

**THE REPUBLIC OF TURKEY**  
**BAHCESEHIR UNIVERSITY**

**CONSUMER AWARENESS OF**  
**NEUROMARKETING APPLICATIONS IN**  
**TURKEY**

**Master's Thesis**

**CANSU BOZDAĞ**

**ISTANBUL, 2016**



**THE REPUBLIC OF TURKEY  
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**GRADUATE SCHOOL OF SOCIAL SCIENCES  
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**Supervisor: PROF.DR.ÖZGÜR ÇENGEL**

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Name of the thesis: Consumer Awareness of Neuromarketing Applications in Turkey

Name/Last Name of the Student: Cansu Bozdağ

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The thesis has been approved by the Graduate School of Social Science.

Yrd.Doç.Dr.Burak Küntay

Graduate School Director

Signature

I certify that this thesis meets all the requirements as a thesis for the degree of Master of Arts.

Doç.Dr.Ela Ünler

Program Coordinator

Signature

This is to certify that we have read this thesis and we find it fully adequate in scope, quality and content, as a thesis for the degree of Master of Arts.

Examining Committee Members

Signature

Thesis Supervisor

Prof. Dr. Özgür Çengel

Member

Doç.Dr.Figen Yıldırım

Member

Yrd.Doç.Dr. Gülberk Gültekin Salman

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## ÖZET

### TÜRKİYE’DE NÖRO PAZARLAMA UYGULAMALARININ FARKINDALIĞI

Cansu Bozdağ

İşletme Anabilim Dalı

Tez Danışmanı: Prof.Dr. Özgür Çengel

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Pazarlama alanında yapılan çalışmaların günümüzdeki rekabetçi koşullarla baş edememesi ve pazarlama bütçelerinin yarısının boşa gitmesi geleneksel pazarlama yöntemlerine ilave olarak yenilikçi pazarlama yöntemlerine ihtiyaç doğurmuştur. Bu kapsamda nöropazarlamanın önemi son yıllarda fark edilir olmuştur. Nöropazarlama, nörobilimdeki fMRI, EEG, MEG gibi beyin görüntüleme tekniklerinin pazarlama alanına uygulanmasıyla gerçekleşmektedir. Bu çalışmada yeni bir alan olan nöropazarlama hakkındaki literatür taranmış, nöropazarlama uygulama teknikleri ve nöropazarlamanın pazarlama girdilerine etkileri açıklanarak tüketicilerin Türkiye’deki nöropazarlama uygulamalarını farkındalığı incelenmiştir.

Çalışmanın araştırma kısmında, geleneksel pazarlama ve nöropazarlamanın bilinirliğini ölçmek ve bu seviyeleri etkileyen faktörler tespit edilmeye çalışılmıştır. Sonuçlar incelendiğinde nöropazarlama bilinirliğinin eğitim durumundan veya demografik özelliklerden bağımsız olarak düşük olduğu görülmüştür. Pazarlama alanında çalışıyor olmak bilinirliği artırırken; nöropazarlama hakkında bilgi sahibi olanların nöropazarlama araştırmaların gönüllü olarak katılımcı olma isteklerinin bilgi sahibi olmayanlara göre daha fazla olduğu saptanmıştır.

**Anahtar Kelimeler:** Nöropazarlama, Pazarlama, Farkındalık, Nöropazarlama uygulamaları, Beyin görüntüleme teknikleri

## ABSTRACT

### CONSUMER AWARENESS OF NEUROMARKETING APPLICATIONS IN TURKEY

Cansu Bozdağ

Business Administration

Thesis Supervisor: Prof.Dr. Özgür Çengel

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The facts that the studies conducted in the field of marketing cannot cope with the current competitive conditions and half of the marketing budgets go to waste have created need for innovative marketing methods in addition to the traditional marketing methods. In this context, the importance of neuromarketing has become appreciable in recent years. Neuromarketing is performed through the application of the neuroimaging techniques in neuroscience such as fMRI, EEG, MEG in the field of marketing. In this study, the literature on neuromarketing, which is a new field, was reviewed, the impacts of neuromarketing on marketing inputs were explained and the awareness of consumers for neuromarketing practices in Turkey was examined.

In the research stage of the study, it was tried to measure the awareness level of traditional marketing and neuromarketing and determine the factors affecting these levels. When the results were analyzed, the awareness level of neuromarketing was found to be low regardless of educational status or demographic features. While working in the field of marketing increases awareness, those who are knowledgeable with neuromarketing was determined to be more willing to participate in neuromarketing researches voluntarily than those with no knowledge about it.

**Keywords:** Neuromarketing, Marketing, Awareness, Neuromarketing Applications, Brain Scanning Methods

## CONTENTS

<b>TABLES .....</b>	<b>viii</b>
<b>ABBREVIATIONS .....</b>	<b>x</b>
<b>1. INTRODUCTION.....</b>	<b>1</b>
<b>1.1 DEFINITION OF MARKETING .....</b>	<b>2</b>
<b>1.2 DEVELOPMENT OF MARKETING .....</b>	<b>3</b>
<b>2. NEUROMARKETING .....</b>	<b>4</b>
<b>2.1 DEFINITION OF NEUROMARKETING.....</b>	<b>4</b>
<b>2.2 HISTORY OF NEUROMARKETING .....</b>	<b>5</b>
<b>2.3 UNDERSTANDING THE CONSUMER’S BRAIN.....</b>	<b>6</b>
<b>2.3.1 EEG .....</b>	<b>8</b>
<b>2.3.2 MEG .....</b>	<b>9</b>
<b>2.3.3 fMRI .....</b>	<b>9</b>
<b>2.4 THE INFLUENCE OF NEUROMARKETING ON MARKETING     INPUTS.....</b>	<b>10</b>
<b>2.4.1 Neuromarketing in Advertising .....</b>	<b>10</b>
<b>2.4.2 Neuromarketing in New Product Development .....</b>	<b>11</b>
<b>2.4.3 Neuromarketing in Product Design .....</b>	<b>12</b>
<b>2.4.4 Neuromarketing in Decision-making .....</b>	<b>13</b>
<b>2.5 ETHICAL ISSUES OF NEUROMARKETING .....</b>	<b>13</b>
<b>3. AWARENESS.....</b>	<b>15</b>

3.1 BRAND AWARENESS.....	15
3.1.1 Brand Recognition .....	16
3.1.2 Brand Recall .....	16
4. METHODOLOGY.....	18
4.1 AIM OF THE STUDY .....	18
4.2 RESEARCH DESIGN .....	18
4.3 LIMITATIONS OF THE STUDY .....	19
4.4 HYPOTHESIS .....	19
4.5 DATA COLLECTION AND ANALYSIS .....	20
4.6 RESULTS .....	20
4.7 CROSS TABULATION AND CHI-SQUARE TEST .....	29
5. CONCLUSION .....	36
REFERENCES .....	40
APPENDIX .....	44

## TABLES

Table 4.1: Gender.....	20
Table 4.2: Education .....	20
Table 4.3: Age .....	21
Table 4.4: Sectors of Work .....	21
Table 4.5: Working in Marketing .....	22
Table 4.6: Information about current marketing practices .....	22
Table 4.7: Knowledgeability Level of Traditional Marketing .....	22
Table 4.8 Knowledgeableness of traditional marketing methods.....	23
Table 4.9 Sufficiency of traditional marketing research .....	23
Table 4.10 Knowledgeability level of neuromarketing .....	24
Table 4.11 Where neuromarketing is learned from .....	24
Table 4.12 Knowledge of where neuromarketing techniques are used in .....	24
Table 4.13 Knowledgeableness of neuromarketing techniques .....	25
Table 4.14 Where neuromarketing techniques learned from .....	25
Table 4.15 Comparison of results of neuromarketing and traditional marketing .....	26
Table 4.16 Knowledge of the brands using neuromarketing techniques in Turkey .....	26
Table 4.17 Reliability of traditional marketing research techniques' results .....	26
Table 4.18 Participation in a neuromarketing research .....	27
Table 4.19 Knowledge level of the neuromarketing research techniques' benefits .....	27
Table 4.20 Benefits of neuromarketing research techniques .....	28
Table 4.21: Cross tabulation table for Hypothesis 1 .....	29
Table 4.22: Chi-Square test table for Hypothesis 1 .....	30
Table 4.23: Cross tabulation table for Hypothesis 2 .....	30
Table 4.24: Chi-Square test table for Hypothesis 2 .....	31

Table 4.25: Cross tabulation table for Hypothesis 3 .....	31
Table 4.26: Chi-Square test table for Hypothesis 3 .....	32
Table 4.27: Cross tabulation table for Hypothesis 4 .....	32
Table 4.28: Chi-Square test table for Hypothesis 4 .....	33
Table 4.29: Cross tabulation table for Hypothesis 5.....	34
Table 4.30: Chi-Square test table for Hypothesis 5 .....	34



## ABBREVIATIONS

EEG	:	Electroencephalography
MEG	:	Magnetoencephalography
FMRI	:	Functional Magnetic Resonance Imaging
4P	:	Product, Place, Price, Promotion
FG	:	Focus Group
Exp	:	Experiment
PhD	:	Doctor of Philosophy
SPSS	:	Statistical Package for the Social Sciences
Asymp.:		Asymptotic
Sig.	:	Significance

## 1. INTRODUCTION

In recent years, neuromarketing, which is mainly associated with using brain research in a managerial context, has come into prominence both in the academic and scientific world. As a new emerging field, neuromarketing is described as techniques such as FMRI, MEG, EEG and so on in order to measure the responses and reactions of the brain.

The use of neuroimaging techniques such as FMRI, MEG and EEG has a fundamental influence on understanding customers, their behaviors and expectations from the business owners and marketers. The fact that there has been an increase in the use of neuromarketing methods in order to evaluate customer behaviors and decision making process has played a significant role in understanding customers and marketers. EEG, fMRI and MEG are among the most appropriate and significant methods used in neuromarketing. The aim of these techniques is to evaluate how the brains of consumers react or respond to the stimuli provided by the products.

As neuromarketing is a brand new field in Turkey and in the world, the number of studies on it is quite low. With this study, it was aimed to fill the gap in Turkish and world literature to some extent. The fact that neuromarketing gives more accurate results in understanding consumer behaviors show that it will become even more important in the future. Therefore, all the studies conducted on newly-emerging field of neuromarketing will gain even more value in the future. In this study, the awareness level of consumers in Turkey for neuromarketing practices was examined. In doing so, the demographic features of the consumers, their relationship with the field of marketing and their familiarity with marketing processes, etc. were taken into consideration. Moreover, in order to create awareness in neuromarketing, the importance of participation in neuromarketing studies is an undeniable fact. That's why the effect of neuromarketing awareness on voluntary participation in neuromarketing studies was also investigated.

The study consists of two sections. In the first section, exploratory research literature review was conducted. In the first part of the first section, definitions and history of

marketing and neuromarketing were mentioned. Of the musts of neuromarketing, the brain scanning methods; fMRI, EEG and MEG were explained. The impacts of neuromarketing on marketing inputs were also investigated. Ethical issues are briefly explained since ethics and privacy are two significant terms that are commonly discussed when it comes to neuromarketing. In the second part of the literature section, the term of awareness was examined in the within the context of brand awareness. As the term of awareness is related to recognition and recall, these terms were also explained.

In the research part of the study, self-administered survey, a cross-sectional descriptive research method, were administered a total of 317 participants. The purpose of the survey was to measure the awareness level of traditional marketing and neuromarketing and also to determine the factors affecting the awareness.

## **1.1 DEFINITION OF MARKETING**

Marketing is important for the business performance of companies as it is a broad term referring to the most significant features of the market. It is mainly concerned with acquiring an understanding of the wide ranged market place and “ensuring you can tap into key trends, reaching consumers with the right product at the right price, place and time” (CIM 2015, p. 3).

Marketing is defined differently by various authors and researchers. “Marketing is advertising to advertising agencies, events to event marketers, knocking on doors to salespeople, direct mail to direct mailers” (Burnett 2008, p. 4). Marketing focuses on thinking about business instead of certain techniques. Although it is usually connected to selling things and accumulating money, it is more than selling and buying. It is defined as creating connection between customers and products, customers and companies.

Marketing is a social and managerial process by which individuals and groups obtain what they need and want through creating and exchanging products and value with others (Kotler 2010, p. 6). “Marketing is an organizational function and a set of processes for creating, communicating and delivering value to customers and for

managing customer relationships in ways that benefit the organization and its stakeholders” (American Marketing Association, 2004).

Furthermore, as an American marketing author, Kotler offers definitions of marketing. Marketing is the process by which an organization relates creatively, productively and profitably to the market place. Marketing is the art of creating and satisfying customers at a profit. Marketing is getting the right goods and services to the right people at the right places at the right time at the right price with the right communications and promotion (Kotler, 1991, p. 31).

## **1.2 DEVELOPMENT OF MARKETING**

According to Wilkie and Moore (2012) the development of marketing thought can be divided into four eras (cited in Ali and Talwar, 2013):

**First Era:** Founding the field (1900–20): In this era, the focus of economists was on production and also, distribution was a significant aspect.

**Second Era:** Formalizing the field (1920–50): The appearance of electricity happened in various parts of the US and also, consumer products started to appear in this era. “Packaged goods delivered by new retailing concepts like supermarkets, also appeared. Academically the field was spun-off from economics” (Ali and Talwar, 2013, p. 19). Furthermore, functional approach to marketing was regarded as a significant aspect in this era.

**Third Era:** Paradigm shift (1950–80). This era focused on mass marketing. In this era, marketing faced paradigm shift. Marketing focused on having an outlook on the subject from the view of the marketing manager. As a result of this, various ideas and perspectives such as marketing orientation, segmentation, 4Ps (product, place, price and promotion) and branding were developed (Ali and Talwar 2013, p. 19).

**Fourth Era:** A fragmentation of the mainstream (1980–present): The focus of this era was on a more economic side. Michael Porter and Five-Forces model created by him had a major influence on this era. Furthermore, developments in economic strategy and game theory had an influence on the advancement of the strategic marketing school. Globalization of marketing also affected the marketing field.

## 2. NEUROMARKETING

### 2.1 DEFINITION OF NEUROMARKETING

In recent years, researchers have been interested in the role of the brain in encouraging consumers to buy new things. This interest has led researchers into a new subject known as neuromarketing. Neuromarketing is the combination of neuroscience, marketing and technology (Voicu 2012). Although some researchers consider neuromarketing as one of the most significant developments in the field of marketing, others reject its significance. As stated by Voicu (2012, p. 1472), many experts point out that our current exploration and vision on the human brain is probably as complete or as accurate as a map of the world in the sixteenth century.

The term neuromarketing includes the study of brain mechanisms in order to understand consumer behavior and develop marketing strategies. Neuromarketing is an undisguised observation technique based on the techniques resulted from neuroscience, used for a better identification and understanding of brain mechanisms underlying consumer behavior, in view of increasing the effectiveness of the commercial activities of the companies (Voicu, 2012, p. 1472). In other words, neuromarketing refers to the area of marketing which focuses on sensory, motor, cognitive and affective reactions displayed by the human brain when it is exposed to external stimuli. In this regard, the importance of the technology of magnetic resonance imaging transfer technology which is used in order to detect brain tumors is emphasized. However, the way the brain receives, processes and interprets the various images is also identified.

Furthermore, the importance of using neuromarketing technique is summarized as follows:

*The premise of using this technique is that consumer purchase decisions are made in seconds in the subconscious, the emotional side of the brain and that by understanding what we like, we do not like, what we want, what causes us fear or boredom, etc., as shown when watching our brain responses to stimuli can design products and marketing communications to*

*better meet the unmet needs of the market and determine purchase* (Voicu 2012, p. 1472).

## **2.2 HISTORY OF NEUROMARKETING**

The combination of neuro and marketing refers to two various fields, neuroscience and marketing. The role of neuromarketing in marketing cannot be denied as neuromarketing is mainly concerned with seeing consumer behavior from a brain perspective.

The invention of the term neuromarketing was made by Professor Ale Smidts, who was known as the father of neuromarketing and also a Nobel Prize winner for Economic Sciences, in 2002. However, in 2004 Baylor College of Medicine in Houston hosted the first neuromarketing conference. Also, in the creation of the first American neuromarketing company in Atlanta was regarded as a significant step for neuromarketing.

The first academic research based on neuromarketing was conducted by Read Montague who was the Professor of Neuroscience at Baylor College of Medicine in 2003 and the research was published in *Neuron* in 2004. The study focused on a group of people who were asked to drink either Pepsi or Coca Cola and their brains were scanned in an fMRI machine (Morin 2011). Despite the fact that the results of the study caught the interest of other researchers, Dr. Montague was unable to show a set of reasons as to how human brain dealt with brand choices. However, the study showed that different parts of the brain were stimulated if people recognized or did not recognize the brand they consumed. Also, the study showed that a well-known brand such as Coca Cola played a significant role in the frontal cortex of human brain. The frontal lobe is defined as the part of the brain where executive functions take place. Also, the frontal lobe is significant in terms of managing attention, controlling short-term memory and planning. In this regard, the study showed that when people realized that they were drinking Coca Cola, they stated that their preference was the Coke brand instead of Pepsi and their executive functions took place in this regard. However, when they were not aware of which brand they were consuming, they reported that their preference was Pepsi instead of Coca Cola. When we look at the latter event, executive functions are not the most active part of the brain. It is another structure in the limbic system. Emotional behaviors

take place in this part of the brain. The study based on The Coke and Pepsi may have failed to persuade some marketing researchers that neuroscience could help crack the neural code which plays a role in buying decisions and behaviors of consumers, but the study caught the attention of some researchers and aroused curiosity about the power of neuroscience.

In 2004, the journal of Nature Neuroscience published an article “Brain Scam” which focused on ethics related to neuromarketing studies. The article discussed the morality of neuromarketers. In response to the article, Dr. Michael Brammer, the CEO of Neurosense, stated:

*I would agree.. in urging caution in the exploitation of any new technology. Scientific rigor and ethical considerations are of paramount importance, but these questions are not confined to commercial activities but rather must apply to all our activities as scientists. Only time will tell whether neuromarketing using fMRI will become an established tool. If our crime is to investigate its value in understanding behavior, and to be paid in the process, we plead guilty (cited in Morin 2011).*

However, despite the harsh criticisms from the media and researchers, Harper Collins added the word “neuromarketing” to its dictionary in 2005. Since then neuromarketing has been receiving attention from researchers and marketers.

### **2.3 UNDERSTANDING THE CONSUMER’S BRAIN**

For many years, researchers have focused on examining and expressing the effectiveness of advertising campaigns. However, the traditional techniques did not work out. Considering that emotions and behaviors of consumers play a major role in processing messages and understanding of consumers, it was not surprising that the traditional techniques failed.

After this failure the introduction of neuroimaging techniques provided methodological alternatives and developments. The introduction of these images allowed marketers to investigate the consumers’ brains in order to understand how their brains process messages, behaviors and why messages influencing buying behaviors result in success or failure. They do so by removing the biggest issue facing conventional advertising

research, which is to trust that people have both the will and the capacity to report how they are affected by a specific piece of advertising (Morin 2011).

Despite the growth in field of neuroscience in recent years, its influence on the marketing field has not been completely understood. It depends on two reasons. First of all, the number of marketing researchers trained in cognitive neuroscience is few and secondly, as stated by Morin (2011), marketing researchers have long feared the public outcry against potential ethical and privacy issues introduced by the use of neuroimaging technology for commercial purposes. For this reason, the scientific studies related to neuromarketing have not been published. However, with the emphasis put on neuromarketing the importance of neuromarketing has been realized more significantly in recent years.

*The brain has an important role in consumer behavior. Even though the brain exists only in 2% of the whole body, it burns about 20% of human body's energy. Also, it is significant to note that about 80% of the human's brain activity takes place unconsciously in order to sustain the tranquility state, leaving only 20% of the brain activity for conscious purposes (Morin 2011).*

As collectors and hunters by their nature, the brains of humans are capable of scrutinizing the environments against dangers and risks which is maintained by the part called "reptilian brain". Morrin (2011) states that this part of the brain has the ability to process all visual stimuli by not making use of the visual cortex, which is the biological argumentation for the fact that human beings in general have a general preference for images over words, or comparably experiences over explanations. For this reason, becoming aware of the fact that the brain is one of the most complex and interwoven biological organs existing, including numerous interconnected cells, it should be obvious that the translation and interpretation of its activity is a highly complex procedure (Purves et al. 2008). Although it is acquainted that the purchasing decision does not represent a binary social response, meaning that one cannot predict that with using a certain advertisement one will make the purchase for sure, there are still high expectations in the ability of neuromarketing observing and analyzing the entire brain in order to find out new, unpredictable results that give new insights into the field of neuroscience (Lee and Kacen, 2008, cited in Roth 2013, p. 4).

### 2.3.1 EEG

EEG, also known as Electroencephalography, refers to an electrical reproduction of brain activity (Postma, 2012). The technique of EEG is regarded as an old method, but it is still accepted as an important technique that is used to scrutinize the changes in the electrical field in certain parts of the brain. EEG depends on using many electrodes connected with the skull that identify electronic signals constituting brain activity. EEG usually records approximately 20 to 40 minutes. The cognitive responses of human beings are known as neurons and every human being has more than 100 billion neurons, which are interconnected with trillions of synapses (Morin 2011). These neurons consist of long extensions through which electricity runs. For this reason, if a certain stimulus like advertising is presented, neurons fire some electric current that can be perceived by the EEG (Morin 2011).

In other words, if a number of neurons are transferred to a certain spot, the amount of electricity produced there is more than normal, which is measured with the EEG. If upon that, neurological knowledge is applied, the recognized electricity can be attached to certain function areas in the brain, which in turn can provide relevant insights to marketing (Postma 2012).

EEG method has an advantage in terms of timing as its temporal resolution is based on milliseconds. Hence, it is possible to detect short neural activities. Furthermore, it should be noted that EEG is measured by a light and portable equipment. For this reason, even though the measurement is usually conducted in a laboratory, the person being studied does not become stressed during the measurement as his/her movements are not restricted. However, a disadvantage of the EEG method is that it causes undesired electronic activities in the brain, (Postma 2012). Thus, the spatial resolution is indefinite (approximately one centimeter), which can be increased by the number of electrodes attached to the skull (Ariely and Berns 2010). It is required to remove these disturbances. In this context, Postma (2012) states that combining the EEG method with the eye tracking method can also be an influential method, since then brain activities can be recorded more specifically.

### **2.3.2 MEG**

Known as Magnetoencephalography, MEG is another method that aims to investigate neural activity. Although this procedure was not famous until a few years ago, the importance of this procedure was realized during the past years. Also, this procedure is closely related to the EEG method. Whereas the method of EEG focuses on the conduction of the local voltage fluctuations on the scalp, the MEG method depends on the magnetic fields of neural activity. Focusing on identifying the recreation processes following injuries or accidents, surgeons usually use this method in the neurosurgery. In the practical measurement, highly sensitive SQUID-detectors are used, while actions are taken to eliminate fields of interference (Braun 2007). The magnetic area of the person being studied is monitored by spectrums of sensors, which look like a cylinder. As a result, it is possible to detect the location and intensity of brain activity in different parts. Even though both MEG and EEG include wonderful time resolution, the spatial resolution of MEG is much better than the EEG method (Morin 2011). However, it should be noted that this technology, as well as the EEG and the fMRI technology, are very cost intensive (Morin 2011).

### **2.3.3 fMRI**

The abbreviation of “magnetic resonance imaging” is known as MRI which is identified with a tool that makes an anatomic representation of the brain by making use of magnets (Postma, 2012). The blood oxygen level is measured with an MRI scanner which shows increased brain activity in certain parts. According to Roth (2013, p. 6), the measurement process works as follows: The magnetic field is able to recognize the blood oxygen content in the brain. Therefore, if neural activity in a certain brain area increases, the oxygen-rich blood increases too because oxygen is required by the brain to work.

The FMRI method started to be used during the 1990’s and provided scientists with insights into the human brain, which had not been fully investigated and understood until then (Kumlehn, 2011). The FMRI method shows the blood flow of oxygen-rich blood to different regions in the brain in order to investigate human behavior (Eser et al. 2011).

FMRI is a kind of neuroimaging technology that is essentially used for marketing purposes. During the past years FMRI has received more attention as it provides the isolation of certain systems of neurons which are attached with specific functions of the brain (Postma, 2012). According to Kumlehn (2011), isolating the neural system is a very complicated situation and is made easier by the advanced technology.

In the case of the presentation of a stimulus to a person, the fMRI method recognizes the increase in oxygen-rich blood in certain parts, which signals an increased activity in a certain part of the brain (Camerer et al. 2004). Camerer et al. (2004) further states that because of the fact that oxygenated blood includes distinct magnetic waves compared to deoxygenated blood, the FMRI scanner can realize this difference in the form of a signal. For this reason, during an fMRI experiment, brain scan is conducted at a person's rest condition or when the presence of no stimulus is available. Afterwards, a stimulus is presented for instance in the form of an advertisement which in turn activates certain brain areas and increases the oxygen-rich blood flow to certain regions being recognized by the fMRI (Morin 2011).

## **2.4 THE INFLUENCE OF NEUROMARKETING ON MARKETING INPUTS**

### **2.4.1 Neuromarketing in Advertising**

The relationship between advertisement and how products are presented to consumers on the market is significant. According to a study by Kenning and Linzmajer (2011), there is a relationship between how attractive an advertisement is and its effects on brain areas. According to Kenning and Linzmajer (2011), ventromedial prefrontal cortex and the ventral striatum which deal with the role of emotions in decision making process and perception of awards are activated by interesting advertisements. However, less interesting advertisements do not activate neither of these brain regions. Based on this data, it is significant to note that whether an advertisement is regarded as interesting and effective or not can be measured by neuromarketing techniques. Also, it was found in the same study that depending on the levels of attractiveness or unattractiveness of advertisements it was possible to remember advertisements. Furthermore, Kenning and Linzmajer (2011) state that it is important to have positive facial expressions for the purpose of creating advertisements as positive facial expressions seem attractive to

consumers. Also, in another study by Ambler and Burne (1999) and Ambler et al. (2000), emotional images used in advertisements point out to remembering advertisements.

Based on this information, it can be said that if neuromarketing is applied effectively, it has a major influence on advertising. “Since very informative knowledge can be gained with the background knowledge about which brain areas are responsible for which thoughts and activities in the brain plus the technical analysis showing which brain areas are activated.” (Roth 2013, p. 8). For this reason, it is important to check if an advertisement is attractive or not when an advertisement is presented to the customers or neuromarketing techniques such as EEG, MEG and so on are applied in the advertisements. However, the use of this method does not guarantee whether the consumers will buy the product advertised or not, but if the advertisement is attractive and interesting, the decision making process of the consumer may be activated and affected positively. In conclusion, the use of neuromarketing in advertising is effective if advertisers can determine which methods can activate the related brain regions and also attractiveness of advertisements is significant (Cranston 2004).

#### **2.4.2 Neuromarketing in New Product Development**

In terms of the influence of neuromarketing on the new product development it can be said that the influence is more restricted (Roth 2013). According to Ariely and Berns (2010), when taking the product experience into account rather than the decisions made before designing the product, it is more suitable to consider the techniques of neuromarketing. That is, it is stated that before the product development process, it is not possible to develop reasonable results. For this reason, Ariely and Berns (2010) state that it is significant to have alternative methods at hand during the process of designing new products.

However, the study by Calvert and Brammer (2012) brings a different discussion to this topic. According to them, because of the role of FMRI in filtering information, using the FMRI method in pretest and design of new products would be applicable. Based on both of these discussions, it can be said that despite the effectiveness of neuromarketing, the development of new products may not depend on neuromarketing since these

techniques are best applied in the testing of the final product. Instead of the neuromarketing techniques, different methods like SWOT analysis can be more applicable in the development of new products as they are capable of determining various features of products such as weaknesses and strengths (Roth 2013).

### **2.4.3 Neuromarketing in Product Design**

The design of a product and its presentation in the market are important in terms of affecting the perception of consumers. For this reason, it is significant to consider the design of products and how they are represented in the market carefully as these factors influence the buying behavior of consumers. Neuromarketing techniques such as EEG, MEG or FMI are known to play a major role in activating certain regions of the brain, and thus, the role of these techniques in the design of the products is fundamental. As consumers can be presented with different designs of products, the brain determines which products are more effective. “Since this process takes place unconsciously in the brain, its reliability is higher than when respondents simply give verbal descriptions of their preferences” (Roth, 2013, p. 9).

It may sometimes not be possible for the customers to show the influence of their expressions on their choices and desires. According to a study by Reimann et al. (2010),

*an attractive and aesthetic representation of a product in the form of its design or its packaging compellingly does increase the activation of the nucleus accumbens and the ventromedial pre frontal cortex, which are responsible for emotions in the decision-making process and the cognition of rewards (cited in Roth 2013, p. 10).*

It is possible to perceive the activations in the brain with the use of FMRI and EEG methods. For this reason, the use of neuromarketing techniques for the purpose of affecting the effectiveness of the present marketing tool pricing can have a significant influence when they are used effectively (Gang et al. 2012).

#### **2.4.4 Neuromarketing in Decision-making**

Decision making is another important process that plays a significant role in neuromarketing. According to Rangel et al. (2008, p. 39), decision making process depends on 5 stages:

- (a) identifying the decision problem
- (b) weighing the possible choices
- (c) making a decision based upon the evaluation of the choices available
- (d) after carrying out the decision, considering the resulting consequences
- (e) learning from the decision-making process in order to make better decisions in the future.

Neuromarketing techniques influence the decision making process significantly. In order to evaluate if a decision might be positive or negative, the ventromedial prefrontal cortex and the striatum are the brain regions which are claimed and which, in turn, can be analyzed by certain neuromarketing techniques such as fMRI or EEG (Roth 2013, p. 10). Decision making process is majorly based on evaluating gain and loss in value prior to and post the decision making process.

#### **2.5 ETHICAL ISSUES OF NEUROMARKETING**

Ethics and privacy are two significant terms that are commonly discussed when it comes to neuromarketing. Neuromarketing is mainly associated with manipulation. For this reason, people usually fear that they are manipulated and lose self-determination because of the manipulative effects of neuromarketing. Neuromarketing is a process that promotes emotions and decision making process. In this regard, Kolar (2014, p. 10) states:

*For guaranteeing an ethical and law confirming marketing research, the European Society for Opinion and Marketing Research and the International Chamber of Commerce developed the international code on market and social research based on key fundamentals securing that market researchers have to*

*conform to all national and international laws, behave ethically and act transparently.*

Furthermore, values such as honesty, data protection, and professional responsibility are important in neuromarketing (Gatterer 2012). Concerned with neuromarketing, neuroethics was developed in 2002. Neuroethics is associated with ethical terms such as personal identity, autonomy and human dignity (Kolar 2014). Also, neuroethics covers topics ranging from philosophical concepts such as free will to practical topics such as privacy and clinical practice (Gatterer 2012).

As discussed above, concerned with manipulation, neuromarketing is regarded as a tool that is used to motivate or manipulate customers. Although motivation seems to have benefits, manipulation is not as beneficial as motivation because of the fact that manipulation is accepted to have a negative impact on people. Manipulation in neuromarketing is mainly practiced through commercial advertisements. For example, high quality accessories are used to decorate houses. Also, light colors are usually used to attract the attention of people and manipulate them by sending messages to people through these colors (Kolar 2014).

### 3. AWARENESS

#### 3.1 BRAND AWARENESS

Awareness is a prerequisite for creating perceptions and ideas. Brand awareness is the power of the traces which brand has in the consumer memory (Uztuž 2003, p.29). Awareness term is utilized with recall and recognition concepts. If recognition and recall take place at the same time, it means that there is awareness.

Brand awareness allows being distinguished from competitors based on the formal and contextual features caused by having been seen or heard before. Consumer awareness level varies between not recognizing the brand and bringing the brand to mind firstly in its product category (Aaker 1991, p.63). Consumer awareness has a material impact on choices. Gilbert (2003) stated that well-known brands are more preferred than unrecognized brands. In case of entering a brand into a new set of consumer preferences, electing depends on the consumer's awareness of the brand. Preferability chances of unrecognized or lesser known brands are very low (Gilbert 2003, p.319).

Brand awareness is not only about recognition or seeing brand before. In addition to recognition, associations like brand name, symbol, and colors should be combined in the consumer's mind for the purpose of creating brand awareness. Hence all brand items ought to be together at the same time in consumer's memory (Campbell 2002, p.208).

Brand dominance level in the brain is the level when a specific brand comes to mind of consumers in the relevant audience in the time of need (Campbell 2002, p.211). Many of the brand executives aim to reach this level of brand awareness. Thus, first choice of consumers in purchasing would be the brand which reaches the dominance level; as a result of this brand would gain the advantage among the competitors.

*Brand awareness is the first and prerequisite dimension of the entire brand knowledge system in consumers' minds, reflecting their ability to identify the brand under different conditions: the likelihood that a brand name will come to mind and the ease with which it does so (Keller, 1993).*

### **3.1.1 Brand Recognition**

Brand recognition is a desired objective for marketers (Laroche, Kim and Zhou 1996, p.116). It can be described as the accessibility level of the brand name which sticks in consumer's memory through showing how fast and easily the brand come to mind (Esch et al. 2006, p. 99). The knowledge of the name of the brand, brand recognition, is the first step pushing consumer to preference.

Consumers obtain essential information via internal and external searches from the sources. Internal search means searching the information related with buying decision in consumer's memory (Odabaşı and Barış 2002, p.360). Internal search is linked with brand recognition. There is no need for external searches if internal search is adequate. Thus, marketers try to decrease the necessity for external searches and also aim to be imbedded in consumer's subconscious (Zaltman 2003, p.83). If brand succeeds in being engraved in consumer's depth, then its preferability choice in case of need will increase.

The difference between brand recognition and recall could be better determined with these two questions: "Have you heard about brand X?" and "Which brands do you know?" The answer of first question is about brand recognition, and answer of second question is about brand recall (Aaker 1991, p.25; Macdonald and Sharp 2003, p.2). Brand recognition is the first step of brand recall since it is impossible to remember without recognizing the brand (Calderón, Cervera and Molla 1997, p.295)

### **3.1.2 Brand Recall**

Second dimension of brand awareness is brand recall. Brand recall is the ability of composing the brand in consumer's memory. Brand recall can be defined as calling brand items properly from consumer's mind (Öztuğ 1997, p. 20). It covers all brand related concepts consisted in the brain. Having unique, strong and superior brand recall is one the most important factor influencing the brand awareness (Aaker 1991, p.109). It shows the power of brand in consciousness (Pappu, Quester and Cooksey 2005, p.145).

Brand recall is crucial for both marketers and consumers. Marketers use brand recalls in the application of brand differentiation, brand positioning and brand extension. Brand recalls can also be used for creating positive feelings and attitudes toward the brands.

Consumers use brand recalls for consisting and organizing information about brands. Brand recalls assists and effects consumer's purchasing behavior (Low and Lamb 2000, p.351).

Brand recalls can be served as emotional impressions in memory. Brand feeling is defined as utilizing neural and nonverbal experiences relevant with brand. The most important characteristic of brand recall is being related to subconscious (Supphellen, 2000).



## **4. METHODOLOGY**

This chapter discusses the research methods used in this study and also explains the research design used in this study. The aim of this chapter is to provide more detailed information related to the methods used in this study.

### **4.1 AIM OF THE STUDY**

The aim of this study is to investigate the consumer awareness of neuromarketing applications in Turkey. Neuromarketing is an undiscovered sea even for people who are working in the marketing field, since it is brand new area. This study examines how gender, educational status and knowledge of marketing processes affect consumer awareness of neuromarketing, through measuring knowledge level of neuromarketing applications. Also, the other objective is to compare the consumer awareness of traditional marketing and neuromarketing with in term and also with in their result's reliability.

Expanding the awareness of neuromarketing and penetrating neuromarketing applications into business life would happen with participation of people in neuromarketing studies and researches. This study also aims to show the relation between being a volunteer for neuromarketing researches with the awareness of neuromarketing.

### **4.2 RESEARCH DESIGN**

This section of the study focuses on the design of the research. Exploratory research is conducted in the beginning of the study which aims to set the ground for future studies. Type of research method was quantitative. Cross-sectional descriptive method was used, because the data was collected with a survey only once. Descriptive research aims to explore, explain and provide more information for the study.

Survey method was used in this study and thus, results in regards to consumer awareness of neuromarketing were generated from a large population. In order to collect data, a self-administered survey which is created by Cevik (2015) to measure the knowledge level of neuromarketing was used in this study.

The survey includes 20 closed-response questions. The first 4 questions are related with demographic properties of the respondents; such as age, gender, educational status and working area. The survey was sent to 317 respondents by e-mail and other internet media.

#### **4.3 LIMITATIONS OF THE STUDY**

There are some limitations for this study. Not only in Turkey but also in the world, the availability of resources and references about neuromarketing are limited since it is one of the latest marketing research tools. Scarcity of researches about neuromarketing restricts to clarify this term deeply.

The respondents for this study are chosen randomly, since study covers all consumers. It is really hard to find respondents who know this topic in the research part of this study.

General limitation for neuromarketing applications can be determined as covering the brain scanning methods; such as fMRI, EEG and MEG. These machines are not very accessible and are very expensive to use. In addition, it is very difficult to make comment on the results of these scanning methods on the purpose of creating new marketing strategies.

#### **4.4 HYPOTHESES**

H1: Marketing people know where neuromarketing techniques are used more than non-marketing people

H2: Knowledge level of the neuromarketing do not change according to educational status

H3: Knowing the brands using neuromarketing in Turkey do not differs among the genders

H4: Knowledge level of neuromarketing affects participation in a neuromarketing researches as a volunteer in a good way.

H5: The idea about the reliability of traditional marketing techniques' results depends on the thoughts on the comparison of the reliability of neuromarketing and traditional marketing techniques' results.

#### 4.5 DATA COLLECTION AND ANALYSIS

Data was collected from 317 respondents through online surveys. SPSS 18.0 software packet was used for statistical analysis. The simple results obtained from survey questions were examined in results part. However cross tabulation and Chi-square were used to test hypotheses.

#### 4.6 RESULTS

This section of the study includes tables and results of tables showing information about the participants in terms of gender, education status of participants, age of participants, brands, work status of participants, the knowledgeability level of participants. SPSS 18.0 was used for statistical analysis.

**Table 4.1: Gender**

	Frequency	Percent	Valid Percent	Cumulative Percent
Women	180	56,8	56,8	56,8
Men	137	43,2	43,2	100,0
Total	317	100,0	100,0	

According to the table above, 56.8 percent of the respondents are female whereas 43.2 percent of the respondents are male.

**Table 4.2: Education**

	Frequency	Percent	Valid Percent	Cumulative Percent
High School	12	3,8	3,8	3,8
University	206	65,0	65,0	68,8
Graduate School	89	28,1	28,1	96,8
PhD	10	3,2	3,2	100,0
Total	317	100,0	100,0	

According to the table above, 3.8 percent of the respondents are high school graduates, 65 percent University graduates, 28.1 percent have master's degree and 3.2 percent have PhD degree.

**Table 4.3: Age**

	Frequency	Percent	Valid Percent	Cumulative Percent
18-29	235	74,1	74,1	74,1
30-49	66	20,8	20,8	95,0
50-64	15	4,7	4,7	99,7
65 -...	1	,3	,3	100,0
Total	317	100,0	100,0	

The table above shows that 74.1 percent of the respondents are between 18 and 29 years old, 20.8 percent between 30-49 years old, 4.7 percent between 50-64 years of old, 0.3 percent over 65 years old.

**Table 4.4: Sectors of work**

	Frequency	Percent	Valid Percent	Cumulative Percent
Service	27	8,5	8,5	8,5
Health	23	7,3	7,3	15,8
Textile	14	4,4	4,4	20,2
Consulting	6	1,9	1,9	22,1
Tourism	4	1,3	1,3	23,3
Food	8	2,5	2,5	25,9
Chemistry	37	11,7	11,7	37,5
Advertising and Promotion	12	3,8	3,8	41,3
Informatics	10	3,2	3,2	44,5
Printing	1	,3	,3	44,8
Education	27	8,5	8,5	53,3
Logistics	7	2,2	2,2	55,5
Others	141	44,5	44,5	100,0
Total	317	100,0	100,0	

This table shows the sectorial distribution of the respondents.

**Table 4.5: Working in marketing field**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	84	26,5	26,5	26,5
No	233	73,5	73,5	100,0
Total	317	100,0	100,0	

The table above shows that while 26,5 percent of the respondents work in the field of marketing, whereas 73.5 percent of the respondents do not work in the field of marketing.

**Table 4.6: Information about current marketing practices**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	159	50,2	50,2	50,2
No	158	49,8	49,8	100,0
Total	317	100,0	100,0	

According to the table above, 50.2 percent of the respondents are knowledgeable about current marketing practices, while 49.8 percent of the respondents are not knowledgeable in the field of Marketing.

**Table 4.7: Knowledgeability level of traditional marketing**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	195	61,5	61,5	61,5
No	122	38,5	38,5	100,0
Total	317	100,0	100,0	

According to the table above, while 61.5 percent of the respondents are knowledgeable about traditional marketing research methods, 38.5 percent of the respondents are not knowledgeable about the field of traditional marketing.

**Table 4.8: Knowledgeableness of traditional marketing methods**

	Frequency	Percent	Valid Percent	Cumulative Percent
Focus Groups	11	3,5	3,5	3,5
Surveys	86	27,1	27,1	30,6
Experiment	33	10,4	10,4	41,0
Observation	10	3,2	3,2	44,2
All	94	29,7	29,7	73,8
Surveys + Experiment	36	11,4	11,4	85,2
Observation + Experiment	3	,9	,9	86,1
Surveys + FG	18	5,7	5,7	91,8
Surveys + FG + Exp.	2	,6	,6	92,4
Observation + Surveys	8	2,5	2,5	95,0
Observation + FG	11	3,5	3,5	98,4
FG + Survey + Exp.	1	,3	,3	98,7
FG +Exp.	4	1,3	1,3	100,0
Total	317	100,0	100,0	

29.7 percent of the respondents know all the methods of traditional marketing. 27.1 percent are knowledgeable about the survey method and 11.4% are knowledgeable about the focus group and the survey method.

**Table 4.9: Sufficiency of traditional marketing research**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	36	11,4	11,4	11,4
No	146	46,1	46,1	57,4
Abstention	135	42,6	42,6	100,0
Total	317	100,0	100,0	

46,1 percent of the questionnaire respondents think that traditional marketing techniques are not enough to develop new marketing strategies, 11.4 percent think that traditional marketing methods are sufficient to develop new marketing strategies, but 42,6% of the respondents abstain from this topic.

**Table 4.10: Knowledgeability level of neuromarketing**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	111	35,0	35,0	35,0
No	206	65,0	65,0	100,0
Total	317	100,0	100,0	

35 percent of the respondents have knowledge about neuromarketing, while 65 percent of the respondents don't have any information.

**Table 4.11: Where neuromarketing is learned from**

	Frequency	Percent	Valid percent	Cumulative Percent
<b>University</b>	30	9,5	9,5	9,5
<b>Factory</b>	17	5,4	5,4	14,9
<b>Marketing Books</b>	16	5,0	5,0	19,9
<b>Internet</b>	37	11,7	11,7	31,6
<b>Newspapers</b>	8	2,5	2,5	34,1
<b>University + Internet</b>	10	3,2	3,2	37,3
<b>Factory + Internet</b>	3	,9	,9	38,2
<b>Marketing Books+ Internet</b>	11	3,5	3,5	41,7
<b>Others</b>	185	58,3	58,3	100,0
<b>Total</b>	317	100,0	100,0	

This table shows how participants get informed about neuromarketing. 11.7 percent gained knowledge about neuromarketing via the internet, 5 percent form marketing books and from their business, 5 percent learned in college. 58.3 percent of the respondent learned neuromarketing from other sources or they have no idea of what neuromarketing is.

**Table 4.12: Knowledge of where neuromarketing techniques are used in**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	94	29,7	29,7	29,7
No	223	70,3	70,3	100,0
Total	317	100,0	100,0	

29.7 of the respondents know where neuromarketing techniques are used, whereas 70.3 percent of the participants do not know where these techniques are used.

**Table 4.13: Knowledgeableness of neuromarketing techniques**

	Frequency	Percent	Valid Percent	Cumulative Percent
Eye Tracking	44	13,9	13,9	13,9
EEG	7	2,2	2,2	16,1
FMRI	16	5,0	5,0	21,1
None	197	62,1	62,1	83,3
All	17	5,4	5,4	88,6
Eye Tracking + EEG	8	2,5	2,5	91,2
EEG+FMRI	15	4,7	4,7	95,9
Eye Tracking + FMRI	13	4,1	4,1	100,0
Total	317	100,0	100,0	

This table shows that 5.4 percent of the respondents know all mentioned neuromarketing techniques. Eye tracking is the most known technique with the 13.9 percent and then fMRI comes with 5 percent. 62.1 percent of the participants do not know neuromarketing techniques.

**Table 4.14: Where neuromarketing techniques learned from**

	Frequency	Percent	Valid Percent	Cumulative Percent
Via Internet	56	17,7	17,7	17,7
University	35	11,0	11,0	28,7
Factory	19	6,0	6,0	34,7
Others	207	65,3	65,3	100,0
Total	317	100,0	100,0	

This table shows where the respondents get information about neuromarketing techniques from. 17.7 of the respondents gained knowledge via internet, 11 percent from University, and 6 percent from Factory. 65.3 percent of the participants learned these techniques from others sources or they do not know the techniques.

**Table 4.15: Comparison of results of neuromarketing and traditional marketing**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	71	22,4	22,4	22,4
No	15	4,7	4,7	27,1
Abstention	231	72,9	72,9	100,0
Total	317	100,0	100,0	

According to table above, 22.4 percent of the respondents think that neuromarketing applications give better results compared to other traditional marketing method; whereas 4.7 percent think the opposite. 72.9 percent do not have any opinion.

**Table 4.16: Knowledge of the brands using neuromarketing techniques in Turkey**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	51	16,1	16,1	16,1
No	266	83,9	83,9	100,0
Total	317	100,0	100,0	

16.1 percent of the respondents know which brands use neuromarketing techniques, whereas 83.9 percent do not have knowledge about it.

**Table 4.17: Reliability of traditional marketing research techniques' results**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	101	31,9	31,9	31,9
No	216	68,1	68,1	100,0
Total	317	100,0	100,0	

31.9 percent of the respondents think traditional marketing methods do not give the correct result and the rest think otherwise.

**Table 4.18: Participation in a neuromarketing research**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	152	47,9	47,9	47,9
No	165	52,1	52,1	100,0
Total	317	100,0	100,0	

47.9 percent of the respondents want to participate in a neuromarketing research as a volunteer, whereas 52.1 percent do not want to participate in such a study.

**Table 4.19: Knowledge level of the neuromarketing research techniques' benefits**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	65	20,5	20,5	20,5
No	162	51,1	51,1	71,6
Abstention	90	28,4	28,4	100,0
Total	317	100,0	100,0	

20.5 percent of the respondents say that they know the benefits of neuromarketing techniques, while 51.1 percent state that they do not.

**Table 4.20: Benefits of neuromarketing research techniques**

	Frequency	Percent	Valid Percent	Cumulative Percent
A more effective method to measure the consumer's thoughts and feelings that they cannot explain	41	12,9	12,9	12,9
Provides more realistic information about consumer perception	38	12,0	12,0	24,9
Provides a better understanding and explanation of the behavior of consumers related to the market	25	7,9	7,9	32,8
Generates more useful results in the field of marketing related to pricing, retailing, advertising and sales that could not be exactly measured previously	21	6,6	6,6	39,4
Neuromarketing techniques are more objective and data-driven.	29	9,1	9,1	48,6
None	163	51,4	51,4	100,0
Total	317	100,0	100,0	

In terms of the benefits of neuromarketing techniques, 12,9 percent know that they are more effective methods to measure the consumer's thoughts and feelings that they cannot explain, 12 percent know that they provide more realistic information about consumer perception, 7.9 percent know that they provide a better understanding and

explanation of consumers' market-related behaviors, 6.6 percent know that they generate more useful results in the areas of marketing related to pricing, retailing, advertising, and sales that could not be exactly measured previously, 9,1% know that they are more objective and data-driven. 51.4% of the respondents do not know the benefits of neuromarketing research techniques.

#### 4.7 CROSS TABULATION AND CHI SQUARE TESTS

Cross tabs and Pearson Chi-Square test method were used to test hypotheses in this part. Calculated Pearson value is compared with an alpha .05. If the calculated Chi-Square significance value is less than .05, then there is a relationship between two conditions.

H1: Marketing people know where neuromarketing techniques are used more than non-marketing people.

**Table 4.21: Cross tabulation table for Hypothesis 1**

		<i>Do you know where neuromarketing techniques are used?</i>		<b>Total</b>
		Yes	No	
<i>Do you work in the marketing field?</i>	Yes	39	45	84
		46,4%	53,6%	100,0%
	No	55	178	233
		23,6%	76,4%	100,0%
<b>Total</b>		94	223	317
		29,7%	70,3%	100,0%

46.4 percent of the respondent working in the marketing field knows where neuromarketing techniques are used; where 53.6 percent do not know. 23.6 percent of non-marketing field workers know where neuromarketing techniques are used; 76.4 percent of non-marketing respondent do not know.

**Table 4.22: Chi-Square test table for Hypothesis 1**

	Value	Asymp. Sig. (2-sided)
Pearson Chi-Square	15,418 <sup>a</sup>	,000
Continuity Correction <sup>b</sup>	14,343	,000
Likelihood Ratio	14,724	,000
Fisher's Exact Test		
N of Valid Cases	317	

\*p<0.05

According to Chi-Square test, knowing where neuromarketing techniques are used is differs to working in marketing field since Pearson Asymptotic Significance (p) is less than 0.05. Respondents who work in marketing field know where neuromarketing is used more than non-marketing respondents.

H1: Marketing people know where neuromarketing techniques are used more than non-marketing people is supported.

H2: Knowledge level of the neuromarketing do not change according to educational status.

**Table 4.23: Cross tabulation table for Hypothesis 2**

		<i>Do you have information about Neuromarketing, one of the latest methods of marketing research?</i>		<b>Total</b>
		Yes	No	
<b>Education</b>	PhD	3	7	10
		30,0%	70,0%	100,0%
	University	41	48	89
		46,1%	53,9%	100,0%
	Graduate School	5	7	12
		41,7%	58,3%	100,0%
Doctorate	62	144	206	
	30,1%	69,9%	100,0%	
<b>Total</b>		111	206	317
		35,0%	65,0%	100,0%

30 percent of the respondents who have PhD degree have knowledge about neuromarketing, whereas 70 percent of doctors have no idea about neuromarketing. Similar distribution is observed in undergraduate respondents. For high school and graduate respondents, there is more homogenous dispersion. When the table is examined, it can be seen that plurality is on the "no" side. So, neuromarketing is off the beaten path for all educational status.

**Table 4.24: Chi-Square test table for Hypothesis 2**

	Value	Asymp. Sig. (2-sided)
Pearson Chi-Square	7,311 <sup>a</sup>	,063*
Likelihood Ratio	7,182	,066
N of Valid Cases	317	

\*p>0.05

Significance value is more than 0.05; which means the awareness of neuromarketing does not change according to educational status.

H2: Knowledge level of the neuromarketing do not change according to educational status is supported.

H3: Knowing the brands using neuromarketing in Turkey do not differs among the genders.

**Table 4.25: Cross tabulation table for Hypothesis 3**

		<i>Do you know the brands that use neuromarketing techniques in Turkey?</i>		<b>Total</b>
		Yes	No	
<b>Gender</b>	Male	24	113	137
		17,5%	82,5%	100,0%
	Female	27	153	180
		15,0%	85,0%	100,0%
<b>Total</b>		51	266	317
		16,1%	83,9%	100,0%

17.5 percent of the male respondents know the brands using neuromarketing techniques in Turkey; whereas 82.5 percent of the males do not know. 15 percent of the female respondent knows the brands using neuromarketing techniques in Turkey whereas 85 percent of the females do not know.

**Table 4.26: Chi-Square test table for Hypothesis 3**

	Value	Asymp. Sig. (2-sided)
Pearson Chi-Square	,365 <sup>a</sup>	,546*
Continuity Correction <sup>b</sup>	,203	,653
Likelihood Ratio	,364	,546
Fisher's Exact Test		
N of Valid Cases	317	

\*p>0.05

As seen in above table Pearson value is more than 0.5 which means knowing brand using neuromarketing techniques in Turkey do not differ according to genders.

H3: Knowing the brands using neuromarketing in Turkey do not differs among the genders is supported.

H4: Knowledge level of neuromarketing affects participation in a neuromarketing researches as a volunteer in a good way.

**Table 4.27: Cross tabulation table for Hypothesis 4**

		<i>Would you like to participate in a neuromarketing research as a volunteer?</i>		<b>Total</b>
		Yes	No	
<i>Do you have information about Neuromarketing, one of the latest methods of marketing research?</i>	Yes	81	30	111
		73,0%	27,0%	100,0%
	No	71	135	206
		34,5%	65,5%	100,0%
<b>Total</b>		152	165	317
		47,9%	52,1%	100,0%

73.0 percent of the respondents who have knowledge about neuromarketing would like to participate in a neuromarketing research as a volunteer; while 27.0 percent would not. When table examined it is seen that more respondent of not-knowing neuromarketing do not want to participate in a neuromarketing research as a volunteer.

**Table 4.28: Chi-Square test table for Hypothesis 4**

	Value	Asymp. Sig. (2-sided)
Pearson Chi-Square	42,855 <sup>a</sup>	,000*
Continuity Correction <sup>b</sup>	41,326	,000
Likelihood Ratio	44,019	,000
Fisher's Exact Test		
N of Valid Cases	317	

\*p<0.05

As it seen in Chi-Square test sigma is less than 0.5. Participation in a neuromarketing research as a volunteer differs on knowledge level of neuromarketing. Respondents who have idea of what is neuromarketing would like to participate in such study more than respondent who do not have.

H4: Knowledge level of neuromarketing affects participation in a neuromarketing researches as a volunteer in a good way is supported.

H5: The idea about the reliability of traditional marketing techniques' results depends on the thoughts on the comparison of the reliability of neuromarketing and traditional marketing techniques' results.

**Table 4.29: Cross tabulation table for Hypothesis 5**

		<i>Do you think traditional marketing research techniques do not give the correct result?</i>		<b>Total</b>
		Yes	No	
<i>Do you think that the results of the application of neuromarketing gives better results as compared to other traditional marketing techniques?</i>	Abstainer	57	174	231
		24,7%	75,3%	100,0%
	Yes	39	32	71
		54,9%	45,1%	100,0%
	No	5	10	15
		33,3%	66,7%	100,0%
<b>Total</b>		101	216	317
		31,9%	68,1%	100,0%

54.9 of the respondents who think the results of the application of neuromarketing gives better results compared to other traditional marketing techniques are of the opinion that traditional marketing research techniques do not give the correct results; however 45.1 of the respondents who think the results of the application of neuromarketing gives better results compared to other traditional marketing techniques oppose this thought. 66.7 percent of the respondents who do not think the results of the application of neuromarketing gives better results compared to others are oppose the opinion that traditional marketing research techniques do not give the correct results. The abstainers from the comparison also do not agree with the idea that traditional marketing research techniques do not give the correct results.

**Table 4.30: Chi-Square test table for Hypothesis 5**

	Value	Asymp. Sig. (2-sided)
Pearson Chi-Square	22,913 <sup>a</sup>	,000*
Likelihood Ratio	21,800	,000
N of Valid Cases	317	

\*p<0.05

The respondents who agreed to the results of the application of neuromarketing gives better results compared to other traditional marketing techniques, mostly think than traditional marketing techniques do not give the correct results; however the respondents who did not agreed that neuromarketing give better results predominantly oppose that traditional marketing techniques do not give the correct results.

H5: The idea about the reliability of traditional marketing techniques' results depends on the thoughts on the comparison of the reliability of neuromarketing and traditional marketing techniques' results is supported.



## 5. CONCLUSION

In recent years, as an emerging field neuromarketing, which is based on using brain research in a managerial context, has gained popularity significantly both in the academic literature and the practical world in general. As a new field of study neuromarketing is defined as techniques such as fMRI, MEG, EEG and so on in order to measure the responses and reactions of the brain. EEG, fMRI and MEG are known as the most appropriate and most widely used methods in neuroscience. These methods aim to evaluate how the brains of consumers react or respond to the stimuli provided by the products.

In this study, the awareness level of consumers in Turkey for neuromarketing practices was examined. When the survey results are examined, it is observed that 61.5 percent of the respondents have knowledge about traditional marketing, whereas only 35 percent are knowledgeable about neuromarketing. The fact that traditional marketing methods such as surveys, focus groups, experiment and observation are easy and low-cost contributes to increase the awareness of them. Although the knowledgeable level of traditional marketing methods is high, only a group of 11 percent defend that traditional marketing methods are sufficient to improve marketing strategies. Nevertheless, 68 percent of the respondents oppose that traditional marketing methods do not give accurate results. That is to say; traditional marketing methods are believed to give accurate results, however are not considered sufficient to understand and improve the market.

As neuromarketing is a very new field, it is not surprising that knowledgeable level of it is low. Although neuromarketing and neuromarketing techniques are learned at universities, work places and through books and journals, the most popular way is through the internet. Only a group of 35 percent is knowledgeable about neuromarketing, whereas approximately 40 percent of the respondents are knowledgeable about neuromarketing techniques such as Eye tracking, fMRI and EEG and 47.9 percent of them state that they are voluntary to participate in neuromarketing researches. Knowledgeability level of the brands using neuromarketing in Turkey is found to be 16 percent, which is an expected result, as the brands using neuromarketing

do not usually enunciate this. Although traditional marketing is wider than neuromarketing, the respondents are of the opinion that neuromarketing gives better results than the other marketing techniques.

Cross-tabulation and Chi-square tests are used to test hypothesis. When results are examined marketing people know where neuromarketing techniques are used more than non-marketing people. It is an expected result since marketing people follow the innovations related with their working field. If marketers learn the advantages of neuromarketing, the practices of it will increase. Educations and workshops are the first things to do for raising relevant experts. This could be provided by opening neuromarketing departments in universities, adding elective courses of neuromarketing or with the publications. There are few companies and advisers which doing neuromarketing researches in Turkey. This companies and advisers may impose neuromarketing and its benefits on firm's marketing departments. Due to the fact that using neuromarketing techniques are very expensive, companies may not want to budget it. But in case of understanding the superior benefits of neuromarketing in long term, the usage may expand. Also, there is no need to reinvent the wheel; companies may apply previous studies to their marketing strategies. Another way to increase the awareness of neuromarketing is using internet and social media. Nowadays internet is the most popular and fast way for searching and learning. Neuromarketing companies should use online channels to reach and inform more people.

Also, knowledge level of neuromarketing is independent from educational level. Consumer awareness of neuromarketing is low in each educational status. This result can be explained as there aren't any topics about neuromarketing in the curriculum. However, there may be elective courses about neuromarketing and other innovative marketing ways in social science departments such as business administration, marketing, etc. Thus, the number of students who want to study in this area would increase and the gap in the literature would be filled before long. As a result of the courses, studies and researches about neuromarketing, competent person would raise. Hence, applications and awareness of neuromarketing would increase. In addition to this universities may open brain scanning laboratories; this would support the researchers. Companies and universities could make joint groups or some different

departments like business administration, medicine, psychology study together and contribute to neuromarketing researches.

Furthermore knowledge of the brands using neuromarketing in Turkey does not differ among genders and the awareness is low for both categories. This study aims to measure the awareness of neuromarketing applications in Turkey, but in the future the studies about women-men marketing may be done. The knowledge of the brands using neuromarketing does not differ among genders, but the effects and results of neuromarketing applications on men and women could differ.

Participating in a neuromarketing research as a volunteer is a must for expanding neuromarketing applications. Thus, measuring the volunteering level is very important. Respondents who have information about neuromarketing applications would like to participate in a neuromarketing research as a volunteer more than the respondents who do not have any idea of neuromarketing; which is an expected result since people are abstain from unknown. Government may provide large scale researches by using their communication channel; such as public service announcement or put related surveys into their websites. These would raise the awareness of neuromarketing and increase the participation of neuromarketing studies.

The idea about the reliability of traditional marketing techniques' results depends on the thoughts on the comparison of the reliability of neuromarketing and traditional marketing techniques' results. The respondents who agree that the results of the application of neuromarketing gives better results compared to other traditional marketing techniques, mostly think that traditional marketing techniques do not give the correct results; however the respondents who do not agree that neuromarketing gives better results predominantly oppose to the idea that traditional marketing techniques do not give the correct results. The advantages of both methods cannot be ignored. The neuromarketing techniques and traditional marketing methods should be used together to create the most effective marketing strategies.

Neuromarketing influences on marketing inputs were mentioned in the literature part of this study. In case of doing detailed researches about applying neuromarketing into marketing inputs such as advertising, product development or decision making these

researches would considerably help marketers to reach consumers in a more proper way. If marketers examine the previous studies, they can easily combine them with their brands. For example, sensory marketing came into prominence nowadays. It is possible to reach thousands of researches and articles about sensory marketing. If marketers deeply analyze these studies and apply the findings to their brands, they might have very successful marketing campaigns.

Next studies about neuromarketing topic might be about its advantages and disadvantages to be understood deeply. Ethics and privacy are inseparable parts of neuromarketing; so extensive studies related with neuromarketing could be done in the future. Also, effects of neuromarketing on a specific product line or sector would be another research subject. They could be combined with destination marketing; such as comparing results of neuromarketing studies in big cities versus rural regions. Previous research studies mostly look from the point of consumer, however next studies may look from the viewpoint of companies. Thus, the contribution of neuromarketing to the companies would be understood. Another research topic would be about brands; like investigating the benefits or applications of using neuromarketing techniques on Turkish brands or world's leading brands. Furthermore, surveys, interviews and brain scanning methods could be used together for research parts to get more accurate results.

Consequently, neuromarketing is a newly emerging field, its applications and benefits are not widely known yet. With widespread practices of neuromarketing, marketing experts can determine the expectations of consumers precisely and develop better marketing strategies, and accordingly consumers eliminate their prejudices and reach the products and services that their unconscious mind demands.

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## APPENDIX

### A.1: Survey<sup>1</sup>

#### 1. Gender

- Female
- Male

#### 2. Education

- High School
- University
- Graduate School
- Doctorate

#### 3. Age

- 18-29
- 30-49
- 50-64
- 65

#### 4. Sector

- Service
- Health
- Textile
- Consulting
- Tourism
- Food

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<sup>1</sup> Cevik, R., (2015). An awareness research for neuromarketing that is a new scientific way of doing market research; Master's Degree: Bahcesehir University, Graduate School of Social Science

- Chemistry
- Advertising And Promotion
- Informatics
- Printing
- Education
- Logistics
- Others

5. Do you work in the marketing field?

- Yes
- No

6. Do you have information about current marketing practices?

- Yes
- No

7. Do you know traditional marketing research methods?

- Yes
- No

8. If you know traditional marketing research methods, which ones do you know?(you can tick more than one option.)

- Focus Groups
- Surveys
- Experiment
- Observation

9. In your opinion, are traditional marketing research methods sufficient to develop marketing strategies?

- Yes
- No
- Abstention

10. Do you have information about Neuromarketing, one of the latest methods of marketing research?

- Yes
- No

11. If you have knowledge in the field of neuromarketing where did you get this information?(You can tick more than one option)

- University
- Factory
- Marketing Books
- Internet
- Newspapers
- Others

12. Do you know where neuromarketing techniques are used?

- Yes
- No

13. Which of the following neuromarketing techniques do you know?

- Eye Tracking
- EEG
- Functional Magnetic Resonance Imaging
- None

14. If you know where neuromarketing techniques are used, how did you get this information?

- Via internet
- University
- Factory
- Others

15. Do you think that the results of the application of neuromarketing gives better results as compared to other traditional marketing techniques?

- Yes
- No
- Abstention

16. Do you know the brands that use neuromarketing techniques in Turkey?

- Yes
- No

17. Do you think traditional marketing research techniques do not give the correct result?

- Yes
- No

18. Would you like to participate in a neuromarketing research as a volunteer?

- Yes
- No
- Abstention

19. Do you know the benefits of neuromarketing research techniques?

- Yes

- No
- Abstention

20. Which of the following benefits of neuromarketing research techniques do you know?

- A more effective method to measure the consumer's thoughts and feelings that they cannot explain.
- Provides more realistic information about consumer perception.
- Provides a better understanding and explanation of the behavior of consumers related to the market.
- Generates more useful results in the field of marketing related to pricing, retailing, advertising and sales that could not be exactly measured previously.
- Neuromarketing techniques are more objective and data-driven.
- None