

ASPECTS REGARDING NEUROMARKETING SPECIFIC RESEARCH METHODS

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Abstract

Information is one of the most important resources that a company must possess. Some informations are hidden deep in the black box - the mind of the consumer. Neuromarketing helps us find what is inside of the black box without troubling the consumer with questions that he doesn't want to answer or that he can't answer. Today because of an extensive research in mapping cortical and subcortical activity in association with behaviors and thoughts, the confidence in neurological data is growing. Thanks to discoveries in perceptual sciences we can identify the parts of the brain that are responsible for the phenomena that we experience daily. For all those interested in information obtained through neuromarketing techniques it becomes evident that there are corresponding neural substrates of consumer decision making process and these substrates can be observed, measured, and possibly manipulated. The following paper reveals some important aspects of the use of neuromarketing in studying consumer behavior by presenting the concepts, methods and techniques used under this sophisticated name, the limitations and advantages of using neuromarketing techniques and the importance of this type of information in decision making process at a company level.

Keywords: marketing research, neuromarketing, consumer behavior, observation, neuroscience

Introduction

Companies have always wanted to get inside consumers skulls, in the so-called "black box" in order to predict as accurately as possible how the latter will react to the stimuli in the market, from prices to offers and advertisements, in order to extract as much as possible out of their pockets. In the past, marketing was based only on a relatively crude measurement of what causes the consumer to buy, using to this end, surveys, the focus group or the observation based on the measurements of eye movements and the degree of sweating (the more excited the subjects are about something the greater is the tendency to sweat) to read the thoughts and feelings of consumers. The reality is that approximately 90% of consumers' buying behavior is unconscious and we cannot really accurately explain their preferences or their most likely purchasing decisions.

Typically, specialists in consumer behavior tend to divide the consumption decisions in two areas: emotional decisions and rational decisions¹. Emerging academic fields such as behavioral economics taught us that there are also forces that are neither rational nor emotional. Unlike emotions - which can be identified through projective techniques - instincts are factors that most people are not aware of. They occur in the absence of thought. We often see consumers who make these types of instinctive choices, such as, for example, in the situation where they choose from the shelves a particular brand of soft drink or bag of chips without knowing exactly why they chose that brand.

Under these conditions, the traditional studies performed are of questionable value. In the case where companies pour millions of dollars or euros in a promotion that may or may not reach its target, we realize that it is time for a paradigm shift.

What is neuromarketing?

Currently, researchers are trying and succeeding to go directly to the decision maker - namely the brain. This action led to a controversial new field called neuromarketing, combining neuroscience, marketing and technology. Considered by some marketing researchers as the most

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¹ Harries, S., Davies, S., 2010, *Neuromarketing Mad Scientists Meet „Mad Men”?*, DRAFTFCB, http://www.draftfcb.com/content/engage/pdf/Engage_Neuromarketing.pdf

important progress in the field, neuromarketing has been at the same time, rejected by skeptical neurologists as being closer to a pseudo-scientific fraud. Many experts point out that our current exploration and vision on the human brain is probably as complete or as accurate as a map of the world in the sixteenth century.

While the first use of fMRI (Functional Magnetic Resonance Imaging) as a marketing tool has been reported in the late 90s by Gerry Zaltman, a professor at Harvard, the term "neuromarketing" was invented by Professor Ale Smidts, considered the father of neuromarketing and a Nobel Prize winner for Economic Sciences, in 2002, while the first neuromarketing conference was held in 2004 at Baylor College of Medicine in Houston. Also, in the development of this area, an important threshold was exceeded in June 2001 with the creation of the first American neuromarketing company in Atlanta, located not far from Coca-Cola headquarters: Brighthouse Institute, led by marketing expert Joe Reyman.

Neuromarketing has recently entered our country by a LAB Romania initiative which has offered its services to the Romanian market since 2009. The first products that used neuromarketing in our country were those of the premium range, but with a large volume of sales, like luxury cars. Communication specialists argue that the market in Romania is not yet ready for neuromarketing, so that local firms will allocate resources to this activity in the near future.

The term neuromarketing designates techniques to identify brain mechanisms in order to understand consumer behavior, in order to improve marketing strategies.

Neuromarketing is an undisguised observation technique based on the techniques resulted from neuroscience, used for a better identification and understanding of brain mechanisms underlying consumer behavior, in view of increasing the effectiveness of the commercial activities of the companies. In other words, neuromarketing is that the domain of marketing studying sensory, motor, cognitive and affective responses recorded by the human brain when it is subjected to external stimuli (when the consumer sees an ad, eats a chocolate bar, drinks a glass of Coca-Cola). This calls for the technology of magnetic resonance imaging transfer technology used to detect brain tumors, but at the same time, allows the identification of the way the brain receives, processes and interprets the various images that are submitted. There are many cases where aspects of consumer behavior cannot be articulated verbally or in writing no matter how skilled is the interviewer or how cooperative is the subject, since these aspects operate below the consciousness level of the individual. In other cases, the very act of acquiring information may interfere with the perception that scientists are trying to measure.

The premise of using this technique is that consumer purchase decisions are made in seconds in the subconscious, the emotional side of the brain and that by understanding what we like, we do not like, what we want, what causes us fear or boredom, etc., as shown when watching our brain responses to stimuli can design products and marketing communications to better meet the unmet needs of the market and determine purchase.

Neuromarketing specific methods

Brainwave recording devices have been available for decades, the difference being that new technologies can now more accurately identify which brain regions are active when people respond to products, when they make brand-level choices or when they are exposed to advertisements.

Brain imaging techniques currently used in neuromarketing are²:

- *EEG (electroencephalography)* – it records brain wave changes produced by the cortex, reflecting the positive or negative emotions produced at that moment. The technique has an excellent temporal resolution of 1/1000 of a second being non-invasive, rapid, inexpensive and the records can be obtained in a natural environment. But the results thus obtained are not reliable because the device

² Lewis, D., Bridger, D., 2005, *Market Researchers make Increasing use of Brain Imaging*, ACNR, Volume 5, No 3, July/August 2005

is very sensitive to the movements of those around, to neon lights, to the electromagnetic waves, or to head movements. Moreover, it only records surface brain activity, while the decision-making mechanism requires the activity of deeper parts of the brain. Although some experts may claim otherwise, it is generally accepted that this technique allows a little over just measuring the interest. While this may be helpful in understanding those aspects of communication that attract attention, it does not allow us to identify emotional reactions. EEG technology has the advantage of being a relatively discreet investigation and allows the subjects of the investigation to enjoy some freedom of movement.

- *fMRI (functional magnetic resonance imaging)* that measures oxygen consumption in various tissues of the brain. This imaging technique has been used to date to investigate the impact of brand perception on consumer preferences, to evaluate videos and television advertising, the study of buying decision process and even to investigate the likely impact of electoral advertising during the presidential elections. The biggest drawback of this technique is that the device needed to perform imaging cannot be transported. Therefore, it introduces a distortion, because it does not take into account the concrete conditions in which the shopping is done and thus, it does not measure the environmental influences.

- *QEEG (quantitative analysis of the frequency of the electroencephalography)* used for the analysis of viewers' response to television advertising and other forms of advertising, the exploring of the effects of watching happy or sad facial expressions, exploring the mental states of motorists who must drive under time pressure or examining how people react to an unexpected "free road". The QEEG technique is simpler to use and less expensive, also allowing to make records in a wide range of natural environments. QEEG can be used in combination with qualitative research methods thus providing a better understanding of consumer choices which could not be uncovered otherwise.

- *MEG (magnetoencephalogram)*. An example of a situation where this technique was used is the one for the measurement of the purchase decision-making process in a "virtual" supermarket. The authors of the study reported that the right parietal cortex became active only when consumers were faced with a preferred brand and concluded that this region was involved in conscious decision making regarding the choices for purchase. The main drawback of this technique is similar to the fMRI technique, i.e. the technology for performing them is not particularly convenient in terms of its use. It "ties" both the researcher and the subject of the investigation to an immovable machine having a high operating cost and which, moreover, requires positioning the subject's head inside a very large machine.

- *ECoG (electrocorticography)*.

- *PET (positron emission tomography)* measures blood flow and the intensity of metabolism in the brain.

Of the aforementioned techniques, fMRI captured the most interest among marketing researchers and enjoyed the most extensive advertising in the general interest and marketing press.

Facial coding techniques are used in support of brain imaging techniques, electromyographies (EMG) to measure the activity of primary facial muscles (zygomatic / orbicular) that may reflect the conscious or unconscious expression of emotions, following the gaze direction (indicating areas of focus of the eyes) and the recording of variations in the galvanic skin response (GSR) showing whether the product attracted interest from the consumer.

Currently, brain scanning is coming increasingly closer to the home of the subjects, by using wireless devices that allow monitoring of emotions even when the subject is in the comfortable environment of his home. In order to perform a study of neuromarketing the specialists recommend using a preselected number of people between 30 and 100, chosen by product or area.

Neuromarketing's pros and cons

One of the most praised aspects of neuromarketing methods is that they are devoid of subjectivity and bias from the participants. For example, when asking a subject to state what he thinks about a certain brand, the person's response will be colored by a complex network of contextual biases and tangential cognitive factors. The promise of neuromarketing is that we can all bypass these confounding factors to get at the heart of the matter – the real representation of the brand. Unfortunately, while this is true to some extent, an entirely new set of confounding factors is introduced during the analysis of neuromarketing data. While many neuromarketing measures are indeed more objective than verbal reports, the data thus obtained does not remain unfiltered. While the signals are not filtered by the consciousness of the research subject, a great deal of manipulation and filtering of the data is performed by the researcher. This introduces the potential for error, but through a different path.

In the studies performed, neuromarketers study the reaction (reactions) of the brain to some stimuli such as appearance, smell, descriptive language (aspect mainly used in the food industry), a chain of events or a story, or the association made between a celebrity and a certain brand (such as can be seen in the sports, perfumes and clothing industry). Biometric sensors are often used to monitor brain activity before, during and after exposure to various stimuli through various neuromarketing techniques. This is done in order to detect processes that have led to certain decisions and to identify that part of the brain that implemented those processes. Biometric sensors use, along with the imaging techniques described above, physiological sensors that monitor heart rate, breathing and skin response.

In this area, however, it is one thing to be able to see what parts of the brain become active in response to a stimulus and it is something else to interpret what this means or what to do with the information obtained. Thus, neuromarketing studies indicate increasingly more towards various "centers known" in the brain. The knowledge about these so-called "known centers" are often sketchy and the demands on their function are often motivated by speculation rather than by a known fact.

Neuromarketing practice is not without criticism or problems. First, consumer advocates argue that neuromarketers exploit people to change their behavior towards the purchase of products / services that they do not need and which lead to the creation of unhealthy and irresponsible addictions and desires. Second, neuromarketing still suffers from a problem that it is trying to overcome – the artificiality of marketing research. Brain activity recorded in a laboratory may not equate with brain behavior at the mall where the purchase decision is taken. Third, neuromarketing studies are not common to the B2B field, probably because of the fact that the customer buying process tends to be lengthy and involves many people so that these decisions can be very difficult to measure in a reliable manner. Fourth, the present cost of these studies is prohibitive for many companies.

We must also be aware when we consider making a research through this technique that neuromarketing has limitations:

- neuromarketing is still only an adjunct, a technique complementary to traditional techniques - not a substitute for them³. The results obtained in neuromarketing studies are translated into specific marketing language, so that the information is used by those who know all the elements of the marketing mix, providing a significant amount of additional information, but not just any information about consumer behavior. On the other hand, the results generated by neuromarketing studies are, at the moment, far too broad and subject to interpretation, to be useful individually.

- The second limit is represented by the price and the technology. According to specialists, neuromarketing is now accessible to more than one hundred companies worldwide. These include Coca-Cola, K-Mart, Delta Airlines, Levi Strauss, Alcatel. One can however estimate that the real

³ Page, G., 2006, *Neuromarketing: Beyond the Buzz*, Millward Brown's Pov, april 2006, www.millwardbrown.com

demand for such equipment used in applications other than medical will lead to a rapid reduction in both cost and size of the equipment, a situation that we approach with small steps.

5. The role of neuromarketing

Neuromarketing shows a very important fact, namely that, as a rule, decisions are taken by the consumer at a mental, emotional and instinctive level⁴. Through brain imaging, marketers seek to capture the rapid commands⁵ set up by the brain for efficient and rapid analysis in the evaluation of the alternatives within the purchasing decision-making process. To save time, the brain does not always go through the entire list of risks, benefits and value judgments. Whenever possible, it is based on some "quick keys" that are based on experience and the benefits of stored information.

The results obtained through neuromarketing have been used so far in the following areas of interest:

- Increasing brand preference;
- Improving advertisements retention;
- Maximizing the impact of advertising;
- Improvement of TV commercials;
- Optimization of media budgets by admastering (shortening the time for broadcasting the spot);
- Optimization of production budgets by testing the spot in the production process.
- Making the branding operational;
- Testing the products before their market launch.

Rezultatele Neuromarketing research results can be surprising. In Buyology⁶, Martin Lindstrom presents the results of a study organized by him and conducted during three years. Among its conclusions, we mention:

- the warning labels on cigarette packs stimulate a brain area associated with lust - despite the fact that the subjects of the study said they considered the warnings on the packages to be effective;
- the images of dominant brands such as iPod, stimulated the same part of the brain normally activated by religious symbols;
- a picture of a Mini Cooper activated that part of the brain that responds to faces

Neuromarketing can also be used in psychological and theoretical applications, the examples in this regard being represented by the assessment of the neurological responses during presidential speeches and movie trailers in order to improve the way both are presented to the public.

Using brain imaging techniques will never allow marketing professionals to find the "Holy Grail" of marketing research, the "buy button" - a mythical region of the brain that should only be stimulated so that consumers feel compelled to purchase a product even if they do not want to do so. This button will not be found because it does not exist! Neuromarketing offers, from a realistic point of view, the prospect of a better understanding of how the brain responds to a wide variety of everyday situations. In addition to great commercial value, neuromarketing offers the opportunity to increase our knowledge of brain function among a non-clinical population, to the extent to which there is an expansion of strong medical technologies in a new and challenging research area.

Neuromarketing specific technology can help minimize negative effects. However, it can help maximize positive aspects, as it requires creativity and a holistic view of the person, considering it a real human being. What neuromarketing can really do is to improve the way companies create

⁴ Boricean, V., 2009, *Brief History of Neuromarketing*, The International Conference on Economics and Administration, Faculty of Administration and Business, University of Bucharest, Romania ICEA – FAA Bucharest, 14-15th November 2009, <http://conference.faa.ro>

⁵ Park, A., 2007, *The Brain: Marketing To Your Mind*, Time Magazine, 19 January 2007, retrieved from <http://www.time.com/time/magazine/article/0,9171,1580370-3,00.html>

⁶ Lindstrom, M., 2011, *Buyology*, Publica Publishing House, ISBN 978-973-1931-59-3

products and promote them, so as to make them more interesting, attractive and valuable for consumers. Or, as Joey Rieman said in "The New Scientist": "The objective of neuromarketing is to change the behavior of the companies, not the behavior of the consumers!"

Conclusions

The immediate application of neuroscience in marketing requires companies to act carefully and to detach scientific substance from promotional deception. In the long run, neuromarketing will be more welcome, from a social point of view, in terms of applications that focus on products and causes with a clear social benefit - applications such as road safety messages or convincing people to quit smoking or to resist the over-eating trend.

Currently, many companies invest in technology and neuromarketing studies and books, and neuromarketing blogs on neuromarketing are given more attention and legitimacy. The recent investment of research company Nielsen in the research "NeuroFocus" increased the influence and credibility of neuromarketing. However, the field is young and like the Wild West many people outside the marketing area expressed concern about the reliability and ethics of neuromarketing.

Neuromarketing is a developing discipline, which in time will give us new insights into human behavior. Unfortunately, at present there are little published research articles in this field. Current debate on neuromarketing is reduced to a few key points:

- pragmatic realities related to the business environment often require science to adapt. For the use of measurement techniques specific to neuromarketing, the solution that is measurable, effective and provides valid results in an acceptable margin of error is the winning solution;
- for neuromarketing to become a common technique in marketing research, it is necessary for the necessary devices to become mobile in order to allow observations in the real world.
- neuromarketing can help understand the differences between what consumers say and what they do, but it should be applied on a large enough sample for this technique to express the behavior of consumers;
- hybrid models can increase efficiency. If you combine the techniques of eye tracking and EEG with a prediction on the market, you get better results. But if you combine sensory testing models with biometric measurements, you will get high depth results.

References

- Boricean, V., 2009, *Brief History of Neuromarketing*, The International Conference on Economics and Administration, Faculty of Administration and Business, University of Bucharest, Romania ICEA – FAA Bucharest, 14-15th November 2009, <http://conference.faa.ro>
- Harries, S., Davies, S., 2010, *Neuromarketing Mad Scientists Meet „Mad Men”?*, DRAFTFCB, http://www.draftfcb.com/content/engage/pdf/Engage_Neuromarketing.pdf
- Lewis, D., Bridger, D., 2005, *Market Researchers make Increasing use of Brain Imaging*, ACNR, Volume 5, No 3, July/August 2005
- Lindstrom, M., 2011, *Buyology*, Publica Publishing House, ISBN 978-973-1931-59-3
- Page, G., 2006, *Neuromarketing: Beyond the Buzz*, Millward Brown's Pov, april 2006, www.millwardbrown.com
- Park, A., 2007, *The Brain: Marketing To Your Mind*, Time Magazine, 19 January 2007, retrieved from <http://www.time.com/time/magazine/article/0,9171,1580370-3,00.html>