NEUROMARKETING – A TOOL OF SELLING TO THE BRAIN

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ABSTRACT

Marketing research methods continuously develop and over the last decade technology offered solutions to improve this area. Traditional marketing research methods fail at some point in certain cases, and since emotions are mediators of how consumers process marketing messages, understanding of cognitive responses to advertisements have always been a challenge in methodology. This is because of the fact that people are not able to express their true preferences when they are asked to express openly, it's their brains that contain those hidden preferences about a particular product. Neuromarketing is the branch of neuroscience research that aims to better understand the consumer through his unconscious processes and has application in marketing, explaining consumer's preferences, motivations and expectations, predicting his behaviour and evaluating successes or failures of advertising messages. In this context, this study aims to analyze techniques in Neuromarketing research and Scope of Neuromarketing.

KEY WORDS: *Neuromarketing, Neuro Science, Cognitive responses*

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Introduction

The basic concept of need can be described as the crux of consumer behaviour. But how this need materialises, gets translated into wants and then finally leads to the fulfilment has been a subject of many discussions. Understanding what drives consumers to choose one particular product over the other is one of the central concerns of marketing. It has always been easier for the businesses to keep a track of what we buy, but it is harder to keep a track of why we buy. It serves the purpose of comprehending the needs and desires of consumers better so as to develop means to deliver products with enhanced utility. Marketing discipline realises these objectives by adopting techniques such as focus groups, in depth interviews, market simulations, social surveys and alike. These tools facilitate in bringing about improvements in the delivery of the product/service such as branding, packaging, price promotion and product utility to enhance product compatibility. Since long, marketing has relied on these traditional techniques which provide insights from the customer's perspective, which however can be prone to cultural and cognitive biases (Bannister 2005).

It however becomes difficult for the respondents to quantify these emotional feelings experienced during its consumption and represent it on a numerical scale (Pradeep 2010). It further complicates the issue when the perceived feeling has an impact on their subconscious mind, which is harder to articulate. Neuroscience tries to fill this gap as it claims to possess the potential of analysing the frequency, location, and timing of neuronal activity and examining the drivers of human behaviour by inspecting the synaptic activity of the brain, thus gaining unbiased first-hand knowledge (Lee, Broderick et al. 2007).

In the highly-competitive advertising industry, science is increasingly becoming an important tool in determining exactly what kinds of marketing campaigns and products appeal to a potential consumer - so much so that there is an emerging field dedicated solely to getting inside our brains to figure out what we really want. This hybrid of Science and Advertising is known as Neuromarketing.

Neuromarketing is a new field of marketing research that studies consumers' sensorimotor, cognitive and affective response to marketing stimuli. Researchers use technologies such as Functional magnetic resonance imaging (fMRI) to measure changes in activity in parts of the brain, Electroencephalography (EEG) and Steady state topography (SST) to measure activity in

specific regional spectra of the brain response, and/or sensors to measure changes in one's physiological state, also known as biometrics, including (heart rate and respiratory rate) to learn why consumers make the decisions they do, and what part of the brain is telling them to do it. Neuromarketing research raised interest for both academic and business side. In fact, certain companies, particularly those with large-scale goals, have invested in their own laboratories, science personnel and / or partnerships with academia.

Neuroscience gathers information on the structure and functions of the brain and its sub-domain called cognitive neuroscience seeks to understand the neural mechanisms behind thoughts, reasoning, emotions, memory or decision making. Using technology advances in neuroscience, researchers can obtain information on brain responses to marketing stimuli, not having full confidence in what they report. They provide new ways for understanding how consumers store, retrieve, develop and use information. Neuromarketing is an emerging interdisciplinary field that aims to investigate and understand consumer behaviour by studying the brain. Thus, using neuro imaging techniques, researchers measure subjects' responses to marketing stimuli.

Neuromarketing is an emerging field which bridges the consumer purchase decision with neuroscience (Christophe, 2011). Neuromarketing is advancing rapid believability and acceptance among advertising professionals. As everything depends on consumers‟ willingness and competency to describe how they feel when they are exposed to an advertising campaign, conventional methods for testing and predicting the effectiveness of huge investments generally have a minimal effect. Cutting edge methods for directly probing minds without requiring demanding cognitive or conscious participation are offered by neuromarketing.

Therefore, the development of this field depends on the advance of science, technology, neuroscience and computer science. As Garcia et al. (2008) remarks, given its status as a young discipline, the theoretical, empirical and practical scope of neuromarketing is still being developed.

Also, Zurawicki (2010) considers that there is an important opportunity for this field, as by better understanding the neural world of consumers we can help them and the brands that serve them better adapt to an increasingly complex and overwhelming world.

Advertisers have long used science to peer into consumers' brains; today 'Neuromarketing' has given them the power to delve into our subconscious.

Objectives of the study:

1. Study aims to analyze techniques in Neuromarketing research
2. To study the Scope of Neuromarketing

Techniques used in Neuromarketing:

In order to be able to discuss various techniques used in neuromarketing research, in the following part there will be briefly presented each technique that can be used and its experimental procedure, as founded in the literature.

Functional Magnetic Resonance Imaging (fMRI) -Represents an appropriate methodology for uncovering the areas of the brain activation in response to a very simple experimental design with little potential for the temporal dimension to be a problem, as Lee et al. remarks (2009). fMRI combines magnetic field and radio waves, producing a signal that allows viewing brain structures in detail and following the metabolic activity in the brain (Perrachione et al. 2008). As Zurawiki (2010) explains, the subject lies on a bed, with the head surrounded by a large magnet which causes the atom particles (protons) inside the subject's head to align with the magnetic field. As blood contains iron, the iron atoms that are not bound to oxygen produce small distortions in the nearer magnetic field and when a certain brain area is active, corresponding blood vessels dilate and more blood rushes in, reducing the amount of oxygen-fee hemoglobin and producing a change in the magnetic field in the active area. Software allows viewing this change, displaying coloured areas overlapping the grey-scale image of the brain and refreshing the image every 2 to 5 seconds. fMRI allows measuring brain activity and searching for patterns while subjects perform certain tasks or experience marketing stimuli. Data analysis can be conducted using specific software packages, as BrainVoyager QX(Levy et al., 2011; Morris et al. 2009) or Statistical parametric Mapping (SPM5) (Falk et al. 2009; Plassmann et al. 2008; Stoll et al. 2008; Plassmann et al. 2007). Positron emission tomography (PET) is another expensive method to use that can obtain physiologic images with spatial resolution similar to fMRI by recording the radiation from the emission of positrons from the radioactive substance administered to the subject. A battery of detectors surrounds the subject's head and traces radiation pulse, without precisely identify the location of the signal, as Zurawicki (2010) notes. Technical issues involve obtaining the radioactive material and it's short life.

Electroencephalography (EEG)-Is one of the most used tools in neuromarketing research, after fMRI. The amplitudes of the recorded brain waves correspond to certain mental states, such as wakefulness (beta waves), relaxation (alpha waves), calmness (theta waves) and sleep (delta waves). A number of electrodes (up to 256) are placed on the scalp of the subjects, in certain areas, in order to measure and record the electricity for that certain spot. As Zurawicki (2010) states , technology allows EEG to be a portable device and record brain activity in any many circumstances, as for example in supermarkets. Also, EEG is able to record only activity data from superficial layers of the cortex. Magnetoencephalography (MEG) uses magnetic potentials to record brain activity at the scalp level, having sensitive detectors in the helmet placed on the subject's head. Magnetic field is not influenced by the type of tissue (blood, brain matter, bones), unlike electrical field used in EEG, and can indicate the depth of the location in the brain with high spatial and temporal resolution. Zurawicki (2010) states that experiments using MEG need a room free of earth's magnetic field. Transcranial magnetic stimulation (TMS) uses magnetic induction in order to modulate the activity of certain brain areas that are located 1-2 centimeters inside, without reaching the neocortex. New TMS technology allows also targeting lower brain areas and is less expensive than PET or fMRI scanners. A plastic case containing an electric coil is positioned near to the subject's head. TMS discharges a magnetic field that passes through the brain, allowing making changes in the brain tissue in certain locations and being able either to temporary activate neurons (using high frequency) or temporary disable neuronal activity (low frequency). Zurawicki (2010) compares TMS to fMRI, stating that TMS is able to highlight causal inferences by analyzing the subject in front of marketing stimuli while certain brain areas are disabled, stimulated, or normal.

The following methods can be used together with the neuro imaging tools described above in order to obtain more information and internal validation in studies. Eye Tracking allows studying behaviour and cognition without measuring brain activity, but where the subject is looking at, for how long he is looking, the path of the subject's view and changes in pupil dilation while the subjects looks at stimuli. As Laubrock et al. (2007) state, eye tracking allows measuring the attention focus and thus monitoring types of behaviour. Zurawicki (2010) states that eye movements fall into two categories: fixations and saccades. Fixation is when the eye movement pauses in a certain position and saccade is a switch to another position. The resulting series of

fixations and saccades is called a scan path, and they are used in analyzing visual perception, cognitive intent, interest and salience. O'Connel et al. (2011) reports a study that confirms that eye tracking provides more accurate information than self-report, as research shows that claimed viewing is not always the same as measured actual viewing

Measuring Physiological Responses to stimuli can provide information on the subject's emotional effects by monitoring the heart rate, blood pressure, skin conductivity (affected by sweat, measuring arousal level), stress hormone from saliva, facial muscles contractions, and inferring the emotional state for each moment. Response time measures computes the amount of time between stimuli appearance and it's response, informing researchers on the complexity of the stimulus to an individual and how the subject relates to it, as Zurawicki (2010) states. This cheap method can be used on recall studies or on measuring subject's attitude towards certain stimuli. Calvert et al. (2004), Kenning et al. (2005) and Zurawicki (2010) have divided the types of tools used in neuromarketing research into the ones that record metabolic activity and the ones that record electric activity in the brain. Fugate (2007) considers that advances in imaging technology will no doubt also provide cheaper, smaller and less obtrusive devices in the near future.

Scope of Neuromarketing:

Companies employ neuroscience for analysing the success of new promotional campaigns. They can very well do so by showing subjects with visual print ads and video clippings from the new promotional campaigns while they are stuck inside the fMRI scanner. Depending on which areas of the brain are affected during the experiment and associating the same with functions those particular regions are associated with, the researchers can infer whether if the subjects are experiencing desired feelings of excitement, humour, passion and whether if the advertisements are drawing sufficient attention and emotional attachment (Fugate 2007). Contrariwise, if the particular regions of the brain do not light up, it can conclude precursory failure of the campaign towards consumers' desired level of expectation (Fugate 2007). This can further assist marketers in making necessary changes in the delivery and retest the experiment on new set of subjects to calculate the differential improvement. Hence, neuromarketing can sufficiently contribute in the

field of pre-launch campaign testing and could help marketers get a fair idea whether their new ads will generate voluminous sales or remain mere unsolicited expenditure.

Moreover, a large portion of the marketing efforts are simply driven to convince consumers to choose one's products over that of the competitor's. As the subconscious brain plays a major role in making the choices and purchase decisions, it becomes an intricate task to pinpoint the differences in competitor's ad promotions that prove effective in driving their sales. Neurotechniques can deal with this issue by picking out the key differences in brain's responses in terms of reactions depicted by the prefrontal cortex and [evaluation part of the brain] when subjects are exposed to both the ads. The information gathered from these studies can be employed for enhancing one's ad campaigns thereby neutralizing the advantages competitor's ad campaign may have and furthermore targeting their ineffectiveness to gain that extra edge.

Opponents of neuromarketing advocate its ineffectiveness by putting forth the technology's corollary ability of mere highlighting the illuminated portions of the brain; thereby claim that it serves with no actionable strategies. However, it may be said that the essence to drive influence is to trigger maximum possible number of different senses. The influence is further enhanced with the frequency of exposure which a positive correlation with the level of impact. This is because when consumers are exposed to the advertisement of an unfamiliar brand, their lies a tendency of uncertainty and negativity. However, repeated exposure to the brand develops familiarity and decreases uncertainty. This fairly justifies the large portion of marketing budget spent towards celebrity endorsements. As aforementioned neuromarketing is totally capable of highlighting which senses get affected during a stimuli and the same information can be used to enhance the number of sensations the consumer experiences. In addition, Kevin Hogan claims that the primary objective of a human behaviour is to seek pleasure and avoid pain (Hogan 2010). Therefore one can assert that neuromarketing techniques can prove substantially significant if it is capable of enhancing the number of senses simulated along with keeping a control of the amount of pain felt. However some of the consumer protection organisations fear the possibility of privacy breach neuromarketing entails. They claim that with the possession of such deep insights of consumer behaviour, they can manipulate them into buying anything (Alert 2003). The media has embellished many of these arguments and alleged that marketers have found the 'Buy Button' in their brain (Lindström and Underhill 2010). This has given birth to

proponents as well as opponents to the technology (Walter, Abler et al. 2005). This brings up a major concern of ethics. In the United States, a consumer protection NGO, Consumer Alert has posted complaints to Universities and other commercial neurolabs protesting the ethics of the practice (Alert 2003). The organisation alleges the technique as a vindictive instrument which holds the potential of helping commercial entities develop irresistible products by targeting the biological weaknesses of consumers, eventually bringing an end to free will. Several academics are reluctant to embrace the field as they feel that the very purpose of neuromarketing is to purely design products that sell, thereby tainting the authenticity of marketing research (Lee, Broderick et al. 2007). Another worry is that brain-scanning is an invasion of privacy and that information will be compiled on the preferences of specific individuals. But neuromarketing studies rely on small numbers of volunteer subjects, so that seems implausible. Critics also object to the use of medical equipment for frivolous rather than medical purposes.

Technically the practice of neuromarketing doesn't breach any defined ethical boundaries. So for now, neuromarketing is clear to continue and no legislation exists to limit its implementation. Conversely, research in neuromarketing could actually help solve issues pertaining to obsessive compulsive disorder (OCD). fMRI might be helpful in locating cortical substrate that are responsible for compulsive behaviour.

However, from scientific grounds, neuromarketing is nowhere near the possibility to enable the researchers to develop products which could dominate an individual's discretion. Moreover, the very fact dissolves all the hopes of neuromarketing is that buying process is not a mere binary procedure (Senior and Lee 2008). Consumers do not make purchases merely based on cause and effect relationship, i.e. for instance it never so happens that a consumer views an advertisement and makes the purchase just based on that single stimulus. It would require extraordinary insights to predict which factors precisely trigger that 'buying button' and hence the claim can clearly be discarded. On practical grounds, the application of the aforementioned set of research knowledge gathered from neuromarketing has not yet helped in realising feasible marketing plans (Madan 2010). While advocates proclaim neuromarketing as the next big thing, it might just turn out to be a 'thing'.

Conclusion:

Neuromarketing is an exciting concept and has been given a good coverage around the world. While neuromarketing has only recently begun to concern neuroscientists, and only few neuromarketing studies have been conducted, it can be said that neuromarketing can be used advantageously in marketing. However, it may not be that cost effective as compared to the other marketing tools though it can reveal a lot more hidden information that would otherwise be unobtainable. We have tried to show here that the popular neuroscientific perception of neuromarketing as unethical, fundamentally flawed, and potentially harmful, should not mistakenly be applied to scholarly marketing research. Indeed, the field of neuromarketing should be considered as a legitimate and important area for future research, which will allow us to fully understand human behaviour in an extremely important context. Applying neuro imaging to marketing research problems should allow us to understand far more clearly the impact of marketing techniques, as well as gain insight into key problems concerning business relationships, answers to which have previously remained elusive.

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