

Neuro Marketing as a Marketing Synergy: The Science of Consumer Choice

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ABSTRACT

The study of consumer behaviour and neurology are being connected in the new discipline of Neuro Marketing. Although it was controversial when it initially appeared in 2002, the area is quickly becoming more accepted and respected by experts in marketing and advertising. Over 400 billion dollars are spent on advertising campaigns annually. However, traditional techniques for evaluating and forecasting the success of such investments have typically fallen short since they rely on customers' ability and willingness to express their feelings in response to advertisements. Innovative techniques for directly examining brains without needing demanding cognitive or conscious input are provided by Neuro Marketing. This essay explores the potential of the emerging discipline of Neuro Marketing and argues that it might significantly increase the efficacy of commercial and cause-related advertising messages globally.

Keywords: Advertising, marketing research, and Neuro Marketing. Neuroscience, fMRI, EEG, and consumer behaviour.

INTRODUCTION:

Conventional marketing models imply that customers compare the utility resulting from product costs and features when making decisions. A mechanistic layer is added by neuroeconomics, which pinpoints the neuronal circuits and calculations that carry out anticipation, decision, and value. Understanding how price, branding, and sensory cues affect perceived value and influence consumer behavior may be enhanced by combining neuro economic insights with marketing. This study presents an empirical methodology for evaluating marketing interventions at the behavioral and neurological levels, synthesizing key results from consumer neuroscience and neuro economics.

The terms "neuro" and "marketing" suggest that two academic disciplines—neuroscience and marketing—are being combined. Since the word "Neuro Marketing" began to emerge rather naturally about 2002, it cannot be credited to a specific person. A small number of American businesses, including Bright house and Sales Brain, were the first to provide Neuro Marketing research and consulting services at the time, promoting the application of technology and insights from cognitive neuroscience. Neuro marketing is essentially

the marketing equivalent of neuropsychology in psychology. Neuro marketing advocates the need of examining customer behavior from a brain viewpoint, whereas neuropsychology investigates the connection between the brain and human cognitive and psychological processes.

The first academic study on neuro marketing was conducted in 2003 by Read Montague, a neuroscience professor at Baylor College of Medicine, and it was published in Neuron in 2004. An fMRI equipment was used to scan the participants' brains while they drank either Pepsi or Coca-Cola. Although the study's findings were fascinating, Dr. Montague was unable to explain how our brain processes brand preferences. However, the study did show that whether or not people are aware of the brand they consume, various areas of their brains light up. According to the study, a powerful brand like Coca-Cola has the ability to "own" a portion of our frontal brain. Our executive function (EF), which regulates our attention, short-term memory, and optimal thinking, particularly planning, is thought to be housed in the frontal lobe. According to the study, people's EF increases and they really state that they prefer the Coke brand over Pepsi when they are aware that they are

drinking Coca-Cola. They claim to prefer Pepsi, but, when they are unsure of the brand they are drinking. In the second instance, an older structure tucked away in the limbic system is the most active area of the brain rather than the EF. Our emotional and automatic behaviors are controlled by this part of the brain. The Coke and Pepsi study was enough to raise concerns about the potential power of neuroscience, but it may not have been sufficient to persuade many marketing researchers that it could assist decipher the neurological code behind our judgments.

In fact, the worry that Neuro Marketing included a secret code to manipulate human impressions below the level of consciousness caused this study to spark a wave of harsh criticism. In 2004, an article titled "Brain Scam" in the journal *Nature Neuroscience* raised ethical concerns with Neuro Marketing research. The study raised serious concerns about the ethics of neuromarketers.

Notably, Harper Collins decided to include the term "neuro-marketing" in their dictionary in 2005 despite this brief media assault. Furthermore, by 2006, the efforts of the consumer advocacy group Commercial Alert and the critical paper published in *Nature Neuroscience* were unable to stop the rise in popularity and expansion of Neuro Marketing.

Let's investigate why.

For far too long, advertisers and marketers have created and evaluated successful advertising campaigns using antiquated methods. Every year, millions of dollars are spent on things that will never be used. Innumerable advertising fall short of capturing consumer interest and effectively influencing our memory banks. It would be as ridiculous as astronomers refusing to utilize electronic telescopes to ignore neuro-imaging as a means of understanding consumer behavior. Putting aside justifiable ethical concerns, neuroimaging undoubtedly offers strong glasses that allow us to see and comprehend a consumer's thinking.

Recognizing the Brain of the Consumer:

The goal of marketing research techniques has been to forecast and explain the efficacy of advertising campaigns for many years. However, traditional techniques have often been a complete failure. Understanding and simulating cognitive reactions to marketing communications has long been a methodological difficulty since emotions are powerful facilitators of how consumers receive information. For example, researchers have mostly depended on consumers' ability to express their opinions about a specific advertisement, either in a group setting like a focus group or in a private setting like a survey or in-person interview. Regretfully, these approaches have significant drawbacks. They begin by assuming that people can really explain their own thought processes, which we now know involve a lot of subconscious elements. Second, a variety of circumstances, such as rewards, time restraints, or peer pressure, encourage

research participants to describe their emotions in an inaccurate manner.

The development of neuro-imaging tools has provided intriguing methodological possibilities in this difficult situation. With the help of these strategies, marketers may now truly delve into the minds of their target audience and learn important things about the unconscious mechanisms that determine whether a message is successful or unsuccessful. They do this by eliminating the main problem with traditional advertising research, which is the belief that individuals are capable and willing to describe how a particular advertisement has influenced them. Even while neuroscience has advanced significantly over the past ten years, it has not yet made inroads into the secluded and shadowy halls of academic advertising research. Why? First, formal training in cognitive neuroscience is scarce among marketing researchers. Second, and perhaps more significantly, marketing researchers have long been concerned about the public's reaction to certain ethical and privacy concerns brought about by the commercial application of neuroimaging technology. Because of this, there are currently very few published scientific neuro-marketing research on the efficacy of advertising. However, things are rapidly shifting.

Neuro Marketing is, in fact, quickly gaining traction. From a few hits in 2002 to hundreds in 2010, the popularity of the term "Neuro Marketing" on Google has grown dramatically. In the meanwhile, advertising companies are starting to realize how important it is to use brain-based methods like eye tracking, EEG, or fMRI to anticipate how successful ads will be. Lastly, CEOs are still under pressure to forecast and gauge the return on the enormous sums of money they spend on advertising campaigns of all kinds due to the recent weakening of the economy. Considering all of these elements shows how urgent and urgent there is for creative advertising research that makes use of the most recent findings about the brain.

Assessing How the Brain Reacts to Advertising Messages:

Electroencephalography (EEG), magnetoencephalography (MEG), and functional magnetic resonance imaging (fMRI) are the three well-established non-invasive techniques for measuring and mapping brain activity, while there are several ways to evaluate physiological reactions to advertising. Due to their non-invasive nature, all three imaging modalities are safe for use in marketing research. That is why they constitute the bulk of studies that have been published in the last five years. Every approach has advantages and disadvantages.

Even though EEG is a rather outdated neurology technique, it is nevertheless regarded as a reliable method of measuring brain activity. Neurons are the cells that provide the basic underpinnings of our cognitive reactions. The foundation of our neurological circuitry is comprised of trillions of synaptic connections and more than 100 billion neurons. A

specific stimulus, such as a piece of advertising, causes neurons to activate, creating a little electrical current that may be increased. These electrical currents contain a variety of brainwave patterns, or frequency patterns, that correspond to various arousal levels. Electrodes are applied to the test subject's scalp, usually using a band or helmet, when EEG is employed in a marketing research study. It is possible to record brainwaves. Electrodes are applied to the test subject's scalp, usually using a band or helmet, when EEG is employed in a marketing research study. Very brief durations of time can be used to capture brainwaves. Up to 10,000 recordings per second are possible with some of the new EEG bands. Taking into account how quickly our minds and senses process information, this is useful. However, the drawback of EEG is its poor spatial resolution, which makes it impossible to pinpoint exactly where neurons are firing in the brain, particularly in older, deeper structures. This is only due to the fact that electrical impulses located far beyond the cortex are not detectable by the electrodes on the scalp. Finally, it is difficult to assert that the brainwaves produced by certain advertising stimuli are just the result of the stimuli themselves, as it is believed that around 80% of our brain activity is utilized to maintain a key condition known as "rest time," "the default mode," or simply "baseline."

EEG was used in the first psychological research as early as 1979. One of the earliest cognitive scientists to put out a theory connecting affect and brain electrical patterns was Davidson. Later research by him and others confirmed that the frontal area of the brain had lateralized electrical patterns. Positive emotions are often indicated by the left frontal lobe's alpha-band wave measurement (8–13 Hz). It is also hypothesized that this kind of activity is a reliable indicator of our level of motivation to take action. Conversely, negative emotions are usually associated with electrical activity in the right frontal lobe. In general, these feelings get us ready to distance ourselves from an experience. EEG is commonly regarded by cognitive scientists as being poor, if not questionable, for the goal of comprehending and forecasting the impacts of advertising, despite the fact that its relatively low cost has made it extremely popular among Neuro Marketing companies in the last five years. Although the information obtained from EEG can be useful in determining the effectiveness of a piece of advertising, it is not enough to explain the cognitive process that causes the complete brain to become active. MEG, which first appeared in the middle of the 1960s and has garnered a lot of interest in the past 10 years due to the remarkable advancements in the measurement and imaging of magnetic fields in the brain, is thought to be a cousin to EEG. As we previously explained, neuronal electrochemical signals determine brain activity. MEG can map and amplify the magnetic field produced by neuronal activity. More significantly than EEG, MEG has superior spatial resolution in addition to having outstanding temporal resolution. However, MEG is not an effective technique for imaging subcortical regions since, like EEG, it is somewhat limited to picking up activity near the brain's surface.

A few useful research have shown that particular frequency bands connect to controlled cognitive functions including object recognition, verbal working memory access, and event recall, despite the technology's high cost and drawbacks. This really implies that measuring activity in regions that are known or anticipated to generate activity in response to particular activities is a better use of MEG than doing exploratory studies.

Therefore, it is not optimal to perform marketing research studies that look at both higher cognitive functions (cortical) and emotional (subcortical), even if MEG is still developing and offers a great means to capture reactions to cognitive events almost in real time. In order to optimize temporal and spatial resolution difficulties and/or offer the extra benefit of time stamping crucial cognitive events at the astounding speed of a few milliseconds, the majority of researchers using MEG combine MEG with fMRI.

The fMRI modality is based on imaging the change in blood flow in the brain using an MRI scanner, in contrast to both EEG and MEG. When neurons activate, they must utilize energy, which is swiftly digested and carried by blood flow. The contrast of the BOLD signal as determined by the fMRI is the crucial component that a marketing researcher must comprehend. The abbreviation for Blood Oxygen Level Dependent is BOLD. Certain parts of a subject's brain receive more oxygenated blood flow when they are exposed to a specific stimuli, like an advertisement, than when they are at rest. The magnetic field that the hydrogen protons in our blood's water molecules emit is distorted as a result of this alteration.

All fMRI investigations are predicated on the idea that, although not directly measuring the electrochemical signals produced by our neurons, the change in the BOLD signal is a reliable indicator of neural activity. The temporal resolution of fMRI is regarded as being fairly sluggish, even if its spatial resolution is ten times greater than EEG because it allows researchers to image the activity of a voxel (Volume-Pixel), which is a cube of neurons that is 1 mm x 1 mm x 1 mm in size. In fact, there is a lag time—typically a few seconds—between when a neuron fires and when the BOLD signal changes. However, the primary benefit of fMRI is its capacity to see deep brain regions, particularly those implicated in emotional reactions. Compared to MEG technology, fMRI scanners are more accessible but also more costly. Together, these elements explain why fMRI is now the most widely used brain imaging method worldwide and is probably going to be the method of choice for Neuro Marketing researchers for many years to come.

WHAT DOES NEURO MARKETING TEACH US ALL? :

Neuro-marketing is obviously in its infancy if neuroscience is regarded as a young field. The opportunities presented by revealing the brain circuits involved in product search, selection, and purchase are only now becoming apparent to marketers. Enough

evidence has already been published to demonstrate some of the fundamental neurocognitive principles at work when consumers receive advertising messages, even if many of the research conducted by neuromarketers are commercial and do not adhere to the norms and review procedure required by academics. I co-wrote the first book on Neuro Marketing in 2002, which outlined these concepts without the advantage of having many of my presumptions confirmed. But since then, I've gathered a ton of factual and scientific data to back up the foundation of a strong Neuro Marketing strategy. For Reference: All of our consumer actions are controlled by the brain.

, It requires a lot of energy to operate effectively. The brain consumes around 20% of our energy, yet making up only 2% of our bodily mass. Below our level of consciousness, the brain controls the majority of the processes we need to carry out each day. This explains why maintaining our rest state or default mode requires around 80% of our brain energy, a crucial component of brain function that still baffles neuroscientists. It is obvious that we only consciously employ 20% of our brain. Even worse, we are too preoccupied with keeping an eye out for possible dangers to manage the majority of our attention. The most ancient section of our brain, known as the R-complex or reptile brain, actually controls us to a considerable extent since survival is the most important thing.

Over millions of years, the reptile brain evolved. It prefers pain avoidance over pleasure, is pre-verbal, and is incapable of comprehending complicated information. It is the area of the brain responsible for our great selfishness and our strong inclination to take mental shortcuts rather than engage in lengthy discussions. The ability of the reptile brain to comprehend visual inputs without the aid of the visual cortex is its most potent feature. This explains why we choose experiences over justifications and pictures over words. According to renowned neurologist and renowned author Antonio Damasio, "We are feeling machines that think, not thinking machines that feel." The brain has been reliant on instinctive reactions for millions of years, despite the fact that we value and even revere our cognitive talents, as demonstrated by Damasio and numerous others. And because biological adaptation to a rapidly changing environment is too sluggish, it will do so for a very long period. What does this signify in terms of Neuro Marketing? It implies that certain guidelines have to be followed when crafting advertising messages in order to maximize information processing at the brain level. We get 10,000 texts a day on average in the modern world. Unless it directly addresses the reptile brain, this amount of info is essentially meaningless.

Neuro Marketing will continue to exist. It will also change, much like people and even brands do. Customers like you might never notice the difference in the communications that are created or improved as a consequence of learning more about how we make purchasing decisions. Although there will always be ethical concerns, guidelines have already been

established to ensure that Neuro Marketing research is carried out in a transparent and respectful manner. Additionally, keep in mind that a lot of advertising messages are not commercial. Numerous campaigns seek to alter individuals' self-destructive habits.

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