

## **NEUROMARKETING - MODERN TECHNIQUE FOR ANALYSING CONSUMER DECISION-MAKING**

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### **Abstract**

Neuromarketing is a scientific discipline that unlocks the mystery of the human mind, answering why consumers prefer a particular product. It is a step ahead of other research methods because it can analyze consumer desires and provide more precise results. In this sense, cognitive neuroscience studies consumer behavior with the aim of gaining a better understanding of the brain mechanisms underlying certain functions such as reasoning, decision-making, emotion, and memory, providing relevant insights into areas such as advertising response and brand loyalty. Indeed, neuroscience is a field that seeks to understand the structure and function of the human brain, how it encodes and represents the environment and how it controls the body and provides theoretical frameworks to assess correlations between the brain and behavioral states, to understand the causal links between stimulus and response. Thus, neuroscience has carved out a place in marketing to study, with much greater precision, the neural mechanisms of individuals exposed to marketing actions and stimuli.

**Keywords:** neuromarketing, neuroscience, ethical responsibility, marketing research, consumer behavior

**JEL Classification:** D87, M31, O39

### **1. Introduction**

In the digital age of information and communication, marketing has evolved considerably to adapt to new consumer demands and behaviors. One of the most exciting innovations in this field is neuromarketing or neuroscience in marketing. This complex concept combines marketing principles with neuroscience knowledge to better understand how the human brain responds to stimuli and to develop effective marketing strategies.

In this respect, a major challenge for the 21st century is to identify the optimal ways to satisfy consumers' needs and desires in a way that is economically profitable for companies. [4] Market research plays a major role in achieving this goal, and its methods, techniques

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and tools have continually evolved. They have given a significant boost to the depth and accuracy of research over the last two decades by incorporating neuromarketing methods and techniques.

The emergence of neuroimaging techniques and modalities has shown immense potential in various fields of research. [1] Imaging techniques are able to identify and map different brain regions in relation to their functions, which act as a key to various cognitive and neurophysiological research. In addition, a more comprehensive view of the human brain is achieved by combining anatomical and functional perspectives through hybridization (fusion). With technologies constantly improving, there have been many developments in fused imaging techniques in recent decades.

The global market for consumer products and services is a potential hotspot for researchers to demonstrate the applications of neuroimaging and brain mapping. Neuromarketing principles apply neuropsychology to marketing research and study subject response to marketing stimuli in terms of cognitive response with brain signals. Compared to traditional research methods, neuromarketing proves to be advanced, emerging, and advantageous as a research tool.



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In this context, neuromarketing emerged as an extension of neuroeconomics research, the term having been introduced by Professor Ale Smitds of Erasmus University in Rotterdam to describe the application of neuroimaging techniques in market research. The main difference from traditional research methods stems from the fact that in neuromarketing research, subjects are not asked what they think about a particular topic. In other words, the declarative component is not taken into account, and results are obtained only from recordings of the brain activity of the participants in the experiment. By delving into the human subconscious, neuromarketing research makes it possible to identify the subjects' non-material reactions to the stimuli to which they are exposed - products, packaging, services symbolized by logos, visual, olfactory, tactile, gustatory or auditory elements specific to goods useful for satisfying needs [3].

The interrelationship between neuroscience and marketing has become imminent due to the limitations and drawbacks of traditional methods used in the study and observation of consumer behavior, based mainly on self-reported information from respondents. Researchers have therefore succumbed to the need to use a more efficient way to overcome these limitations, which could provide a better understanding of consumer behavior.

Indeed, neuroscience is a field that seeks to understand the structure and function of the human brain, how it encodes and represents the environment and how it controls the body and provides theoretical frameworks to assess correlations between the brain and behavioral states, to understand the causal links between stimulus and response. Cognitive neuroscience studies consumer behavior with the aim of gaining a better understanding of the brain mechanisms underlying certain functions such as reasoning, decision making, emotion and memory, these brain functions go hand in hand with marketing concepts such as advertising response, brand loyalty etc. Thus, neuroscience has carved out a place in marketing to study with much greater precision the neural mechanisms of individuals exposed to marketing actions and stimuli. [2]

The main premise of neuromarketing is that most purchasing decisions are not made consciously but are influenced by instinctive and emotional reactions in the brain. [5] Therefore, by using neuroscience techniques, one tries to understand these subconscious reactions and to create strategies that stimulate them in a favorable way. It also aims to better understand the impact of marketing stimuli by observing and interpreting human emotions.

The reason behind neuromarketing is that human decision-making is not primarily a conscious process. Instead, there is growing evidence that the desire to buy products and services is an emotional process in which the brain uses "shortcuts" to speed up the decision-making process. At the intersection of economics, neuroscience, consumer behavior and cognitive psychology, neuromarketing focuses on the emotions that are relevant to human decision-making and uses this knowledge to make marketing more effective.

As a result, neuromarketing is becoming a cutting-edge scientific discipline that defines the boundary between neuroscience and marketing, aiming to apply knowledge from the medical sciences about the workings of the human brain and its use in effective business strategies, while at the same time offering products and services so that buyer behavior is directed towards purchase [6] Neuromarketing is a scientific discipline that unlocks the mystery of the human mind, answering why consumers prefer a particular product. Because it can analyze consumer desires, it also provides more accurate results.

## **2. Neuromarketing targets**



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Neuromarketing is important in the process of selling products and services because of its objectives, which can bring many benefits: [9]

- ✓ Enhances the consumer experience
- ✓ Incentivizes customers to make the right decision for their needs
- ✓ Brand becomes present in consumers' minds and associations are made with your products and services
- ✓ Interacts with the perception of your product using sensory memory techniques
- ✓ An emotional connection is created between the consumer and the brand.

In neuromarketing there is a certain reluctance that is partly due to a general pessimism about the technique's ability to generate useful insights beyond what traditional marketing methods offer. Several academic studies have shown that brain data can predict future product success more accurately than traditional market research tools such as surveys and focus groups. For example, studies have found that after participants watched anti-smoking ads, the number of phone calls to quit lines increased. However, traditional surveys on the effectiveness of ads have not led in the same direction.

These experiments show the benefits of neuromarketing over traditional approaches, which have significant inherent limitations. In surveys or focus groups respondents are not always receptive about their memories, feelings, and preferences. Often people misremember, lie, or are embarrassed by the way a question is asked.

Neuromarketing is seen as a field of commercial marketing communications that applies neuropsychology to marketing research, studying the sensory-motor, cognitive and affective response of consumers to marketing stimuli. An example of neuromarketing is Coca Cola, which uses the color red to capture, make the brand memorable and instantly recognizable to consumers. The packaging of crisps is another example that uses the auditory sense through the noise made by the bag being associated with the crunchy sound of the crisps. From a visual point of view, we can see landing pages promoting "life-changing" products. These techniques are well thought out because the images and buttons

are positioned exactly where the eye will go. The design, color scheme and position of elements influence the consumer's buying decision. Social media ads are a good environment to use neuroscience. We encounter neuromarketing in videos, testimonials and images in social media posts that grab consumer attention through various triggers. Blogs stand out through tone of voice and illustrations, using neuromarketing with the aim of making the user better understand the message the author wants to convey, as well as attracting attention. Podcasts also play an important role in developing the relationship between brand and consumer through the auditory senses they rely on. Voice, can be a very good stimulus, which often, in this case, attracts.

## 2.1. Neuromarketing strategies for business development



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The question that arises from a strategic point of view is whether everything in marketing is based on neuromarketing. Potential benefits for marketers include more effective and relevant marketing campaigns and strategies for consumers. It often involves manipulating people's real needs and wants to suit the needs and wants of marketing interests.

Marketing campaigns almost always try to produce some kind of brain activity that leads to the desired behavior. Neuromarketing is not inherently about manipulating the audience but rather about understanding people's real needs and wants. With this knowledge, marketers can develop better products and relevant, less wasteful advertising campaigns.

To optimize the neuromarketing strategy, it is advisable to address all five senses - visual, auditory, taste, smell and touch.

- ✓ **Visual sense** - keeping track of exactly in what order the consumer notices items on a web page, a product on the shelf or information displayed. This helps to see where users spend more time and where their activity is focused when interacting with the brand.

- ✓ **Auditory sense** - music is an example of an auditory strategy through which the brand can suggest consumption, relaxation, parties, to associate purchases with a certain mood.

- ✓ **Taste** - in supermarkets the big brands offer samples of cold meats, cheeses, etc. near the aisles for products in the same category; after testing, you are more likely to go to the shelf to buy that product.

✓ **Smell** - the use of a particular odorant to identify with its brand; therefore, smell can play an important role in the consumer's experience and therefore in the consumer's decision to purchase the product the brand is promoting.

✓ **Touch** - if a consumer prefers online shopping, then it is difficult for the brand to convince them by touch that it is the product they need; in the physical store it is much easier to approach consumers through the experience of actually interacting with your products.

### 3. Neuroimaging techniques used in neuromarketing



Neuromarketing is based on the use of neuroscience technologies and techniques to monitor and understand human brain responses to marketing stimuli. These technologies may include. [8]

✓ **Electroencephalogram (EEG):** This technique records electrical activity in the brain to measure emotional states and attention levels during exposure to marketing stimuli. Of interest to neuromarketing research are alpha and beta rhythms, with researchers looking at the degree to which alpha rhythms decline and are replaced by beta rhythms, which characterize volitional cognitive activity. The principle behind EEG investigations is called the Frontal Asymmetry Theory. [4]

✓ **Functional Magnetic Resonance Imaging (fMRI).** This provides real-time images of the brain and allows observation of brain activity in different areas during cognitive processes, including responses to marketing stimuli. It works by recording changes in the magnetic field adjacent to blood vessels that supply neurons. This change is induced by a decrease in blood oxygen concentration due to increased oxygen consumption in active neurons.

✓ **Biometric Measurements.** This can include monitoring pulse, facial expressions and skin reactions to gauge consumer emotions and interest levels.

✓ **Eye Measurements.** By tracking eye movements, you can evaluate how people process information in an advertisement or on a website. Eye-tracking (ET) equipment allows eye fixations to be measured by recording corneal reflections caused by infrared radiation. The equipment can be of two types: fixed (mounted on the screen on which the material to be investigated is projected) or mobile (in the form of glasses, which are attached to the

subject's head). The use of this device is based on the premise that mental attention is directed towards the object of visual attention.

✓ **The Galvanometer (GSR)** measures the variations induced by the activation of the vegetative nervous system (VNS) that occur in skin conductance. Given that activation of the VNS is an indicator of arousal, we can conclude that the GSR measures the degree of arousal induced by a stimulus and is thus a better predictor of market performance than declarative methods. GSR measurements are limited by the fact that they do not indicate the valence of emotional reactions, only their intensity. In other words, we cannot know whether the reaction captured is a positive or negative one, both of which may result in a similar recording on the GSR.

Although implementing such research is relatively expensive - in the order of tens of thousands of euros - the findings are significant. Using fMRI, eight of the nine regions investigated were found to be activated in the brains of subjects subjected to commercials. In other words, the brains of the individuals tested react in a certain way to the content of such advertisements.[7] Another, even more interesting, finding reveals that most purchasing decisions are made more arbitrarily, unconsciously, on the spot (probably also due to the existence of a large number of stimuli at the point of sale) than previously thought.

### 3.1 Neuromarketing Applications

✓ **Advertising Optimization.** Neuromarketing can reveal which visual elements, text or colors are most attractive and effective in attracting attention and generating positive reactions. [10]

✓ **Improving User Experience.** Neuroscience research can help design websites and mobile apps to ensure a more enjoyable and intuitive user experience.

✓ **Product Design.** By understanding emotional responses to different aspects of design, one can optimize the look and functionality of products to generate positive reactions.

✓ **Pricing and Value Perception.** Neuromarketing can reveal how pricing affects the perception of value of a product or service and guide more effective pricing.

✓ **Buying Decisions.** Neuroscience studies can help understand the cognitive processes involved in making purchasing decisions and provide insights for persuasive strategies.

✓ **Product and Concept Testing.** Companies can use neuromarketing techniques to assess consumer reactions to new products or innovative concepts. This can help adjust products to better suit market preferences and needs.

✓ **Creating Persuasive Messages.** Neuromarketing studies can reveal the words, phrases or wording that have the greatest impact on consumers' brains. These insights can be used to create persuasive and compelling messages.

✓ **Audience Segmentation.** By analyzing the brain's reactions to different types of stimuli, neuromarketing can help identify audience segments with similar preferences and responses. This allows for more precise and personalized segmentation in marketing strategies.

✓ **Evaluating the Effects of Advertising Campaigns.** Using neuromarketing techniques, companies can evaluate the emotional impact and level of engagement generated by their advertising campaigns. This helps to adjust and improve future campaigns.

✓ **Online Behavior.** Neuromarketing can also be applied online to understand how consumers react to websites, online ads or social media content.

### **3.2. Market research ethics using neuromarketing**

The ethical nature of the neuromarketing approach is one of the biggest and most sensitive challenges of its application in the field of market research. Since its inception, neuromarketing has been a controversial field, raising many ethical issues for researchers. [4] This reaction is due to the research methodology which is considered by some authors as having a high potential for intrusion into the mind of the subject. The feeling of distrust towards the new technology was amplified by the exaggerated approach of the media. Media reports spoke of the discovery of the "buy button" in the human brain. It would allow, to some extent, a "brainwashing" of individuals and thus a manipulation of their brains to make purchasing decisions in favor of a certain company or a certain benefit.

Neuromarketers claim to use these information, techniques, and processes to subtly influence people's buying decisions. For example, they might place a product in front of a person while they are looking at something else or play certain sounds in a shop to make people feel more positively about the products they see. Some people accept neuromarketing because they believe it helps companies sell more products without resorting to manipulative tactics such as false advertising. Others reject it because they believe it preys on people's vulnerabilities and exploits their subconscious desires.

Finally, there is the issue of accuracy. Neuromarketing research is still in its early stages, and scientists have not yet perfected the techniques needed to get accurate results. This means there is a chance that some of the data collected by neuromarketers may be inaccurate. Funding, regulation and accuracy are major issues that need to be addressed before neuromarketing truly reaches its potential. [9]

Despite its benefits, neuromarketing also raises ethical dilemmas. [10]. When such personal and intimate information is obtained about the reactions of an individual's brain, concerns about confidentiality and consent arise. Here are some issues to consider regarding ethics in neuromarketing.



✓ **Consent and Privacy.** Participants in neuromarketing studies should be informed of the data that will be collected and used and provide their voluntary consent. Ensuring data confidentiality is essential.

✓ **Manipulation and Excessive Persuasion.** Using neuromarketing techniques to manipulate or mislead consumers is unethical. Encouraging purchase decisions based on subconscious impulses can raise moral issues.

✓ **Transparency and Honesty.** Companies should be transparent about their use of neuromarketing techniques and not try to hide or manipulate information to gain unfair advantages.

✓ **Consumer Education.** Educating consumers on how neuromarketing techniques work can help them better understand the factors that influence their purchasing decisions.

✓ **Corporate Responsibility.** Companies using neuromarketing techniques should be responsible in their application and ensure that they use neuroscience knowledge to create authentic and valuable experiences for customers.

## **Conclusion**

Neuromarketing is an exciting and innovative approach to marketing that uses neuroscience knowledge to understand and influence consumer behavior. By revealing subconscious reactions and emotional responses in the brain, companies can develop more effective and personalized marketing strategies. However, it is important to use these techniques ethically and responsibly in order to build trust and authenticity with customers. The dream of every entrepreneur is to miraculously increase their sales.

Whereas in the past a lot of money was spent on banners on busy streets, flyers, and other such promotional materials, now they are looking to reduce the budget dedicated to a marketing strategy and improve its effectiveness. This is where the concept of neuromarketing comes in. Neuromarketing techniques are very useful because they basically tap into the pleasure centers of buyers who will instinctively come to buy your products.

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