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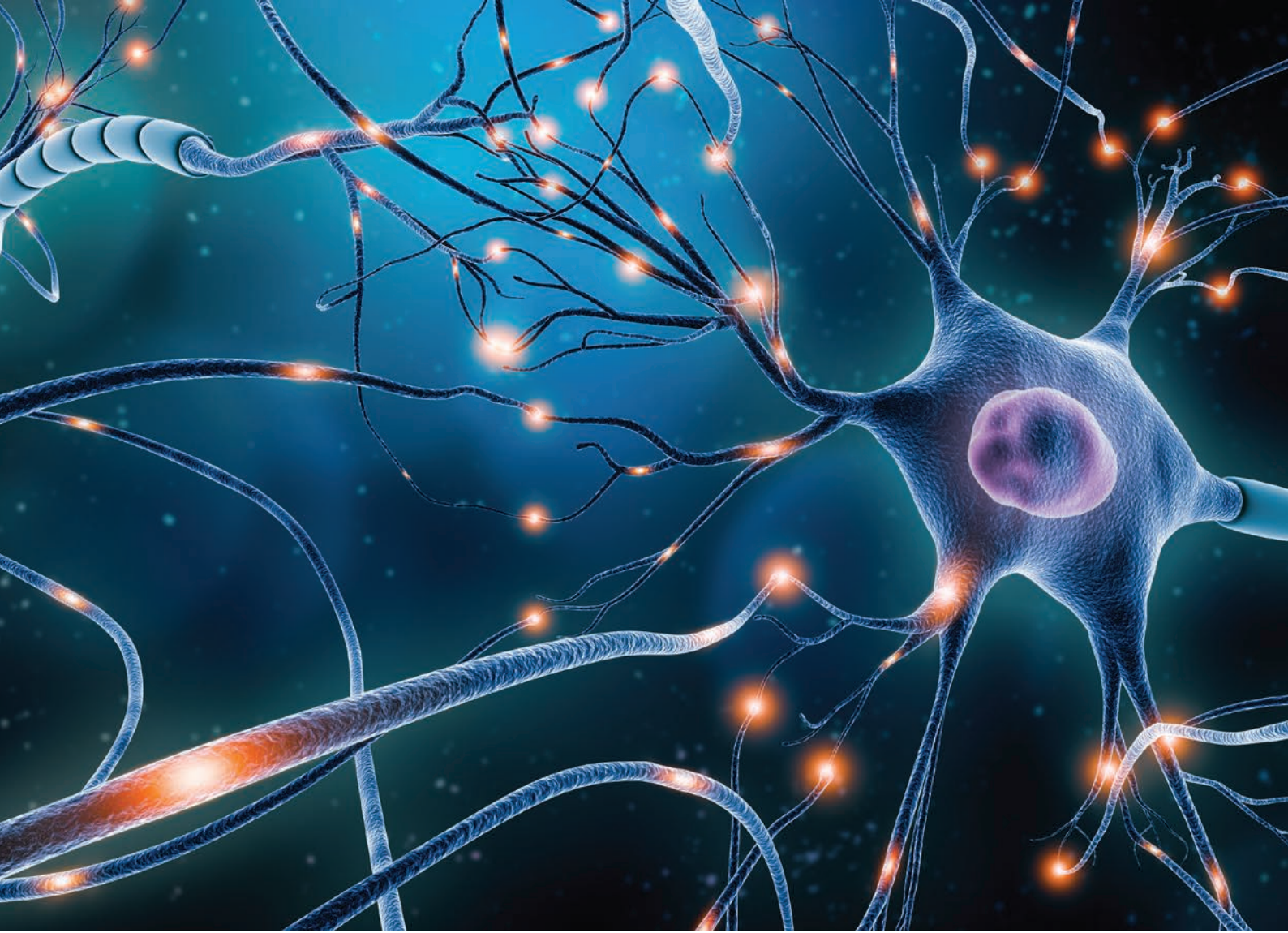
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Neuromarketing and Consumer Neuroscience

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Abstract:

Over the past hundreds of years neuroscientists have had the opportunity to study the functioning of certain parts of the brain, to find out exactly what makes us tick. In this way, they clarified the physical connections in the brain as well as what thoughts they produced. This field of study, neuroscience, became the most important

contributor to the area of neuromarketing distinguishing it from traditional marketing. In this way, certain companies, who utilize neuromarketing as a technology, have taken steps closer to their customers, and some governments, that may or may not be appreciated. In some instances, neuromarketing has also been used for malicious purposes. This new technology,

with its ethical flaws, gives consumers and businesses advantages, but also poses challenges. This essay wants to evaluate and examine the field of neuromarketing and how it is beneficial in marketing while also highlighting the problems with this technology so that it may be further developed in the future since neuromarketing, which was born in the light of neuroscience, has been an effective and fast method in terms of determining and changing people's thoughts about products and services.

Keywords: Neuromarketing, consumer neuroscience, the new brain, fMRI, advertising, and ethics.

1-Introduction

Neuromarketing has sounded some alarm bells in terms of the ethics around determining where in the brain the “buy” button exists in order to create advertising revolving around the findings of this neuroeconomics approach [1]. In general, marketing's central aim is to research what it is about individual, group and organizational behavior that contributes to the decision making process as relevant to markets [1]. It is no surprise that our “unconscious mental processes” are central to getting at this understanding and new technologies such as neuroimaging techniques are a non-invasive means to get at this unconscious thinking [1]. Used in this sequence we have what is called neuromarketing techniques [1]. Before delving into the modern understandings and ethics

around neuromarketing it is important to understand its beginnings.

Dr. Ale Smidts is the person attributed to the newly developed, as of 2002, concept of neuromarketing which emphasizes a superior understanding of how the human brain functions and the reasons why we make the choices we make. Dr. Smidts states that the goal of neuromarketing is to “better understand the customer and their response to marketing stimuli by measuring processes in the brain and incorporating them into both theory and stimulus development” [3]. The machine, he claims, that is most used to understand brain function is electroencephalogram, or EEG, because it is less costly than using the more advanced and complex imaging machine known as the fMRI (or functional magnetic resonance imaging)[3].

fMRI can show us images of the brain at very quick intervals (every 10 seconds) that work on measurement of blood flow and are the tool of choice in neuromarketing [11]. In the case of the world famous Coca Cola versus Pepsi taste test challenge (which used to be aired on television commercials where people were blind folded to taste each beverage and then choose the better tasting drink) fMRI has taken this to another level to determine which parts of the brain are activated during drinking [11]. The age-old Coca Cola versus Pepsi challenge has continued, even though both drinks and their ingredients are almost identical, and about the influence of behavior in our preferences of products. The taste-test challenge of

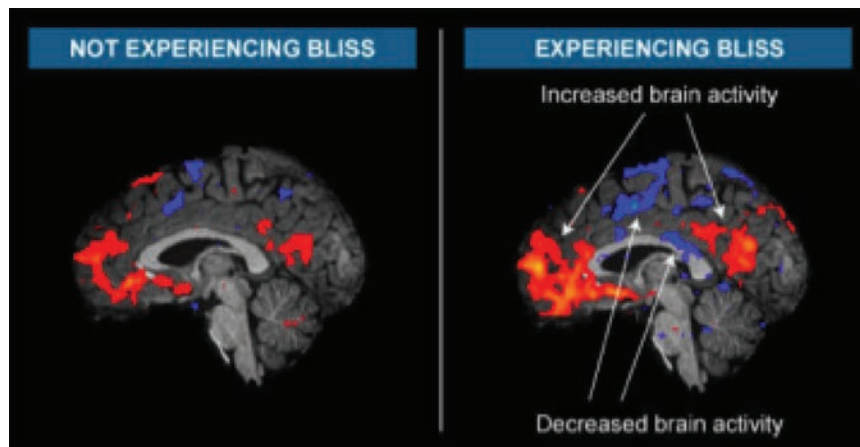


Image 3.
fMRI [12]

old has been replaced by “behavioral tasting tests and fMRI scans’ and researchers have found that a “constant neural response is observed in the subjects’ ventromedial prefrontal cortex when the drinks are served anonymously; and that when participants knew what they were drinking, it hugely affected their brain activity, as well as their behavioral preferences” [11].

The science involved in neuromarketing aims to help improve this marketing tool [3]. Dr. Smidts argues that neuromarketing is:

“a better understanding of the customer and his reaction to marketing stimuli by measuring the processes in the brain (neuroimaging and biometrics) and including them in the development of both theory and stimuli. Marketing stimuli include products, ads, salesperson behavior, webpage design and so on” [3].

Renvoise and Morin, in their book called *Neuromarketing: Understanding the buy buttons in your customer’s brain* (2007), explains that when

neuromarketing was first heard of, some people perceived the science of neuromarketing as a threat. They objected for fear of being manipulated. However, neuromarketing can help unravel the mystery that is the basis of our thoughts not only for business purposes, but for consumers themselves. Uncovering the brain’s decision-making system will help many people make better decisions for their own lives. Thus, people will be able to act and think more consciously against the fraud of the virtual world and the capitalist system [2].

This fear of neuromarketing, however, does not come from their logic of how the brain works. Renvoise and Morin state that the “Old brain only works for us to stay alive” or the human brain as it worked in the past was an emotional brain. Information and events that contain logic do not activate the old brain. Renvoise and Morin also explain that the brain has three parts, the new, the middle and the old brain. The new brain part basically an-

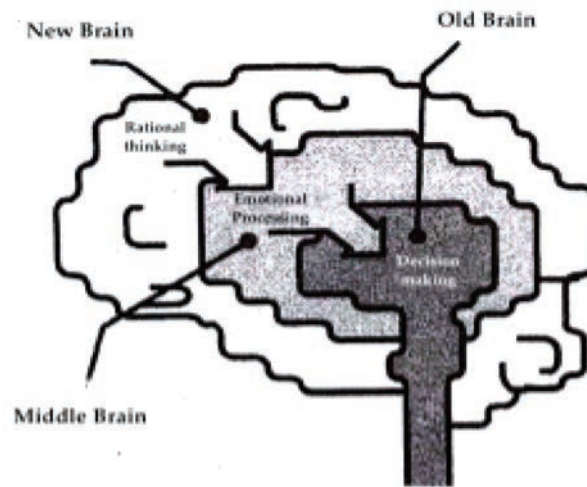


Image 1.

Three Parts of the Brain: (Renvoise and Morin).

analyzes sounds or visions, and is about our physical senses. The middle brain is like a storage center that helps us be aware of what is happening around us while it also helps us analyze emotions of the self and others. The last part of the brain for them is called the old brain which also serves as a storage center, but involves our subconscious thinking where we are not aware of what is actually going on. It is this part of the brain, according to Renvoise and Morin, that makes us decide what we should do [2].

Memory retention and processing of displayed information is directly related to the emotions experienced at that moment, which is a quality directly related to how neuromarketing works [2]. In some cases, people who experience extremely traumatic events may have forgotten them completely, while others may have these events engraved in their memory [3]. Renvoise and Morin also state that even if most people

think that we make decisions with our logic, they actually decide with human emotions. For this reason, the last choice is always left to the old brain [2].

The old brain is selfish and when it comes to survival, it takes action without ever thinking about other people and other living things [2]. When we see someone else in trouble, the old brain rejoices that you are not in that person's shoes and acts selfishly [2]. Your desire to help that person has been realized by the new brain because the new brain thinks rationally [2]. Interestingly, the authors point out that Neuromarketing helps us to explore the system of how our old brain works, so we can stop and understand what we actually do and need to live rightdevoted to the role of the new brain perhaps [2]. For example, some companies' advertisements make us buy products that we do not need, or social media makes us feel like we do not have the best physical features to be happy like

those posted everywhere in social media. With neuromarketing, they argue, we can see what we actually need and what will be enough to make us happy in our own personal life [2].

2-Neurofocus and MYND:

The company that started neuromarketing and the one that wanted people to be happy with themselves started probing into people's minds. This company is called NeuroFocus and started out in 2011. Neurofocus collaborated with many renowned universities, such as the Massachusetts Institute of Technology, UC Berkeley, and Harvard [4]. Neurofocus has worked on various types of products such as packaging and advertising to attract consumers' brains [4]. Neurofocus works by using neuroscience to understand and focus on consumers, specifically in terms of their "attention, engagement and memory retention" by tracking human brainwaves, for example by tracking how our eyes move [5]. Neurofocus has made quite a name for itself in a very short period of time and has helped many companies increase their revenues since its inception [5].

Thus, the developers of Mynd, a wireless, 'dry' headset will help marketers understand consumer thoughts at the subconscious level [6]. This device, as of 2011 offers "real time" responses from consumers that will assist in "revolutionizing mobile in-store market research and media consumption at home" [6]. Mynd is dual purpose and the European Tools for Brain-Computer Interaction Consortium wants to

use Mynd for medical purposes and helping people who suffer from neurological disorders and diseases while Neurofocus wants to benefit from the device's potential in marketing [6]. The benefits of this technology include:

- "Full-brain coverage with dense-array EEG (electroencephalographic) sensors. Full-brain measurement is the universal neuroscientific standard applied in the world's premier laboratories and educational institutions.
- Within seconds of slipping the user-friendly headset on, a consumer's brainwave activity is captured across the full cortex.
- Wireless transmission of brainwave signals; capable of interfacing with any Bluetooth-enabled mobile communications device.
- Dry "smart" electrodes (sensors), eliminating the use of gels and enhancing signal quality by introducing novel technological breakthroughs.
- Enables first full-brain coverage home panels for market research.
- Comfortable, lightweight, aesthetically pleasing modular design with easily-replaceable sensors" [6].

The reason why Mynd is able to provide such beneficial services is because it is made with a superior type of EEG sensors that can measure brain activity at "2000 times per second" and includes "eye-tracking technology" to help locate visual objects [6]. Professor

Robert Knight, at UC Berkeley's Department of Neuroscience, says Mynd and its dual use, in the medical and marketing field, can be beneficial to business and to improve people's lives [6].

3-The Advantages and Disadvantages of Neuromarketing

"[C]onsumers would benefit from the creation of products and campaigns directed to them and would have their decisions facilitated rather than manipulated, while organizations would save large portions of their budgets that are currently used on inefficient and ineffective campaigns, ensuring greater competitiveness and improvements to customer" [1]. The benefits of neuromarketing reveal that consumers are not always aware of what products or services can improve and ease their daily lifestyles. According to the way the brain works and how it works, "[p]eople do not make decisions based on totally rational criteria, even though most people will tell you that they do" [2]. This idea, on the rationality of consumers, started out in the 1960s by cognitive psychologists Amos Tversky and Daniel Kahneman that clashed with the ideas of classical economists such as Adam Smith and his notion of people being able to make rational decisions. This was later developed by Richard Thaler, the father of behavioral economics and his analysis of the ways we think and behave as consumers.

Rational criteria certainly enter decision-making, but is it rational to buy a million dollar Lamborghini for rational reasons? [7]. "[S]ome decisions

have rational elements or are almost completely rational. If you have to replace a broken part, there's not much emotion involved. But for most consumer purchases—automobiles, health and beauty products, food, fragrances, beer—there's a strong non-rational component" (conick). Brands have a particular power over consumers making them think that they prefer certain brands over others for specific reasons when the two items may be identical, such as in flavor [7].

According to Renvoise and Morin (2007) before the official neuromarketing took off in 2011, in 2009, brands tried to demonstrate the need for neuromarketing as they continued to perform traditional marketing research to address the needs of consumers [2]. In addition, businesses are expected to be innovative and think ahead of what their consumers might need it. One example of how brands make rational decisions for their customers is by innovating products they realize could be useful or beneficial to their lives when companies create products. Renvoise and Morin give the historical example of Sony which determined the problem that people had about projectors. The problem was "the weight of the projectors", it was hard to carry a projector from home to work and back to home from work. In this example the company made a poster that exactly represents the customer [2]. Sony depicted the customers' problem to the customer, and this company proved to them they needed a lighter projector (image 2 above). Sony gave the mes-



Image 2.
Poster

sage of “We have the solution.”, and they sold the projectors much more readily. One of the key benefits of neuromarketing, based on this example according to Renvoise and Morin, is that brands would do significantly better determining what their consumers need rather than going through a trial-and-error process by simply asking consumers to “blink yes” if they need a product or service [2].

Traditional marketing is not the same as neuromarketing. “Neuromarketing gives us information about the strengths and weaknesses of marketing strategies. By measuring brain activity, you can determine the power of advertisements, websites, commercials, flyers and everything else related to your business” [9]. Traditional marketing cannot achieve these tasks. Yet priming is an extant traditional marketing principle. Priming is a psycho-

logical concept that revolves around human mental “representations of concepts” or ones they are related to. In this case the concept is known to involve “rational bias” whereby “the mind interprets ambiguous new perceptual information in a way that is consistent with information it has recently perceived [8]. Neuromarketing can address this rational bias by the mind while also exposing marketing weaknesses and strengths to make the best of both worlds.

The disadvantages of neuromarketing revolve around its use for the shaping of political campaigns and swaying voters [9]. For example “during the US election of 2004, one study looked at brain activity and political judgment” and research has shown that the way a political candidate physically looks influences people and that losing candidates can stimulate responses of pain

in voters [9]. It is for these manipulative uses of neuromarketing that have led it to earn such a bad reputation.

With neuromarketing, our requests may come more easily and quickly, but this is not always the best thing. It can offer you more things that you love but cannot give up. For example, imagine that you like to smoke but have to quit because of health problems. Thanks to neuromarketing, a technology that knows what you like will most likely bring you advertisements about smoking and make it harder for you to quit. Also, your desire to quit smoking is not something most cigarette brands will like, these brands will want to send you special ads, which company would want to lose their customer? Would you consider neuromarketing a nice thing when you are in a situation like that?

We can understand that it is an addiction increasing from the interest of people in social media rather than the example of cigarettes. There is a very serious technology dependency in the new generation. The biggest source of this is neuromarketing. He is making the new generation dependent on technology by creating products, videos, articles and posts that will appeal to young people and reflect their lives. This addiction affects not only their social life, but also their mental and physical health.

fMRI can work in deeper areas of the brain than EEG machines, but is more likely to miss small details. EEG, on the other hand, can monitor changes for fractions of a second, but cannot work deep in the brain like fMRI. At the same

time, fMRI is \$20,000 more expensive than EEG. In 2008, a team led by Hilke Plassmann had their subjects drink three wines, each at a different price. The subjects' brains preferred the expensive wine, whereas all wines were the same. After consumers see product prices, there is a drastic change in their neural calculations about the product. What people say is never exactly the same as the thoughts in their brains. Humans do not have a perfect ability to remember. They may lie when they are in certain emotions. Neuroscience comes into play at these times, giving more accurate results, but unfortunately it is more costly [13].

Another expensive technology is devices that monitor face and eye movements. While technically difficult to manage, Uma Karmarkar, a neuro-economist at UC San Diego, says the time and effort spent on traditional methods will be well worth the price for these technologies. "Indeed, the insights that physiological tools typically offer—whether, given a certain stimulus such as a name, someone is feeling a strong emotion, is paying attention, and remembers the content—are particularly useful for designing advertisements" [13].

But physiological tools seem to remain popular for a while, as they are more traditional, less expensive, and require less effort. Scientists at NYU evaluated the methods used under the name neuro and determined that fMRI technology had the highest predictive power compared to other methods (eye tracking, heart rate, skin conductance,

EEG). Other techniques are also nice and usable for marketing, but fMRI is the most accurate [13].

Usually, marketers not only learn the thoughts and feelings of the consumer, they want to change the thoughts in their brains. They do this for their own benefit, and there are many ways they can be successful. Among these methods, we can cite Sleep nudging and Hormone manipulation techniques. Explaining these methods with examples may help you understand more easily. If we give an example for sleep nudging; We can talk about an experiment done on people who smoke. When smokers are in the second phase of their sleep, the smell of cigarettes mixed with the smell of rotten eggs spreads into the room. It has been determined that smokers who sleep with this smell reduce their smoking in the following days. In an example of hormone manipulation, researchers observed that people secrete more testosterone against expensive products, proving how important the social status of the concept of expensiveness and cheapness is [13].

The Ethics of Neuromarketing:

The disadvantages of neuromarketing tend to be very telling about issues raised under ethics. The literature on the ethics of neuromarketing tends to break up the issue between ethical and unethical cases of using neuromarketing. In the first case, the ethicality of using such a technology is based on the intent of marketing, which is not tied to the old or new forms of mar-

keting, but is rather about what businesses do with the information they gain from consumers. In the case above cited are the actions of politicians and what they do with the information they obtain from their voters. It seems that ethics come into question in marketing and neuromarketing when negligence and evil-intents are in question and not when marketing and neuromarketing have always relied on the concept of influencing consumer thought, feelings and actions. Consumers are assumed to have their own rational will and control of their consumption decisions even with neuromarketing. Neuromarketing, versus the older models of marketing, simply want to make marketing easier by more readily matching a consumer to a product or service of interest rather than using the older techniques (such as consumer surveys or calling of consumers or sending of feedback letters) [9]. It is an issue of "compatibility" to consumer preferences [9]. The issue becomes problematic when, in the case of obese people (who are argued to be more vulnerable to the visual aspects of products), marketers are designing products that may attract those who could become more unhealthy with the purchase of their product [9]. This also includes marketing centered and focused on children, especially in the case of harmful media content [7].

Capitalist ideals and making profit through harmful advertising content that makes consumers buy things dangerous to their health should be of ethical concern [3]. These ideals become

especially relevant when we consider the government supported and enacted advertising policies around cigarette smoking and how some countries, that all advertise against the use of cigarettes and the resultant damages of smoking, can be multi-interpretable [9]. However, when the issue of neuromarketing for smokers is examined the contrary is found. Research from 2015 (from the University of British Columbia Blogger Natiqa Babar) claims that according to testing done by Lindstorm, where neurotransmitters were used to track brain activity of participants, cigarette smokers react to the graphic warning images on cigarette packages [10]. The research results proved that smokers did not find the warning images repulsive, but on the contrary desirable thus encouraging their desire to smoke a cigarette [10]. It was assumed, since more research is required about how this happens in the brain, that it was a form of rebellion of smokers' thoughts against the warning images that were intended to make them dislike smoking based on the health hazards it creates [10]. A concept called "stealth marketing" must be further analyzed in this case as it relates to this example and in general for neuromarketing purposes [10]. Thus, in this case the marketing and advertising is achieving the contrary of what it supposedly intends on, or "the warning may actually push them [the smokers] to consume the product; against their better judgment" [10]. The same type of analogy can be made for products that are damaging to the environment

or have any other negative impact on people or society.

Non-capitalist ideals via neuromarketing can be advanced for charity purposes. This is why neuromarketing is especially beneficial for charity and enacts helping others. Neuromarketing uses the notion of "downward comparison" for example, to get people to "feel sorry" for others in need or to make them aware that through their donations a child may get an education, thus based on the human feeling of reward, or sympathy, through their contributions and resultant feeling of happiness which is considered an ethical part of neuromarketing (and traditional marketing as well) [9]. Marketing has ethics issues and they are not only about what they provide as messages in their advertisements [1].

Sometimes these ethics revolve around issues of too much consumer consumption or what has been called "purchase addiction" [1]. Thus, the issue of unethical business practices is not new and has been the focus of much research in this area (Lee). Neuromarketing opens up a new discussion on the traditional views of marketing practices if not variable only in a digital and technological dimension.

Conclusion:

Although neuromarketing, which emerged under the light of neuroscience, is a very new technology, it has grown rapidly and has changed the marketing operations carried out today to a visible extent. With Neuromarketing, companies and other organi-

zations that appeal to the community have been able to directly determine what people like and dislike, and have shaped their businesses according to the results of these data. Of course, scientists were not limited to this, but they developed neuromarketing technology and tried to accelerate this fast method, as a result of which new technological tools emerged. While we are fortunate to have such technology, the benefits of technology have been misused throughout history and today. In other words, neuromarketing has brought us disadvantages as well as advantages. Products that people do not need, products that are sold as if they need them, or propaganda using neuromarketing for the sake of maintaining authority are just a few of them. In addition to these, neuromarketing studies that affect people's health in a good way are also carried out.

It is an undeniable fact that neuromarketing has a significant impact today. Frankly, I think it's a fascinating technology. Today, there is a technology that can separate the human brain according to their functioning and change their minds. As mentioned above, besides those who use it for good, there are also those who use this technology for bad purposes. Neuromarketing, which is used in many fields today, is mostly used in the field of marketing and politics. Unfortunately, certain institutions use this technology for bad propaganda. They leave an impact, such as buying products they don't need or defending a politician they don't support. The use of this

technology for these purposes is unfortunately a reality. Of course, there are institutions that use it for good purposes. The biggest example of these are the institutions that help those who want to get rid of their addictions. These institutions also frequently use neuromarketing to contribute to the lives of their customers. Neuromarketing, which is used for these purposes today, will most likely be used for the same purposes in the future. The way it's presented to people may change, but the purpose will remain the same because that's always been the main purpose of this technology.

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