Implications of Neuromarketing Research in Designing the Marketing Strategies

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This paper presents a recent area of research which is derived from neuroscience and has vast applications in marketing, called neuromarketing. Neuromarketing is amalgamation of Neurology & Marketing which has revolutionise the marketing research because it makes use of brain imaging techniques (fMRI, EEG,SST,GSR etc.) as a key to unlock the secrets of customer buying behaviour & hence it will serve guidance in designing marketing strategies like packaging, advertising, branding, product design, service marketing etc.

Keywords-Neuromarketing, Functional magnetic Resonance Imaging, Electroencephalogram

I. INTRODUCTION

Transdisciplinarity is the new name of the game in all marketing approaches, and neuromarketing is just another perspective that requires the expertise of different kind of specialists — doctors, psychologists, neuroscientists, cultural mediators, etc Neuromarketing is a rather new field in the marketing research industry that employs neuroimaging techniques into the research process. Researchers record through EEG (electroencephalography) or fMRI (functional Magnetic Resonance Imaging) — participants' brain activity while viewing different communication messages. Various elements of the communication can be correlated with the impact they have on a person's brain

A strategy is a long-term plan to achieve certain objectives. A marketing strategy is therefore a marketing plan designed to achieve marketing objectives. Marketing objective may relate to becoming the market leader by delighting customers. The strategic plan therefore is the detailed planning involving marketing research, and then developing a marketing mix to delight customers. Every_organisation needs to have clear marketing objectives, and the major route to achieving organisational goals will depend on strategy. It is important, therefore, to be clear about the difference between strategy and tactics.

The rise of loyalty marketing and consumers shifting to online media has put increasing pressure on traditional ad agencies and broadcasters to deliver measurable ROI to clients[16].Neuromarketing is the practice of using brainscanning technology to measure marketing effectiveness, has applicability to the field of loyalty marketing and a number of key areas in marketing.

A. Neuromarketing: Where science & marketing meet-

The father of neuromarketing, professor *Ale Smidts* is winner of the Nobel Prize for Economy in 2002 and the term neuromarketing was created in the same year, 2002.Neuromarketing originates in neurosciences, whose main objective is to understand human brain by using interdisciplinary sciences i.e Neuroanatomy, Neurology, Neuropsychology, Neuroendocrinology & Cognitive Science. Neuromarketing researches have been developed in the United States since 1991.

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, galvanic skin response) to learn why consumers make the decisions they do, and what part of the brain is telling them to do it.[21] Neuromarketing is the practice of using technology to measure the brain activity of consumer subjects as a way to discover how people respond to products and marketing messages.

II. SCOPE OF NEUROMARKETING

Earliest experimental study was done by **Read Montague** [36]which included brain scanning of 64 blind folded respondents to two well known different brands of soft drinks. Among the two tastes one taste stimulated higher brain activity in **prefrontal cortex**, which shows liking towards strong flavour of drink. But when name of brands were disclosed the responses changed with the stimulating activity in brain, this experiment showed that preferences are influenced by emotions & memory.

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- It is evident that the idea of evaluating the neurological responses with the correlation of consume behaviour has caused considerable excitement within the marketing profession.
 Cognitive science is especially useful for companies producing consumer goods which are often confronted with the question whether the product launched by them would be accepted by the consumers
- 2) In particular, EEG has been used to explore reactions to TV advertisements in a number of ways. For example, Young (2002) explored whether specific moments within ads are primarily responsible for brand development and attention. Memory and information processing have also been of interest, with Rossiter et al. (2001) using EEG to show that certain visual scenes – showing fastest activation in left frontal cortices – are also better recognised[25]
- 3) As neuroscience opens the brain to marketers' scrutiny, the electrical flashes that arise in response to stimuli make it increasingly apparent that what drives purchase decision making is actually a primal mechanism of the mind -attachment. This signal of a potent emotional attachment is the foundation for brand success[11]
- 4) Brands that win the battle for awareness (ie the most salient brands) are more likely to be chosen Based on neuroscientific insights, brands following the three branding laws
- 5) Of distinctive relevance, coherence and participation have a higher chance of winning the competition for cortical representation. Hence brain scanning is highly beneficial in branding.[12]
- 6) The Bill & Melinda Gates Foundation have begun to invest with a \$500K grant to Clemson University. The project will measure student engagement physiologically with galvanic skin response (GSR).Hence, Neuromarketing techniques are finding their importance in academic sector as well by measuring student's engagement & inclination.

III. CLINICAL TECHNIQUES USED IN NEUROMARKETING

Considering the need of studying the human brain, in order to understand the decision making process, Williams (2010) refers that neuromarketing research is usually conducted through one or more of the following clinical techniques:

1) Functional magnetic resonance imaging (fMRI). A



Fig 1-Image of FMRI scan of brain

technique that shows what parts of the brain are active by detecting changes in blood flow and the amount of oxygen consumed in different areas.

2) <u>Electroencephalography (EEG)</u>. The EEG technique measures the electrical activity of the brain (neurons) as

Fig 2-Brain waves captured during EEG



recorded by electrodes placed on a subject's head. Subjects are either given special EEG headsets to wear while exposed to marketing materials.

 Eye tracking. Eyes are the main focus in this technique as the location and pattern of a subjects gaze is studied to determine which images or portions of an image illicit the most attention.



Fig 3-Eye tracking machine connected to computer

 <u>Galvanic skin response (GSR).</u> GSR is a technique that measures the subtle changes in skin (such as temperature and sweat) that occur in conjunction with certain emotions.

IV. CONSUMER DECESION MAKING

Decision making is traditionally viewed as a rational process where reason calculates the best way to achieve the goal. Investigations from different areas of cognitive science have shown that human decisions and actions are much more influenced by intuition and emotional responses then it was previously thought.

 Unconscious decision making-One of the most amazing and at the same time unsettling ideas emerging from research in the neurological and psychological sciences in recent decades, is the power and the pervasive nature of automatic unconscious (or nonconscious) thinking. It's amazing because we have an incredible thinking and problem solving machine operating beneath the conscious level of our awareness 2) Human Brain & decision making-In addition to the Right Brain and Left Brain, the brain is organized in 3 parts which act as separate organs with different cellular structures and different functions.
On the way to the development of the human brain, mankind went through several phases. First there was a brain stem and a cerebellum, which constitute the inner and most primitive layer. The brain stem especially is the part of the brain that overseas such functions as reproduction, self-preservation, circulation of the blood, breathing, sleeping, and the contractions of muscles in response to external stimulation.

The brain stem sits on top of the spinal column at the base of the skull. This layer is called the "Reptilian Brain" so named because all vertebrates from reptiles to mammals have one. This is the brain structure that ultimately controls actions and decisions. Research in neurosciences demonstrates that although the 3 brains communicate with each other, each one

- has a specialized function:A. The "New Brain" thinks. It processes rational data and shares its deductions with the other two brains.
- B. The "Middle Brain" feels. It processes emotions and gut feelings and also share its findings with the other two brains.
- C. The "Reptilian Brain" decides. It takes input from the other 2 brains but it controls the final decision making process.

V. IMPLICATIONS OF NEUROMARKETING RESEARCH

Another marketing specialist, Christophe Morin, coauthor of "*Neuromarketing: Understanding the Buy Buttons in Your Customer's Brain*" emphases some keys points of neuromarketing through which the companies can improve their products, services, marketing strategies and advertising. These aspects from Morin's argument are made subconsciously, in the neither regions of the mind he calls the primal brain, areas where "basic fight-or-flight instincts kick in. We buy, he says, out of fear." Therefore, there are some human features that should be considered strong "buy buttons". These aspects help us to take the right decisions:

1).We're self-centered

Once you know that the true decision-maker is the Reptilian Brain, your entire sales and marketing strategy should apply completely different communication principles in order to be impactful. To make decisions, egotism is an important landmark. "People are completely egocentric and all they want is something that will create a difference in their lives, eliminate pain and possibly bring them more pleasure," Morin says. 2). We crave contrast Sometimes our actions can be explained due to inedited things. Thus, the contrast is a significant way to captivate people. "The bottom line is, on any given day, we will receive about 10,000 ad messages, and only the ones that are huge contrasts will get any attention,"

3). We're naturally lazy

Simplicity is a substantial tool for advertising messages. About the message, it is recommended to keep it simple,but strong. "Most companies tend to create abstract messages and use too many words," Morin says. "Reading is much more a function of the "new brain". We recommend that, of course, companies use a lot of concrete visuals."

4). We like stories

Advertising and marketing with strong beginnings and ends create a catching reaction. That's why, Christophe Morin advises entrepreneurs to sum up and recap their strongest selling points at the end of any promotional material. He also underlines that people brain has a natural tendency to pay attention at the beginning and end of anything.

5). We're visual

Visual memory can create a higher impact then a hearing one. Appealing video and graphic presentations can make the difference at cash registers where price and reason can't. Several times we make decisions visually, without being aware of them. Only later do we rationalize decisions we made.

6). Emotion trumps reason

"Give us the right emotion to ride on, and we'll buy what you're selling". "When we experience an emotion", Morin says, "it creates a chemical change in our brain, hormones flood our brain and change the speeds with which neurons connect, and it's through those

VI. SPECIFIC IMPLICATIONS OF NEUROMARKETING IN MARKETING STRATEGIES-

 Sales Strategy & Neuromarketing- Neuromarketing (the science of the brain applied to marketing and sales) tells us that we are all hard-wired by our old brain (sometimes called the reptilian brain) to survive. This means, in today's business context, that the buyer you are calling upon will instinctively (we're looking at as little as 5 milliseconds) process visual and verbal cues to determine if your goal is to eat him or her for lunch. The wrong cues trigger the fight (resistance) or flight response, neither of which is helpful in the sales process.

Eliminate The Threats

For a the seller to survive, we must eliminate the perceived threats that can trigger fight or flight by following strategies-

<u>First, eliminate the visual threat</u>: Concentrate first on the potential visual threat. The reason for this is that visual cues are processed by the old brain faster than audio cues, and the initial instinctive response may be the dominant one.

<u>Second, eliminate the verbal threat:</u> Next, point attention to what the buyer can gain, rather than risk, by engaging with you. Do this by liberally using the "YOU" words; "you", "your" and generally any words that fall within the buyer's "what's in it for me" mindset.

<u>Cut Through To the Buy Button</u>-According to Renvoise and Patrick, there are 6 and only 6 stimuli that speak to the reptilian brain. "Incorporating these 6 stimuli will give you fast access to the old brain and will immediately improve your ability to sell, market, and communicate."

- 1. Self-Interest
- 2. Contrast
- 3. Tangible Input
- 4. The Beginning and the End
- 5. Visual Stimuli
- 6. Emotion
- 2) Social Media & Neuromarketing (Metznik,2011)-Neuromarketing and social media are connected at a very fundamental level; social media is the conscious way people are expressing their hard-wired instinct for survival and self-interest. If this is correct, then the growth and expansion of social media we have witnessed in only the tip of the iceberg. The businesses that grasp and embrace this idea will easily outstrip their competition. Success of social media has to do, in part, with the absence of stimuli that cause us to instintively go into survival mode. Social media simply offers a more comfortable way to live our lives. Traditional media pushes or imposes messages; social media is about attracting messages.

Traditional media is invasive-it invades my space. The natural tendency, then, is to resist the "invasion." With social media is a safe place to enter.

Traditional media may contain hidden agendas. Social media strives to be transparent. We are all too familiar with bait and switch tactics, from the TV commercials to the used car lot. Their intent is to deceive for their own self-serving purpose. Attractive thing about social media is that success goes to those who are most transparent. This means allowingeven welcoming- criticism and responding with sincerity. Diana Explained the key facts that advertisers need to know about this emerging field, and how to optimize ads across both TV and digital.

Fact #1: Biometrics reveal what ads people like by going straight to the source: the brain

Using measures such as heart rate, skin conductance, respiration, kinesthetic differences and eye tracking, researchers can determine what types of ads or content people pay attention to and find the most engaging. Neuromarketing technology works by detecting what parts of the brain "light up" when people look at a stimulus. According to Pranav Yadav, CEO of Neuro-Insights U.S., different parts of the brain are responsible for different activities related to engagement and recall.

The left side of the brain activates as it processes details and complex information, while the right side is more engaged when a person has an emotional response or processes visuals. Researchers can even pinpoint when memory encoding is happening in certain parts of the brain. This would indicate that an ad has a stronger chance of being remembered.

The key benefit of this type of research is that it does away with self-reporting or social desirability biases. Tony Marlow, Director of Strategic Insights at Yahoo!, says that 95% of the decisions we make are made at an unconscious level. o when people are asked how advertising affects them, they often genuinely don't know and can't access what's happening at the unconscious layer. Biometrics extracts insights that consumers often can't articulate.

Fact **#2**: Neuromarketing isn't an exact science, but neither is more traditional survey-based research

The panelists all agreed that while the technology behind this research has improved significantly in just a couple of years, it's far from an exact science. Biometrics research can tell you what ads someone has a strong emotional response to, but why that's the case can be trickier to isolate.

There are also sample size issues since neuro-based research is often significantly more expensive than survey-based approaches. Experts advise advertisers to try to keep the sample size as robust as they can afford and look at only a few variables, so that direct correlations are easier to make. That might mean showing the same ads to the same type of people, but just varying the context around the ads. Yahoo!'s Power of Relevancy study did just that within a biometric laboratory environment. Each participant was presented with ads that were personally relevant, contextually relevant or both. Marlow says that attention to an ad increased by 27% when an ad was personally relevant, or behaviourally targeted, to users. Contextually relevant ads elicit an emotional response that's almost twice as high as those ads that aren't contextually targeted. He says the strongest response comes when an ad has both contextual and personal relevance.

Fact #3: The right media, the right message and the right timing all matter

Universal McCann's Hutton says that the saturation of media makes it more important than ever to target the right message to the right consumer at the right time. Twenty-five years ago, he says, ad tolerance was fairly high: Consumers could see an ad about 25 times before hitting the "wear out" point. As consumers have become more media-literate and more exposed to advertising, Hutton puts that number closer to four or five times today.

Dave Kaplan, Bravo's VP of Research, shared a nuanced anecdote about research the network has done around the interplay of context and creative. Bravo's content is focused on five areas: food, fashion, design, beauty and pop. Throughout the history of TV, food ads have been paired during food shows and performed well. Now with the help of neuromarketing, Kaplan is finding that, say, a stylized car ad that talks about aesthetics elicits more of an emotional response during a beauty or fashion show because there is a strong contextual fit. Based on this insight, the network is testing "outside" categories during some shows.

Panelists pointed to studies that show there is a large margin for waste in TV with incorrectly targeted ads, which leads to apathy in the audience. However, if you target incorrectly in online display advertising, it's even worse. Audience members not only tune out, they have a strong negative response to the brand, according to Marlow.

That's exactly why he says his research team at Yahoo! is investing heavily in giving advertisers and publishers the right insights. His work is meant to help create both ads and content strategies that are correctly targeted, avoiding that negative user reaction and instead triggering a strong emotional response.

Bottom line for advertisers

In the next decade, neuromarketing will undoubtedly grow in influence. It's one tool in a growing arsenal that can be used to better understand how creative and media work together. But ultimately, the goal of all advertising research should be to improve user experience. After all, people don't hate advertising. They hate bad advertising.

I. Product & packaging Design[2]-

1- The eye can only recognize a small portion of the package in high resolution at one time. Once the eye scans it creates the full picture in your brain. Use this in your favor, group information into clusters and space out the clusters so that the space between them is larger as the importance of the message grows.

2- Ensure that the content and value proposition of the package can be clearly deciphered in under 5 seconds. On average consumers do not spend more time than 6 seconds scanning a label.

3- When deciding between versions of packaging analyze them in context. Where will they be sold, who will they be sold next to? The brain is wired to detect contrast so packaging that looks like everybody else will blend into the background.

4- Consistency in messaging is key especially across different mediums of communication. When designing packaging consider the key messages and visuals that will be used to promote the product. Maintain the centrality of the messaging and stay visually and linguistically consistent across all platforms.

5- Invest in quality materials and design. The brain perceives quality before processing any copy; once the brain determines that the product is of undesirable quality or value there is no amount of copy that can change the perception.

6- Over 50% of purchase decisions are made on shelf. Make your primary claims the most attractive at store level and your secondary claims those that the user can learn outside of the store.

7- The brain scans a package in the direction it is used to reading. For example, in English we read from left to right. Thus the triangle created from starting in the top left of the package and moving to the bottom right of the package, is the most valuable real estate.

8- The brain associates colours with contexts not concepts. Red does not always mean stop or danger; in the right context it can also cue love, heat, power and even money. Use colours to create contextual meaning.

9- The brain processes emotion before reason. Understand what emotions the consumer needs to experience, and cue their senses, to attract them to the product, then reason (copy) why this is better within the context of those emotions.

10- The brain can make a closer association with images than words; visually convey the benefits of the product.

3) *Multimedia & Neuromarketing-* A sizable number of neuromarketing companies already brain test movie trailers for the major studios through fMRI, EEG, galvanic skin response, eye-tracking and other biometric approaches. For now, the test data helps the studios and distributors better *market* the movie. A trailblazing few firms and studios have delved into

the upstart practice of "neurocinema," the method of using neurofeedback to help moviemakers vet and refine film elements such as scripts, characters, plots, scenes, and effects. Princeton University psychology professor_Uri Hasson coined the term "neurocinematics" based on an fMRI study, in which he concluded that certain types of films (e.g. horror, action, sci-fi) produced high activation scores in the amygdala region of viewer subjects' brains, the part that controls disgust, anger, lust, and fear. Hasson asserted that horror filmmakers can potentially control audiences' brains by precisely editing films to maximize amygdalic excitement and thus "control for" buzz and success at the theatre

4) *Neuromarketing & Branding-* As neuroscience opens the brain to marketers' scrutiny, the electrical flashes that arise in response to stimuli make it increasingly apparent that what drives purchase decision making is actually a primal mechanism of the mind attachment. This signal of a potent emotional attachment is the foundation for brand success. It's a form of primal brand magic, built on a near-mythical brand story that unconsciously transports one from the mundane to the imaginational, transforming our inner world and inspiring us to buy.

A brand experience has the potential to actually transform our brain chemistry. The experience of a product/service and its messaging can be transformational in a sensory way and emotionally. More importantly, at the end of a satisfying product experience, our feelings have been transformed into a strong emotional attachment (magical/mystical bond) that endures until proven otherwise.

Fostering magical brand connections is particularly important in this "new normal" era of consumer frugality because an emotional connection creates consumers loyalty. But how can CMOs begin the quest for the magic brand grail.

"Brand Marketers always have a deep understanding of their category's "left brain" – the numbers and functional benefits. The "right brain" attributes often are unexplored. What visual, sensorial and emotional benefits can your brand deliver and own – that work together with your product's attributes – to create an unbreakable bond that turns your consumers into brand enthusiasts. This can start with highly projective techniques like portrait building, present and future brand scenarios, and story creation with all of the internal teams that have a stake in the brand: marketing, design, R&D, senior management and your various agencies.

2. Understand the sensorial and emotional palette of your audience.

A lot of research is still left brain, Q&A focused. To unveil the magic in your brand, using highly right brained projective

techniques – like image sorts, drawing and writing – can get at the more elusive sensorial and emotional attributes that are important to YOUR consumer and relevant, meaningful and inspiring in YOUR category. A great example is the method brand, which disrupted the established home cleaning market with a "detox your home" message and a visual position that brought that message to life using simple, clean, highly sensorial shapes and colors that intrigue, inspire and motivate one to buy.

3. Create a Visual Position.

Brand positions are often created in words, though people experience brands primarily visually. BUT...a brand's packaging, advertising and overall presence in the world starts with visual symbolism, not words. And unlike our pets at home, who have heightened senses of smell and hearing, humans are primarily sight driven. 70% of our sense receptors are in our eyes and 80% of what we learn about the world comes to us visually...yet most brands do not have a visual position that brings the written positioning and story to life. Visual positioning defines the symbolic territory a brand can occupy to create distinction and often includes: overall personality, color and texture palettes, movement (upward like Gillette Mach3 or explosive and outward like Gillette Fusion), energy and other qualities that will unleash your brand's magic.

CONCLUSION

Nowadays, marketing should move forward focus groups and other traditional marketing techniques. If companies want to obtain any feedback on a product they must get inside consumers' heads. The information that is obtained during focus groups may not be accurate while the signals issuing from the brain are more likely to point to what the subjects are really thinking and feeling. In today's visual pollution, knowing your audience and understanding their behaviour also mean understanding what simulates their attention to your advertising campaigns.

Neuromarketing offers the perspectives of a quantitative method to test the effectiveness of ads, logos and sounds before spending money on promotion. Given the existing overabundance number of ads, this new research tool is a vital instrument for those companies that want to better understand their targeted audience and to design better products for their clients.All in all, it is important for marketers to keep in mind that neuromarketing is a tool to be used within an overall marketing strategy – one that reinforces or supports messaging, media and the brand. It will not be successful as a standalone strategy. "What we already know from behavioral economics and neuromarketing is that people are remarkably bad at predicting their own behavior," said Williams. "So once neuromarketing tools are more accessible, I think we'll see market researchers using neuromarketing as a primary tool." Neuromarketing is here to stay – science fiction is now reality. Big brands, small brands and nonprofits should consider exploring this tool sooner rather than later

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