that the information obtained through neuromarketing is valuable, however they are undecided about whether it is ethical or not. Since it is thought that the neuromarketing approach will attract more attention in the future, studies in this field can be increased and supported. With the continuing development of the neuromarketing technology, experiments will probably reveal more effective results.

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