

The Need To Dive Deep Into Consumer Minds With Neuro Marketing: Evolution And Recent Developments

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ABSTRACT

The study tries to understand the evolution, need and the dynamics of Neuromarketing in order to determine its impact and relevance in the current times. It is going to help the beginners or marketing enthusiasts to grab the conceptual understanding in a granular fashion, encouraging them to study and explore more about the field of Neuromarketing.

This paper briefly discusses the evolution and recent developments of Neuromarketing. It further discusses the techniques, advantages, limitations along with the future of Neuromarketing. It encompasses a varied comprehension of the concept of Neuromarketing which would be helpful for scholars unaware of the fundamentals. With the ever-growing need of more sophistication and precision in the methodologies involved around marketing techniques of research and consumer, a revolutionary set of techniques like that of Neuromarketing are set to take the pace of consumer insights to a whole new level.

Overall findings of the paper reveal that Neuromarketing can act as a promising futuristic tool which can aid in understanding the emotions of the consumers thereby helping in carrying out authentic research, idea development and innovation in the field of marketing. Further, Neuromarketing, if utilized with thorough research and understanding of consumer insights, has the capability to revolutionize and forever change the theories and refresh the concepts of consumer behaviour.

Keywords: Neuromarketing, Market Research, Marketing Communications, Consumer Insights, Consumer Behavioural studies, Advertising Effectiveness, fMRI

1. INTRODUCTION

Neuromarketing is the domain of marketing that studies the responsiveness of brain to marketing strategies. In the words of Roger Dooley, 'neuro-marketing is an application of neuro-sciences to marketing'. It is an emerging field that associates psychology, neuroscience and economics. Lee et al. (2007) defines Neuromarketing as 'an application of neuro scientific methods to analyze and understand human behaviour in relation to markets and marketing exchanges.' Krajnovic et al. (2012) stressed that it is 'a field of marketing that uses neuroscientific methods and techniques to analyze and understand consumer behaviour in the market and important marketing issues.' According to Neuromarketing Science and Business Association (NMSBA), the discipline tries to answer how consumers make buying decisions, how much they are willing to pay for a product or how do they value the product and also what some brands are seem more appealing than the others.

In Neuromarketing, the main focus is on systems neuroscience, which is the study of how different brain areas interact (Braeutigam 2005). A distinction is essential between consumer

neuroscience (neuroscience and consumer psychology) and Neuromarketing, interest in neurophysiological tools (Javor et al. 2013). However, it is of utmost importance to have an accurate understanding of the brain's function to interpret the results correctly.

Neuromarketing measures encoding of individual's memory, sensory approach to a product, how human emotions behave when confronted with a product or service, brand loyalty and its preference among consumers and how often people can recall the brand.

Over the last few years, there has been increasing demand for Neuromarketing by companies for conducting research in the field of advertising and brand promotion. One of the main purposes of this research paper is to give an overview of Neuromarketing, its key features and recent developments in the field of Neuromarketing. The paper is organized as follows: Section 2 presents a brief origin and history of Neuromarketing. Section 3 describes the important techniques of Neuromarketing research. Section 4 presents the major advantages and limitations of employing Neuromarketing. Finally, Section 5 provides a summary and concludes.

2. NEUROMARKETING: ORIGIN AND HISTORY

Neuromarketing is relatively a newer concept (originating essentially in 2002) and is developing very fast among marketers. The technique of marketing measures brain activity and help researchers or scientists in improving the predictions of consumer behavior and visualizes the workings of brain in unrivalled details.

- i. The beginning: The concept has its roots in the book, "The Hidden Persuaders" published in 1957 written by Vance Packard. In his work, Packard tried to reveal how advertising companies use psychological methods to deduce consumer's unconscious desires in order to convince them to buy the product the company is selling. Later, David W. Stewart in 1984 wrote 'Physiological measurement of advertising effect: an unfulfilled promise' wherein he had stressed that individual's genuine response to market information could be known using physiological measures. Since then, regular investigation and further developments have taken place in the terrain of Neuromarketing.
- ii. Official Introduction: The term Neuromarketing was first introduced by Ale Smidts, Professor at University of Erasmus in Rotterdam (Roebuck, 2011), indicating the use of neuroimaging techniques in market research. Bright House, America was the first company mentioned in the literature to have used the term Neuromarketing (Cacioppo&Berntson, 2005). One of the most commonly cited study on the application of Neuromarketing, "Cola Brains", which was first published in 2004 and had released the research results of Professor Read Montague at Baylor College of Medicine in Houston, Texas (McClure et al., 2004; Pispers&Dabrowski, 2011).

- iii. **First Usage:** The best known experiment in Neuromarketing is associated with the work of Harvard Professor Jerry Zaltman. Professor Gerald Zaltman patented the Zaltman Metaphor Elicitation Technique (ZMET), a market research tool in the early 1990s. Through the use of the techniques, the researcher can explore the human subconscious/his thinking with a set of images instead of words that cause a positive emotional response and activate hidden images that encourage the purchase. Graphical collages are then constructed on the basis of detected images. These images form the basis of developing commercials. ZMET quickly fascinated many big companies such as Coca-Cola, L-mart, Levi- Strauss, General Motors, Nestle, Procter& Gamble. Owing to the growing popularity of ZMET, these organizations employed Professor Zaltman and his associates to investigate brain scans of consumers. In 1999, the professor began to use the fMRI to show correlations between consumer brain activity and marketing information.

Early on in the field's development Neuromarketing techniques began to be used to understand consumer behavior as well as their decision making process during 'purchasing acts'. These methods were used to better understand marketing aspects such as competition, products, and advertisements using the principles of neurobiology. The application of neurophysiological methods in the marketing research led to the development of the umbrella term 'Neuromarketing'. Thus as a scientific discipline, Neuromarketing has swiftly become a high utility research tools to provide current day business marketers with key insight into mental synthesis of human beings and how it functions in different circumstances (Taher, 2006). However, it is equally important for market researchers to keep in mind that this methodology is still in its early stages, and elementary research is imperative to facilitate an application of these techniques to marketing (Plassmann, Kenning & Ahlert, 2007).

3. TECHNIQUES OF NEUROMARKETING

Neuromarketing is a new terrain of marketing and holds immense potential. Neuromarketing can play an instrumental role in apprehending, consumer's behavior and perception. The responses of the consumers are analysed to help the marketers to position the products/services in a manner to grab the immediate attention of the target group of customers. The field of Neuromarketing, if fully utilized, has the power to completely revolutionize the field of marketing.

According to Calvert & Brammer, 2012, around 80 per cent of the new products fail within first three years of its launch. These products that lack market research relating to what the new product offers and what is actually needed in the market. Professor Gerald Zaltman had highlighted that about 95 per cent of the consumer decisions are made through subconscious minds. He emphasized that purchasing decisions are often motivated through human emotions that they place on a particular product rather than solely brand preferences or prices. Suppose for example, an individual is offered free meal box on the purchase of a movie ticket in a cinema hall, then it is much likely that the individual will buy tickets from

the hall that offer freebies. That’s why it is important to consider the emotional aspect while advertising a product. The next section broadly covers the techniques used in Neuromarketing which help market researchers understand consumer choices.

TECHNIQUES	PURPOSE
Functional Magnetic Resonance Imaging (fMRI)	It is measuring brain activity by through changes in the blood flow
Electroencephalography (EEG)	Detection of electrical brain activity with the help of brain wave patterns
Voice Pitch Analysis	Examining changes in the human voice due to emotions
Galvanic skin response	Examining the amount of sweat secretion from sweat glands for studying the change in electrical properties of skin
Eye Tracking	Determining the position and direction of the eye
Positron Emission Tomography (PET)	Examining various metabolic processes of the body
Diffusion Tensor Imaging (DTI)	Determination of white matter fiber tracts which are useful for functions like language, visions etc.
Near Infrared Spectroscopy (NIRS)	Measures the blood flow changes due to brain activity

3.1 Functional Magnetic Resonance Imaging (fMRI)- fMRI gauge brain activity through changes in the level of blood flow as and when an individual is engaged in any activity, simple or complex. This technique increases the oxygen in the blood flow inside the brain. It is a popular method since it does not require any surgery to inject substances or exposed to ionizing radiation. This technique is one of the most expensive techniques used in Neuromarketing but it provides highest quality of information as well. This can be used for assessing brand labels, evaluation of advertisement videos, creating jingles and in assessing whether the product is more remembered and liked by the consumer than any other comparable product.

3.2. Electroencephalography(EEG)- This method records the electrical activity of the brain using a cap of electrodes attached to the scalp. Each electrode makes a recording of its own to arrive at a meaningful conclusion by comparing them with the standards. This technique requires specialized skills and training to interpret the results. Scientific studies showed that when a marketing stimulus produces theta waves in the left brain vs alpha waves in the right brain, it implies that the consumer likes the product. On the other hand, when

theta waves are produced in the right brain vs alpha in the left brain, it means that the consumer will remember the product.

3.3. Positron Emission Tomography (PET)- It involves injecting radioactive tracers in the body and then studying its movement when stimulus is received. It has similar spatial resolution and productivity as that of fMRI. Since the technology has health hazards, it is not very popular as a Neuromarketing tool.

3.4. Magneto encephalography (MEG)- MEG uses liquid helium, to estimate the brain activity at voxels using magnetic field tomography (MFT). MFT solutions inspect brain functions at various spatiotemporal scales. In the spatial discipline, the details can be covered ranging from a few millimeters to almost the entire brain. In the time arena, the range is from a fraction of a millisecond to minutes and hours. MEG provides high temporal resolution and has better spatial resolution than EEG. Although, both the techniques are equally costly.

3.5. Galvanic skin response- This refers to the changes in sweat glands in response to changes in the intensity of an individual's emotional state. Human emotions like anger, happiness, trust, joy, surprise, sadness create activities in the human mind. This activity is created on human hands by brain responses and the data can be recorded for usage in marketing. The research showed that this measure is not much responsive, and the results are not encouraging.

3.6. Eye tracking- A tool that tracks the client's look on a product. This tool allows us to measure eye movements, determine the amount of time spent on a product, identifies fixing areas where the consumer has spent most time and determines the points where that produce most attention. This technology can be used in supermarkets and stores, designing of web page. Further, it is a widely believed fact that advertisements that include people images are much more effective than those that do not. Dooley, 2009 said that it is discovered by several researches that if a person in the advertisement looks straight and not at the content describing the product, then consumers will focus on the person and not on the product. Thus, to make advertisement effective, the strategy should be to focus on the product description by making the person facing towards that instead of a straight face.

4. Advantages and limitations of Neuromarketing

Neuromarketing plays an instrumental role in apprehending, consumer's behavior and perception. The responses of the consumers are analyzed, helping the marketers to position the products/services in a manner to grab the immediate attention of the target group of customers. The field of Neuromarketing, if fully utilized, has the power to completely revolutionize the field of marketing.

In this fast running hectic world, why would one want to take up extra work, extra pain and expenses of conducting Neuromarketing research when one can easily organize interviews

and surveys to arrive at a similar result. The answer lies in the benefits that Neuromarketing research provides which are way beyond what is provided by the traditional marketing.

Fisher et al, (2010) suggested that Neuromarketing is a qualitative research that gives quantitative outcomes. On the other hand, Bercea (2013) proposed that the field itself cannot be classified as qualitative or quantitative rather it is the equipment that is used and the research results decides its classification. Nevertheless, the discipline has the ability to walk through the minds of the individuals, it thus become necessary to have access to less biased information than one would receive using traditional research methods.

Ariely and Berns in 2010 stated that the most important benefit of Neuromarketing lies in its ability to differentiate between what consumer desires for and what are their needs. In addition, it will help in discovering what the consumer will buy the most and what all influenced to make that decision. Fortunato et al (2014) proposed that with the usage of Neuromarketing, one can identify the brain areas that are stimulated by a marketing activity and the cognitive procedures that occur in those regions of the brain. Hence, Neuromarketing has the potential to recognize the cause and effects of consumers' decision making. The researchers also suggested that Neuromarketing can help in developing effective social campaigns such as environmental and climate change awareness. Huszár& Pap (2016) in 'Revolutionizing marketing research: A critical view on the promising Neuromarketing' suggested that neuroscientific techniques contributes to a clear and better understanding of consumer needs. It helps companies in designing of advertisements based on the consumers' emotions and requirements. These emotions cannot be assessed using traditional methods of marketing.

The below few paragraphs give an insight about the supremacy of Neuromarketing over traditional marketing. Darren Bridger, an expert having an experience of more than 15 years of working with Neuromarketing industry stressed the following benefits of Neuromarketing.

1. New Approach: The field of Neuromarketing helps in assessing even the lower level effects of designs and videos such as packaging, advertisements on individual's emotions. This is as against the traditional research which focuses on measuring higher level effects of a brand's efforts. Neuromarketing percolates down to focus on how to design to make the packaging more attractive so as to engage more people, what font size too use, choice of text to make information more memorable.

2. Bridging the Gap: Consumers these days make decisions from their sub-conscious minds and hence do not truly reflect their opinion about the product. Unlike traditional methods, Neuromarketing can fill this gap by uncovering the genuine feeling of the customers. It receives data not only from the consumers through surveys but also from various techniques such as facial expressions, eye tracking. The responses recorded using these techniques are can reveal lot more than what simple surveys or interviews can.

3.Uniformity in measurements: It is commonly seen in consumer surveys that the participants usually respond in either exaggerating or understate their true preferences. Even if they respond consciously, yet there exists a high level of variation in the responses. One cannot be able to rate their feelings on a measurement scale. Neuromarketing tries to solve this by comparing the results across cultures.

4.Usage of reactions to improve: The techniques of Neuromarketing allows for linking the physiological reactions and elements of the product. Measuring emotions of the consumers on the basis of their reactions may be on the packaging, advertisements, texts etc. can provide more information and thus helps the brand to improve those parts that stimulate negative responses. Neural techniques records responses moment by moment and thus provide valuable information on how to edit the advertisement or how to engage more people to their brand.

5.Measuring priming effects: Priming, in simple meaning, is an action that prepares someone from using it. Neurosciences can measure this and relate to the feelings that an advertisement or a brand may invoke in the consumer's mind. For example, an advertisement of a luxury brand in a mall may provoke you to buy the same.

In addition to these, usage of Neuromarketing leads to increase in sales revenue to the brands, brings accuracy in research work, increased return on brands' investments, lessens complexity in marketing and usage of well-known and authentic equipment among others. However, in order for the newly developed field to be successful, it is essential to have sufficient availability of funds to carry out the research, willingness of participants is a must. Further, the researchers should have expertise in neurosciences, awareness among the consumers and marketers are all necessary.

Disadvantages of Neuromarketing

As a scientific discipline, Neuromarketing is swiftly becoming a high utility research tools to provide current day business marketers with key insight into mental synthesis of human beings and how it functions in different circumstances (Taher, 2006). However, it is equally important for market researchers to keep in mind that this methodology is still in its early stages, and elementary research is imperative to facilitate an application of these techniques to marketing (Plassmann, Kenning & Ahlert, 2007).

In the world of constantly changing lifestyle and improved living standards, it becomes essential to be aware of the consumers' decisions made through sub-conscious minds. This drives the producers to produce the goods considering the consumers' needs and preferences. Although Neuromarketing offers a number of benefits, yet one should not ignore the negative results its application may produce. In an attempt to explore the truth behind the sub-

conscious decision making through Neuromarketing, the marketers may manipulate the consumer minds by using situations on the side of a few commercial companies. Neuromarketing is a complex field and hence cannot be generalized. Fortunato et al, 2014 stressed that environmental factors such as presence of a laboratory or a store may affect the areas of brain that are processing specific emotions. The basic requirement to apply Neuromarketing is to have a laboratory. With the use of specialized tools of Neuromarketing, such as with EEG, one can easily tell the exact timing when a person was more engaged while watching an advertisement or with eye-tracking, it can be precisely said that the person was more associated with the picture on the advertisement or with the price or with the product itself. However, the difficult part is to interpret the data. It may be easier to know which part of the brain gets activated when exposed to a stimulus but what this means or what can be done with this is what requires the attention.

Another disadvantage of Neuromarketing includes the Ethical Concerns. Critics say that Neuromarketing mainly describes patterns of leaning and behavioral outcomes, which a psychologist does. Perrachione (2008) stressed that the marketers use the discipline to swindle customers for their benefits. They use Neuromarketing techniques to identify the brain areas that respond to their advertisements and use this information to govern the consumers to buy their product. Akin & Sututemix, 2014 believe that the Neuromarketing is not ethical since it reveals consumer emotions that affect their buying decisions. Since Neuromarketing mainly uses brain imaging techniques, it is feared that critical aspects of the human brain may be derived along with the marketer's data. This information may cause consumers to exploit their own actions and is a threat to the privacy of their ideas. This may in turn lead to manipulation of firm's decisions regarding consumer preferences for their own benefits. Therefore, this makes it necessary to address these problems, that is seen as a violation of consumer rights, their privacy and confidentiality. Neuromarketing cannot be treated as a public good that comes for free. In fact, it puts an end to the consumer's free will and thus consumers are more exposed to the ill effects of a firm's marketing strategies. In addition, requirement of specified skills to conduct the tests, expensive equipment and thus high costs of carrying out the research, threat of leakage of data are few other drawbacks that make marketers, researchers and consumers skeptical about Neuromarketing.

FINDINGS AND CONCLUSION

Neuromarketing is a relatively newer discipline with a lot more is needed to be explored. Although Nobel laureate, Santiago Ramon Y Cajal had stressed that neurons are the center of the nervous system many years ago, yet it is recently that it is accepted by the scientists. Human mind still needs to be explored. Neuromarketing has its benefits and limitations. It is costlier than that of the traditional marketing methods. The discipline however, has the potential to peep into consumers' mind and reveal hidden information of one's mind. This sort of Neuromarketing research is conducted through composite and complex machines such as functional Magnetic Resonance Imaging (fMRI) which poses some limitations, making it

costlier and difficult for the researchers to look into people's brain. Further, Neuromarketing can be used for promoting sustainable consumption, awareness for the need to protect environment or for adoption of green technologies. One may think of increasing the human's emotional engagement with the sustainable decision making processes. A few examples may include assessing the impact of sustainable consumption and production campaigns, measures to reduce pollution and saving of environment on achievement of awareness goals. The discipline can aid in improving human psychology of taking right decisions in favour of using and adopting green technologies, promotion of recycling, lesser use of plastics, and reduce pollution among others. A better understanding of human brain and the aspects that influence his decision making regarding sustainable environment can be achieved through the use of Neuromarketing. Therefore, Neuromarketing can be applied to study in the development of sustainable projects by doing research on products that have high success rates in the market, identifying conscious use and disposal of products, recognition of factors that generate emotions, designing of sustainable products. Further, marketing strategies can be developed accurate positioning of the products, increased targeting of products, measuring brand equity, identify consumer perception about the product.

Furthermore, Neurosciences can be used to influence consumer behaviour in the future for smarter market segmentation. To do this, traditionally, marketers segment the portions of population on the basis of gender, age, marital status, income and wealth etc. as well as according to their attitudes and aspirations. Neuromarketing has the potential to segment based on differences in consumer's brain. Hilke Plassmann, marketing expert at INSEAD stressed that using traditional methods to segment markets may produce biased results and prove to be costly if the participants have provided wrong data. She suggested taking those factors into account that motivates consumer behavior. Deep insights about consumer minds by understanding brain structure can be useful in predicting their responses to marketing stimulus.

Thus to summarize, Neuromarketing is a relatively new discipline that has the potential to aid the traditional research methods in helping producers to understand their consumers in a better way. All companies whether small or big should explore its potential and making use of this new field to understand the consumer decision making process, role played by emotions in making purchase decisions, predicting the success of their brands, improving the effectiveness of their advertising campaigns, promoting sustainable development, market segmentation among others.

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