

Neuromarketing: The Modern Science of Consumer Brainwashing

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Abstract

The mind is a marvel, a phenomenon as well as a mystery. The capacity to use brain responses and relate them to behavior has accelerated at a breathtaking pace over the past few years and yielded an incredible amount of information. This new field of studying brain's "buying centers" is called Neuromarketing. The base of neuromarketing is meme - a unit of cultural information similar to gene. Meme is a unit of information stored in the brain. Neuromarketing is increasingly being used across numerous industries worldwide to help companies improve their product development, package design and marketing efforts. Full-brain neurological testing provides a deep dive into consumers' subconscious minds, where product trial and purchase decisions are made, and where brand loyalty is formed. Some consumer advocate organizations, such as the Center for Digital Democracy, have criticized neuromarketing's potentially invasive technology. India is newest market for these neuromarketing techniques and is gaining popularity very fast. This paper is an effort to study the concept of neuromarketing and also its ethical use and effectiveness in the world of marketing.

Key Words: Neuromarketing, Consumer Behavior, Market Research, Consumer's Preference, Marketing, Advertising.

INTRODUCTION

The business man must understand the workings of the minds of his customers, and must know how to influence them effectively; he must know how to apply psychology to advertising.

(Walter Dill Scott - Psychologist at Northwestern University, one of the first researchers of advertising psychology; lived between 1869-1955)

Neuromarketing is a controversial new field of marketing which uses medical technologies like functional Magnetic Resonance Imaging (fMRI) - not to heal, but to sell products. Neuromarketing is an applied extension of neuroscience. The Neuromarketing concept was developed by psychologists at Harvard University in 1990. The word "neuromarketing" was coined by Ale Smidts in 2002. The technology is based on a model whereby the major thinking part of human activity (over 90%) including emotion proceeds in subconscious area that is below the levels of controlled awareness. Neuromarketing is a new field of marketing 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 (heart rate, 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. The base of neuromarketing is "meme" (by Richard Dawkins - a unit of cultural information similar to gene). Meme is a unit of information stored in the brain. These units are effective influencing human who is making choices and decisions within 2.6 seconds. If "meme" is chosen properly we remember the good, joke or song and would share it. "Memes stay in memory and they are affected by marketers". Examples of memes are aromas of fresh bread, sweets, favourite food, characters in fairy tales, melodies that cannot be out of head. Thus neuromarketers examine people's brain, scan it, revealing subconscious motives and manipulate them. Neuromarketing is the practice of using technology to measure brain activity in consumer behavior in order to develop and communicate the brand's 4Ps. The premise is that consumer buying decisions are made in split seconds in the subconscious, emotional part of the brain and that by understanding what we like, don't like, want, fear,

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are bored by, etc. as indicated by our brain's reactions to brand stimuli, marketers can design products and communications to better meet "unmet" market needs, connect and drive "the buy".

It is commonly accepted that traditional market research is flawed because consumers don't know, can't articulate, or will even lie in a focus group about their purchase motivations. Neuromarketing research removes subjectivity and ambiguity by going right to measuring observable brain behavior. Respondent attention level, emotional engagement and memory storage are common metrics. The various techniques used in Neuromarketing include:

- fMRI (Functional Magnetic Resonance Imaging)
- SST (Steady State Topography)
- MEG (Magneto-encephalography)
- EEG (Electroencephalography)
- Eye Tracking
- Voice Stress Analysis
- Galvanic Skin Response

Researchers use these technologies to:

- Measure the activity changes in certain parts of the brain;
- Understand why consumers make the decisions they make;
- Find out what part of the brain leads them to that particular decision

In today's cut throat competition, every new product launch, ad campaign or package design takes significant research, time and resources to ensure success, but we all know that not every launch is successful. Marketers spend a lot of time in the guess work to determine: Will it grab attention? Will it be memorable? Will it engage emotionally? And most importantly, will it drive purchase intent? Reducing this guess work out of the equation prior to launch is a marketer's dream, which is now a definable reality with quantifiable results. The whole concept of market research is to minimize this gap between the guess work and reality. Neuromarketing is the tool in the hand of the marketers to reduce this gap.

Every employer is keen to learn why consumers make the decisions they do, and what part of the brain is telling them to do it. For this reason the perception technologists of the market are very tempted to learn the techniques of effective manipulation of the subconscious brain activity. The main reason is to inspire the desired reaction in person's perception as deeply as possible. Neuromarketing – scanning people's brains to gauge their reaction to products – has

made huge strides over the past few years world over. India has also submitted its subconscious to the probing. This phrase describes the attempts to locate a mythical region of the human brain that when activated would drive subsequent consumer behavior, perhaps without consumers being consciously aware of this. Indeed, during the early evolution of neuromarketing it could conceivably have been considered a form of applied social psychology. But due to the fact that neuromarketing is essentially the study of the cortical substrates of social influence in an applied setting, it is now being considered as a scientific sub discipline in its own right. All neuromarketing researches need to have a strong theoretical background with a clear experimental hypothesis.

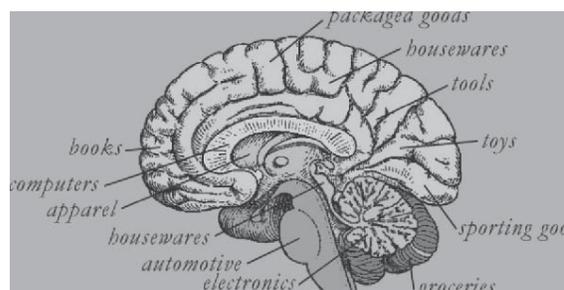


Figure 1: Buying Centers in Brain

Source: Max Sutherland, *Australian Neuromarketing Symposium at Swinburne University (Melbourne) in February 2007.*

Companies such as Google, CBS, and Frito-Lay amongst others that have used neuromarketing services to measure consumer thoughts on their advertisements or products. Best-known technology of neuromarketing was developed in the late 1990's by Harvard professor Jerry Zaltman (Gerald Zaltman), it was patented under the name of Zaltman Metaphor Elicitation Technique (ZMET). The essence of ZMET reduces to exploring the human unconscious with specially selected sets of images that cause a positive emotional response and activate hidden images, metaphors stimulating the purchase. Graphical collages are constructed on the base of detected images, which lays in the basis for commercials. Marketing Technology ZMET quickly gained popularity among hundreds of major companies-customers including Coca-Cola, General Motors, Nestle, Proctor & Gamble.

EVOLUTION OF NEUROMARKETING

Neuromarketing is an extension of peering inside people's heads with devices. In the late 1960's marketers started using *pupilometers* – devices that measure spontaneous pupil

dilation as an indicator of peoples' interest while they were looking at packages or print advertisements. Herbert Krugman was a pioneer in this area. At the same time came *GSR* (galvanic skin response), as a possible indicator of people's emotional response to advertisements. Later, came in the new technology for *eye tracking* to reveal exactly where on the page (or a TV scene) people's eyes were actually looking. And in the 1970's Herbert Krugman and Flemming Hansen began to explore left and right brain processes using *electroencephalograph* (EEG) brain wave technology. Each of these technologies was heralded at the time as a breakthrough. But none of them found widespread, lasting use in marketing - although some, like eye tracking, carved out a small niche. *Brain wave recording* devices have been available for decades but new technology can now pinpoint more precisely which brain regions are active as people respond to products or make brand choices or are exposed to advertisements. The neuroscience dream of being able to peer into the functioning brain has been made possible.

In 1981, came across brain wave monitoring using *SST* (*Steady State Topography*). Professor Richard Silberstein at Swinburne University was using SST in pure and clinical applications and was investigating its possible use in marketing. People were impressed, even though the technology clearly had a long way to go. Today, 30 years later, SST can provide revealing insights in marketing with the benefit of more than a quarter century of accumulated experience in interpreting SST brain wave activity. The newer technologies, *fMRI* and *MEG* (magneto-encephalography) are the latest developments in brain-scan technologies. Their potential to impress clients has made it attractive to transition their use across into marketing. But while their potential is undoubtedly exciting, published studies deploying them in marketing remain quite scarce. Probably no more than two dozen studies have been and barely a handful of these have published any real details in peer reviewed journals. One of the earliest studies using the newer technology was by Ambler and his colleagues at the London Business School. It asked people while they were in a MEG scanner which of 3 brands they would purchase and found that familiar brands stimulate the right parietal cortex. The authors pointed to this area as the possible 'location of brand equity'. In 2000, Rossiter et al used SST to monitor brain waves while people watched TV ads and they were able to predict what scenes people would recognize a week later. They found they could predict this from activity in the left brain at the time of exposure. Until then it was thought that the crucial processing for pictures would be in the right hemisphere.

Marketing analysts will use neuromarketing to better measure a consumer's preference, as the verbal response given to the question, "Do you like this product?" May not always be the true answer due to cognitive bias. This knowledge will help marketers create products and services designed more effectively and marketing campaigns focused more on the brain's response. This makes neuromarketing and its applied results potentially subliminal. Neuromarketing will tell the marketer what the consumer reacts to, whether it was the color of the packaging, the sound the box makes when shaken, or the idea that they will have something their co-consumers do not. It is one thing to see which parts of the brain become active in response to a stimulus. It is another to interpret what this means or what you can do with it. This is tackled usually by correlation with dependent variables. Rossiter et al (2001) used verbal report in the form of a scene-recognition test one week later. Ambler et al focused on differences in brain response stimulated by brands that people said they would purchase (compared to ones that they would not).

Mostly the focus of the researches has been on correlation with so called 'known centers' such as: reward centre, self referencing centre, face recognition centre, liking centre, anticipation centre etc. Marketing analysts will use neuromarketing to better measure a consumer's preference, as the verbal response given to the question may not be true always. Neuromarketing studies have increasingly pointed to various 'known centers' in the brain. Yet knowledge about these so called 'known centers' is often sketchy and the claims about their function are often reasoned speculation rather than known fact.

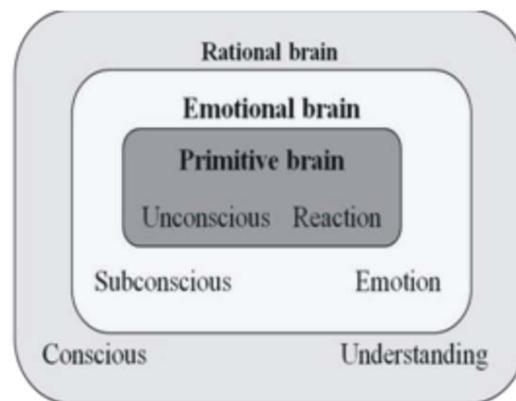


Figure 2. Roles played by the parts of the brain

Source: Dragolea L., Cotîrlea D, *Polish Journal of Management Studies*, Vol 3, 2011.

This concept can be clearly understood from the following example, a study by Knutson et al published in late 2007. It pointed to the insula as an area that registers price-pain. People given \$20 to spend were shown products in a scanner that they could choose to buy. One part of the brain was activated when they saw brands they liked but then the higher the brands price, the more it triggered activity in another part of their brain, the insula. The study concluded that this is a center that registers price-pain. Within weeks however, a broader neuroscience study discovered that addicted smokers who suffered damage to this area (from car accidents etc) were suddenly able to give up their long standing addiction to smoking. It emerged that this part of the brain, the insula relates somehow to our ability to exercise control over addictive behaviors. Now, just how price-pain and addiction might be related, if at all, awaits further research. The message is that 'knowledge' about these so called 'known centers' is embryonic, and still developing rapidly, so this type of interpretation in terms of 'functional centers' needs to be taken with a good dose of caution.

It is not that long since phrenologists pointed to individual bumps on the outside of the head and made serious inferences about that person's personality and abilities. Phrenology is of course, now totally discredited. Skeptics of neuroscience argue that it is just a form of 21st century internal phrenology. That is not general view but it is important to keep a realistic perspective as to how embryonic the field is. We really don't know yet how to fully interpret many of these things and we are still in a very early stage.

NEUROMARKETING IN INDIAN MARKET

Anantha Pradeep, Neurofocus's Indian-born chief executive, says the idea of selling products through multiple celebrity endorsements is misplaced. And he sees huge opportunities for neuromarketing in India. It is a culture that is highly emotional and companies need to be able to talk to people in a language that they truly understand. If you look at the India's ancient scriptures and philosophies you can see that it is a culture obsessed with the brain. For thousands of years the country has looked into the human condition, how people should live their lives, how they should think and react in any given situation. How does the mind and body connect? If I don't do this here, where will I do it?

Companies might not share such mysticism, but they know understanding India's middle class is crucial. In a report from earlier this year, analysts at Deutsche Bank said: India's

middle class consumption is roughly equivalent to Ireland's total private consumption and is forecast to triple as a share of India's total consumption over the next 15 years. For corporations, the middle class in India thus presents significant business opportunities. The sales growth of consumer goods such as televisions and mobile phones to the middle class has already been established, but a new range of products such as financial services is increasingly being geared towards this group as well.

Developing and testing strategies that are designed to cure rather than create social pathologies is hard to argue with. Used in this type of application, neuromarketing will be refined to public applause, rather than public alarm. For consumer goods companies, the technique is an alternative to verbal feedback from would-be consumers, which is not always reliable. The idea is to scan people's reactions, then design products, packaging and advertising to stimulate particular parts of the brain. And the leading practitioner sees India's bulging middle class as a prime target.

Meanwhile, penny-pinching customers might soon have to control their subconscious, if they're to avoid overspending on saris, spices and the rest. In recent years, the rise of the application of neuroscientific research methods to market research has resulted in some strident criticisms and rather apocalyptic predictions in the popular press. The enthusiastic debate in the popular press which surrounded the emergence of neuromarketing was probably inspired by the oft cited but discredited notion of a "buy button in the brain." Neuroethics is a sub discipline of bioethics. them would be accepted by the consumers.

NEUROMARKETING- CONTROVERSIES AND ISSUES

Some consumer advocate organizations, such as the Center for Digital Democracy, have criticized neuromarketing's potentially invasive technology. Jeff Chester, the executive director of the organization, claims that neuromarketing is "having an effect on individuals that individuals are not informed about." Further, he claims that though there hasn't historically been regulation on adult advertising due to adults having defense mechanisms to discern what is true and untrue, that it should now be regulated "if the advertising is now purposely designed to bypass those rational defenses, protecting advertising speech in the marketplace has to be questioned." Joseph Turow, a communications professor at the University of Pennsylvania, dismisses neuromarketing as another reincarnation of gimmicky attempts for advertisers to find non-traditional approaches toward gathering

consumer opinion. He is quoted in saying, “There has always been a holy grail in advertising to try to reach people in a hypodermic way.

So as this bandwagon called neuromarketing picks up speed, some of the same threats that killed off previous technologies are re-emerging. A key one is over-claiming. It is an unfortunate fact that the sale of ‘smoke & mirrors’ often outsells substance. Smoke and mirrors is a metaphor for a deceptive, fraudulent or insubstantial explanation or description. The source of the name is based on magicians’ illusions, where magicians make objects appear or disappear by extending or retracting mirrors amid a confusing burst of smoke. The expression may have a connotation of virtuosity or cleverness in carrying out such a deception. At least in the short term. Bias towards over claiming exists in the media as well as in the marketing of consulting services to clients. The media love sensationalist stories that can carry a headline like ‘*Buy centre of the brain found*’. As a result, journalistic reporting is prone to outstrip the scientific substance.

Neuromarketing critics dismiss it as a fad. Because the practice of neuromarketing is not without its critics and issues. First, consumer advocates and other groups have claimed neuromarketers are exploiting people to “sell us crap we don’t need” and creating unhealthy and irresponsible addictions and cravings. Second, neuromarketing still suffers from the issue it is trying to overcome: the artificiality of market research. Brain activity in a lab may not equate to brain behavior in the mall where the buying decision is consummated. Third, neuromarketing studies have not been common in the B2B arena, perhaps because the customer buying process tends to be lengthy and involve many people so it may be difficult to measure these decisions reliably. Fourth, the cost of conducting these studies today is prohibitive for many companies. Neuromarketing is only poised to grow in use and influence. But as the practice makes its way out of the lab and into the real world, at the grocery aisle, onto your computer perhaps...a debate, well beyond marketing, will rage.

Major corporations and research firms, are jumping on the neuromarketing bandwagon because they are desperate for any novel technique to help them break through all the marketing clutter. ‘It’s as much about the nature of the industry and the anxiety roiling through the system as it is about anything else.’ The problem is that keeping up with the neuroscience literature is like trying to drink from a fire-hose. As the noted neurobiologist Steven Rose said: “The world-wide effort being poured into the neurosciences is

producing an indigestible mass of facts at all levels.” It is becoming extraordinarily difficult for full time neuroscientists to keep up - let alone businesses. Let’s face it... marketing is not interested in science or complexity. The truth is that marketing clients want ‘KIS’ not complexity. They want simplicity - an easy to understand, single number solution that says ‘this ad (or pack, or scene) ... is good/bad ...and says whether it will work or won’t work. Rather than try to drink from that fire-hose, there is a temptation for marketing to oversimplify and over-claim. Yet Neurofocus, the global market leader in neurological testing, has seen 100 per cent year-on-year growth over the last three years. It employs leading neuroscientists, works with major food, car, electronics and cosmetics companies, and has offices in London, Tokyo, Tel Aviv, Seoul, Bogotá, New York and Dallas.

CONCLUSION

Neuroscientists are convinced that the use of neuroscience techniques will open up a whole new world of understanding of the mind. As it develops, neuroscience will deliver increasingly powerful, marketing insights. Its immediate application to general marketing requires businesses to tread carefully and disentangle the scientific substance from the promotional hype. Businesses prepared to exercise this caution and engage with it now have an opportunity for early-mover advantage before the application of Neuromarketing gets constrained by regulation. The realm of marketing and market research has never been a model of ethical scruple. But the recent developments are truly macabre in their implications. The hucksters have enlisted research labs to map the brain’s activation responses in order prod desires for particular products.

Also, the world media, harbor very few doubts about the power of advertising and believe it knows what it is doing - otherwise why would it be using Neuromarketing? As Ehrenberg once observed: “Advertising is in an odd position. Its extreme protagonists claim it has extraordinary powers.... and its severest critics believe them.” Mystique forms a convenient climate for smoke-and-mirrors merchants, to rush in and tout their consulting services brandishing these new devices. For the substantive pioneers this is going to make things difficult because it inevitably degrades the whole field. The difficulty for clients is in identifying genuine scientific neuromarketing in amongst a growing clutter of toutware services on offer. We know that ‘hidden buy buttons’ are a media fantasy but some neuromarketing suppliers cannot resist the temptation to

pander to the media's need for a sensationalist headline. Myth and mystique will be difficult to dispel and will prompt regulation to constrain neuromarketing. Hype is likely to lead to a social backlash because marketing already stands accused as a cause in social epidemics like obesity, diabetes, alcoholism and gambling. After the legacy of Big Tobacco, marketing is not cut much slack.

Would you like a particular product? This remains a baffling question for companies which cater to consumer needs. And guess what, the key to this basic question, regarding liking and disliking of a product lies in the research of cognitive scientists who are exploring new avenue through this research. In the longer term, Neuromarketing will be far more socially welcome for applications that focus on products and causes with a clear social benefit - applications like road safety messages and persuading people to give up smoking or to resist over-eating. To follow the field of neuromarketing, it is important to look at neuroscience generally and not just studies labeled neuromarketing. Studies relevant to neuromarketing appear in various neuroscience journals. If neuromarketing comes under regulatory pressure, we can expect that more of these studies will be 'repositioned' and re-labeled something other than 'neuromarketing'. Neuro-aesthetics and neuroeconomics are especially relevant.

The following quote by Daniel Bichi^o (Manager at Competent Consulting (a consulting and training company), member of International Association of Coaches, USA) sums up the relevance of Neuromarketing in today's business world, *"What neuromarketing can really do is to improve how companies create products and advertise them, in order to become more interesting, appealing and valuable for consumers."*

REFERENCES

1. Ambler, T., J. Stins, et al. (2002). "Salience and Choice: Neural correlates of shopping decisions." London Business School, Centre for Marketing Working Papers No. 01-902.
2. Anantha Pradeep, Neurofocus expanding the power of the mind, Research Magazine, October 2008.
3. Barabba, V., and G. Zaltman. *Hearing the Voice of the Market: Competitive Advantage Through Creative Use of Market Information*. Boston: Harvard Business School Press, 1991.
4. Carter, R. (2000). Mapping the Mind. London, Phoenix. P93-4.
5. Ehrenberg, A. (1982). "Repetitive advertising and the consumer." *Journal of Advertising Research* **1**: 70-79.

6. Hansen, F. (1981). "Hemispherical Lateralization: Implications for Understanding Consumer Behavior." *Journal of Consumer Research* **8**(1): 23-36.
7. Knutson, B. *et al.* Neural predictors of purchases. *Neuron* **53**, 147-156 (2007).
8. Krugman, H. (1977). "Memory without Recall, Exposure without Perception." *Journal of Advertising Research* (August 1977).
9. Krugman, H. E. (1964). "Some Applications of Pupil Measurement." *Journal of Marketing Research* **1**(4): 15-19.
10. Naqvi (2007). "Damage to the Insula Disrupts Addiction to Cigarette Smoking" *Science* **315**(5811): 531 - 534.
11. Rossiter, J. R., R. B. Silberstein, et al. (2001). "Brain-imaging Detection of Visual Scene Encoding in Long-term Memory for TV Commercials." *Journal of Advertising Research*: 13-21.
12. Sutherland Max, Neuromarketing: What's it all about? Presentation delivered in the Australian Neuromarketing Symposium at Swinburne University (Melbourne) in February 2007.
13. Sutherland, M. (2006). "Comments on Product Placement." *International Journal of Advertising* **25**(1): 107-114.
14. Zaltman, Gerald. *How Customers Think: Essential Insights into the Mind of the Markets*. Boston: Harvard Business School Press, 2003.