

# Neuro Design And Neuromarketing: A Consumer Insight

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## Abstract

The development in the field of Neuro Design has evolved into some remarkable developments that have made us use sophisticated techniques in the field of marketing. The human brain has been researched from the perspective of a marketer. The outcomes of these researches are making headways into understanding the mechanics of purchase decisions by a buyer. Thus, a new area has emerged called "neuromarketing." When a buyer engages with a brand, there are several reactions that take place in the mind of the buyer. These reactions are developed as certain signals in the brain. We can capture these signals and make use of them to make some conclusive understanding of what reactions generate the required purchase decision. The advertising world has been impacted by neuromarketing at the turn of the century remarkably from 2002 onwards. We have witnessed that auto companies worldwide have applied Neuro marketing techniques in their latest advertisements to impress upon knowledgeable buyers. But the question remains how to predict the real intentions of the buyers: their bodily actions depicting their perceptions, minds, and hearts. There are several neuroimaging tools developed by Neuro Design like fMRI, Eye tracking, and EEG. This paper tries to figure out how these tools help the new age marketer in persuading the customer to buy and predicting the outcome of this persuasion accurately.

**Keywords:** Neuromarketing, Brain Research, Neuroimaging, Eye Tracking, EEG, fMRI

## 1. Introduction

It is a marketer's quest to find out various ways to lure the customer into buying his/ her products or services. One of the important tools that marketers have found is Neuro marketing, which is based on the domains of neuro design, neuroscience, and psychology. As described by Neuro Design is a practice that derives its acumen from the fields of neuroscience and psychology. The in-store and web activities of the prospects, their web presence / lingering on a particular webpage, and their clicks and picks can be recorded. These records along with the shared photographs/graphics on social media help us derive some conclusions about the intentions of buyers' purchase decisions. Neuro Design also draws concepts from other related fields of image processing (computer analysing the graphics

and image compositions), economics (customers' economic decisions- how they make the expenditure and most of the time it can be crazy activities), and psychology (what goes in the minds of the buyers other than the monetary considerations (Bridger, 2017) Neuromarketing is an amalgamation of three basic fields of the knowledge that are neurosciences (a branch of medical sciences), technology and marketing. The studies related to brain actions help marketing persons to check the brain reactions of the customers which can influence the overall integrated marketing activities. This study technology can even help in refining or reintroducing a product or idea . It is a very sophisticated endeavour in marketing where the marketer sends stimuli in the market in terms of the advertisement or any such communication and then tries to find out the customers' reactions to these stimuli by various neuroscientific tools. The

stimuli also can be a direct exposure to an idea/ product, packaging, or some written/oral communication. In other words, marketer tries to study customer reactions in terms of some measures of brain activities. They include brain images, scans, or some other senses. Thus, marketers can get data that are unbiased, true, and self-revealing from where accurate marketing predictions can be drawn.

## 2. Growth of Neuro Design and Neuromarketing

Marketing concepts have been developing throughout the ages from basic production concepts to selling-marketing-sustainable ones. There is a sea change in the way today's competitive world looks towards the way people have been transacting on the commercial front. Several challenges are faced by marketers as well as producers from the aspect of design, manufacture, and promotions to serve the end customer and maintain customer loyalty. Different analogies are considered for improving the way these activities are carried out such as design-manufacture-sale- service-customer loyalty. Neuro Design is one such discipline that has developed over recent years. It looks like a scientific imagination of a fiction writer but the application of neuroscience research in the fields of design is a reality today. According to Bridger (2017) these concepts are new and haven't yet all filtered down to all design degrees and courses, but they are likely to become an everyday part of the designer's toolkit in the near future. The consultancy organizations have already started accepting Neuro design as the way forward and some of them have started implementing them into their design practices. Neuro design can be described as the application of two fields of neuroscience and psychology. Typical buyer behaviour comprises of various activities one can take in the shop whilst handling an item, or on the web we surf. The liked photographs are shared on Facebook and Instagram. These activities are the subject matter of study for the marketers to conclude the customers' buying intentions. Modern designers are using innovative designs out of the right usage of computers and their creativity. They are trained to add an aesthetic look to the designs they create. The product design practices have come a long way in creating these appealing designs as we can see in some of the cars, cosmetic products, and other related products we use every day. This knowledge base from the design field has been augmented with the huge repository that neuroscience and psychology have created over the last decade or so. As rightly pointed out again by Bridger (2017) these repositories describe many aspects that can explain what types of designs are liked by the common persons and the research keeps on adding to this repository. Thus, a new field of neuro aesthetics has emerged that tells designers which graphics impact the human brain in the right way .

## 3. Growth of Neuromarketing

Over the years marketers have struggled to create good products, which are looked upon by customers as valuable, at the same time they have tried to get some edge over the competition as far as their product/ service is concerned. But recently marketers have started including the psychological aspect of the consumer as a more important aspect than the offering from the marketer. The current research by Kotler (2019), states that marketers must observe the customer as a

total human being in four parts: physical body, mind, heart, and spirit. That means the marketer must understand the feelings as well as excitement and wow to stand in the complex market that exists today. Looking at the new theory it is right for marketers to adapt to the concepts of Neuro Marketing. The term "Neuromarketing" has been coined in 2002 in Neuro Relay. Smidts (2013) staunchly stated that that mankind has made considerable progress in the field of brain methods by which we can study the favoured choices. He believes that Neuro marketing aims at knowing the customer in greater detail and finding his/her responses to the various marketing communications by gauging the brain's progressions and reactions in the form of images taken of the brain and the biometric records. Different marketing communications can be in the form of customer exposure to the goods/ services, advertisements, sales presentations, promotional materials, and various media presences including websites. He went on to define Neuro marketing as the research of brain processes to know the customer's reactions to improvise the marketing policies. Whereas according to (Lee et. al., 2007), Neuro marketing purpose is to recognize how customers think and why the customer selects the product/services by applying "neuroscientific approaches to analyse and recognize human behaviour to markets and marketing interactions". Smidts (2013) in the case of the brain with famous personality impacts in advertisement stated that known and related personality looks will snatch the attention and will stand out in the advertising mess. He also emphasised that it should be made sure that there is a realistic connection between famous personalities and the goods/services to improve memory encrypting of the goods and induce conviction to the goods leading to higher purchase intention. By professional guidance, marketers improve bodily allure, friendliness, and honesty and highlight identification/role models. Studies reveal that there is an impact from famous personality to the goods/ services at the level of the Medial Orbitofrontal Cortex . Another definition of Neuromarketing is the scientific method that uses MRI (magnetic resonance imaging), EEG (electroencephalography), TMS (transcranial magnetic stimulation), fMRI (functional magnetic resonance imaging), and additional neural wave tools to observe the brain's reactions to marketing impetuses to find out what customers' views are for goods/services, ads, or even packages to accurately built series of ads that are based on the neural reactions . Along the same lines, Smidts, (2013) has proposed a study that was on anti-smoking advertisements with one fMRI 16 advertisement and one prediction on customer liking. His remarks were EEG used instead of fMRI saves us cost but we lose high resolution and results that can be achieved by fMRI. He further stated that with more and more studies we can create a higher level of knowledge for neuro marketing studies and thus, have a more beneficial and long-lasting consumption of the goods/ services thus created. This concept is in line with Marketing 3.0 which keeps human values at the centre (Marketing 1.0 keeps the product while Marketing 2.0 keeps the consumer at the centre) .

## 4. Tools used for Neuromarketing

In the earlier section, we have mentioned the tools used for neuro marketing. In this section let us discuss various popular tools used for the same.

**EEG:** Electroencephalography is abbreviated as EEG which tries to record the activities of the brain when exposed to some

stimuli. The probes are applied on the head and the brain activity has been recorded by these probes with electrical signals. The created images are created by the brain's activity and electrical signals create the image through various channels (there are typically 16, or 32 channels to record). The images are mostly in the form of waves. In the medical field, the technique has been used to find out the causes of seizures fits, or any memory-related problems.

**HD EEG:** HD EEG is a more sophisticated technique than EEG with higher channels (mostly 256 or higher). This process can give us more accurate and high-density (so-called HD EEG) recordings of brain activities. The recorded ongoing electrical activity generated by the neurons in the brain, which is why it is also called a "brain wave" test. As the channels are more, it can also accommodate the thematic maps of the brain activity.

**Eye Tracking:** The Eye tracking method is used where the eye's positions are monitored when the eye has been exposed to some visual stimulus. It is a medical method but is also used by neuro marketing techniques. There is a camera that observes the pupil of the eye and creates the related analysis in the form of images. The pupil dilation and movements are recorded. There are various areas where it is being applied. Product design, design of packaging, and testing by psychology are some of the examples of the same. The main concern in this test is to locate the positions where the users are looking.

**Galvanic Skin Response:** Galvanic Skin Response (GSR) tries to observe the temperature of the skin. It also checks the moisture in the skin. Both these parameters are helpful in analysing the electrical conductance (an electrical phenomenon) that represents the psychological and physiological level of excitement. This excitement is termed arousal in the design thinking processes. The method can be used to check the pulse deviations of the person also. Pulse & humidity changes and skin conductance are the indicators of the psychological status of the person including arousal as well as excitement. Another major application is to use this method as a lie detector.

**Cognitive Analysis:** Cognitive study always applies the human-like treatment to any task or process. In neuro marketing, it is being used to combine various analyses for a given set of stimuli and try to collate the results. Thus, the results of all the above methods can be analysed separately and then combined to check the validity of the combined report. In the given circumstances they all should follow the same pattern.

**Functional magnetic resonance imaging (fMRI):** fMRI is the acronym for functional magnetic resonance imaging. This is a technique where the magnetic field is been used to scan the brain and thus the images can be recorded for further analysis. The major measured item is the level of oxygen in the brain, where the activity is on a large scale, the usage of oxygen is also more of that which can be captured by the magnetic field. Thus, we can measure correctly the part where the oxygen level has increased, and then depending upon the position and the oxygen levels, conclusions can be drawn. This method is widely used in neuro marketing nowadays.

**Empathic design:** Empathic design is a method where no device is being used. This is a conceptual method where the end customer or consumer has been empathised. This means that the designer experiences what otherwise the user or consumer

is facing. It can be said in simple terms that stepping into someone's shoes. Here the consumer's world has been envisioned and the design has been carried out keeping the user at the centre.

## 5. Factors influencing and limitations faced by Neuromarketing

Any recent trend will face several factors and there will be a few positive and mostly negative factors affecting the trend. The usage of neuro marketing is not an exception to the same. The factors are discussed below (Alsharif et al., 2023).

**Expertise available:** There are a very small number of experts available currently in the neuromarketing field. These are new techniques introduced in the marketing functions. So, experts in fMRI, HD EEG, and EEG are scarce. The number of persons who can read and interpret the recorded images/waves is also scarce. There are experts available in the neurosciences and marketing fields, but both expertise combined is a rare commodity.

**Cost of equipment and process:** The costs of equipment and the costs of the process are very high. These processes are being used in the medical field to date. So, a precedence of using such expenses has been established, which is exactly the opposite in the marketing field. The normal costs of MRI machines in India range from a few Lakh Rupees to a few crore Rupees. Thus, there are monetary compulsions on the usage of the techniques. With customized equipment, the solution can be worked out for use in the neuromarketing areas.

**Lack of Knowledge and Awareness:** There is a lack of knowledge and awareness among the marketing people about this method. The methods have always been looked upon as the equipment from the medical fields. So, the marketer does not look towards neuromarketing as an alternative in the field of marketing. The current management is also not looking towards this new technique as there are several misconceptions about the field. When some Innovators make good use of this technique and prove its worth, others will start following. But for that to happen some strong success story needs to be created.

**Privacy and Ethics:** The use of the neuro marketing methods can lead to understanding the user in its entirety. This means you may have a peep into the conscious and subconscious minds of users. This has led to concerns related to privacy, personal rights & confidentiality. These are the ethical issues related to privacy violations and will invoke some legal concerns on the matter. Even though the users have agreed to part with their rights on the issue, the information leaking issue remains unanswered. The info can be leaked for commercial benefits by the marketers, and this also can lead to legal implications, as they are currently with some major social media giants.

**Shortage of Resources:** There is a shortage of resources on all fronts. Shortage of funds from marketers as well as a shortage of facilities and skilled persons from the service providers. This is a chicken and egg dilemma. As there is no demand, supply is short; whereas there is no supply, there is no demand.

**Time-consuming process:** The method is a very lengthy and time-consuming process. The experimentation will need a set-up. The users need to be persuaded, which may take time. The

process takes time as the set-up takes time, results printing, and then interpretation will take time. Thus, the action on the analysis will be postponed too much. Once the method becomes a regular one, the time gap can be reduced.

## 6. Use of Neuromarketing across sectors

The emerging usage of neuromarketing has been used in various industry sectors. These sectors have been represented below.

**Auto Industry:** The Korean auto giant Hyundai uses Neuro marketing in their car designs. This technique has been used to design the exterior of the cars. The users are exposed to the test EEG and then their reactions are recorded towards the design and then utilized to finalise the designs. It has been their regular practice to use empathic design for their car as a neuro marketing method.

**Daimler:** The motor car brand used fMRI to read the reactions from the pleasure centre of the brain after creating a campaign that used car headlights that were reflections of human faces .

**Food Industry:** Campbell's and Frito-Lay use neuro imaging for designing the packaging for potato chips. When they analyzed the design with dazzling colours, the emotions of guilt were recorded. When the matte beige colours were introduced the emotion was a healthy feeling. So, they changed the packaging to matte and beige colour .

**Digital Payment (Finance):** eBay has conducted brain wave research which concluded that the feature of speed scores more over the feature of safety. They introduced the users to use the payment gateway for speed and became successful .

**Technology Platform:** Yahoo tested its 60-second ad by asking users to wear an EEG cap and watch it. The result was favourable and then it was aired on prime time investing a lot of money.

**Food & Beverage:** PepsiCo has partnered with NeuroFocus and tested its consumers' response to Baked Lays. This resulted

in the creation of a new single-serve package of the product, as well as an ad campaign that the test informed .

## 7. Conclusion

Neuromarketing is a new method that has become available to marketers in this more complex world. It has become easier to understand how the consumers' emotions are and how to position the products in the targeted marketplace. The insight into the mind space of users can be as small an issue as knowing the reaction to colour. On the other extreme, it can be an opinion on a very controversial issue in the community. However, the methods of Neuroscience and Neuro Imaging have made it possible today to understand the subconscious mind of the user. It has helped organizations to make appropriate decisions and improve their offerings in the market. This is the reason we can find that multi-national companies have adopted the neuro marketing methods at the earliest. As the field of Neuro Marketing emerges, consultancy firms have started their Neuromarketing practices. Brighthouse, NeuroFocus (Now Nielsen Consumer Neuroscience), Neurosense, and Neuro-Insight are some of the names that started the Neuro Marketing consultancy services to various multi-national companies.

There is no doubt that Neuro Design and Neuro Marketing are here to stay. The techniques are still developing and can impact the businesses carried out in the near future. The future poses several challenges that need to be worked upon by the industry leaders, so Neuro Design and Neuro Marketing become affordable to smaller companies too and thus extend the benefits to society at large. At the same time, marketers also have to face a lot of challenges while using the data related to the subconscious mind. There are several privacy, and confidential issues that can lead to severe legal fundamental changes in society. The deep insight into the mind space of consumers can help marketers make faster decisions and will cost less in the decision-making process.

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