

Neuromarketing: Anew Marketing Tool to Peep into Customer's Minds

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Abstract

Managers today are under tremendous pressure to uncover factors driving customers' attitudes and behavior that can serve a source of competitive advantage. The purpose of this paper is to alert marketers that a new methodology exists for researching many of the components of the consumer decision making process. In the more complex process of satisfying the consumers new marketing tools are needed to understand their constraints or preferences. The ability to examine what specific brain function or functions are activated during various stages of the consumer's decision-making process should help service marketers improve their efficiency and effectiveness. While neuromarketing has applications to all forms of product marketing, it is of particular interest to services marketers because of the intangible nature of services; thus making conventional research more difficult and speculative.

Neuromarketing research may shed light on many unanswered questions regarding consumers. Unfortunately, traditional methods of generating customer insights suffer from well-known limitations, and have remained largely unchanged since their introduction decades ago. As a result, there is growing interest in brain-based approaches that may enable managers to directly probe customers' underlying thoughts, feelings, and intentions. The goal of this article is to provide practical guidance to managers on using these tools.

INTRODUCTION

To understand how customers think, feel, and respond to a company's offerings, it has always been a tricky

business. So firms by conducting surveys and focus groups, can generate customer insights and these areas, are fast, inexpensive, and offer remarkable value for marketers.

The limitations with the traditional customer insight generation process are well known. The accuracy of measures using introspection is often suboptimal for highly quantitative decisions such as those involving pricing and distribution. The validity of self-report measures can be overcome by a number of well-known shortcomings. Respondents have imperfect memory. By just asking a question is known to change respondents' behavior. Perhaps most worryingly, there are few ways to distinguish between cases where respondents are being truthful versus when they are not, and when marketers ask the appropriate questions versus when they do not. In an increasingly customer-oriented era where business strategy depends upon customer insights to stay ahead of the competition, this lack of confidence can pose important challenges for companies. First, rapid advances in measuring marketing ROI has led to a situation where firms prioritize strategies, such as pricing and promotions, that are or at least appear to be measured with precision. Amazon and Google, for example, routinely conduct A/B testing and experiments on a daily basis to check managers' intuitions and hypotheses before executing changes on a large scale¹.

They remain, however, challenging in many areas of brand and product management dealing with questions, such as brand image and customer loyalty, that are strategically important but data poor. This had led to an ironic situation where, even as companies increasingly

view marketing expenditures as sound long-term investments rather than short-term costs, actual expenditures more and more emphasize short-term effects at the expense of long-term health.

Second, the inability to trust customer insights gathered using traditional techniques can result in considerable skepticism and confusion within companies ranks, often leading to difficult conversations between managers within marketing and those outside. In particular, recent developments in brain-based approaches have opened the possibility for marketers to directly probe and measure customers' underlying thoughts, feelings, and intentions. However, as often is the case with cutting edge technology, there has been a widespread tendency to overestimate both effectiveness and limitations. The goal of this article is to provide an overall framework and practical guidance on how managers can use brain-based methods to understand customers and generate actionable insights. In particular, by viewing traditional and brain-based approaches as complements, rather than substitutes, marketers and firms can combine them in novel and innovative ways, in order to generate and validate customer insights that are foundational in strategy formulation.

Unconscious mental processes are major influences in people's deliberation. Among the newest techniques for the measurement of marketing stimuli are neuroimaging techniques, which make an image of the patient's brain using non-invasive means. When used in marketing to understand consumer behaviour in relation to markets and commercial trade, these methods are called neuromarketing techniques (Lee, Broderick & Chamberlain, 2007).

The use of neuromarketing activities has aroused some controversy. On one hand, critics of the subject believe that the use of such techniques would affect consumers' ability to choose not to consume marketed products, leaving the individuals unable to resist such efforts and making them easy targets for the company's campaigns (Wilson, Gaines & Hill, 2008). On the other hand,

defenders of neuromarketing activities, such as Lindstrom (2009a, 2009b) and Dooley (2010), discuss the benefits deriving from the technique to both consumers and organisations. According to these authors, consumers would benefit from the creation of products and campaigns directed to them and would have their decisions facilitated rather than manipulated, while organisations would save large portions of their budgets that are currently used on inefficient and ineffective campaigns, ensuring greater competitiveness and improvements to customers. There is yet another segment of researchers who believe that neuromarketing would be much more science fiction than reality because it is impossible to find people with identical thoughts in the world, as thought is changeable and varies according to personal experiences, values and character (Hubert, 2010).

This article seeks to survey the main neuromarketing techniques used in the world and the main practical results obtained. Specifically, the objectives are; to identify the main existing definitions of neuromarketing; to identify the importance and the potential contributions of neuromarketing; to demonstrate the advantages of neuromarketing as a marketing research tool compared to traditional research methods; to present the main neuromarketing techniques that are being used in the development of marketing research; to present studies in which neuromarketing research techniques were used; and to identify the main limitations of neuromarketing.

Although studies on this topic were first conducted in the early 1990s, research in the area is still scarce and inconclusive due to high costs and the need for specialised equipment. However, neuromarketing offers new approaches that, if incorporated into other methodologies, may lead to very interesting effects and could expand the results of marketing strategies in different segments. Organisations can be encouraged to develop market research with the use of neuroimaging techniques for product development, the choice of channels, and pricing and communication decisions.

Methodology

The field of neuromarketing is fairly new and of great interest to marketing researchers (Morin, 2011, Dinu, Tannase, Dinu&Tannase, 2010). This exploratory research used the technique of content analysis. This technique was described by Bardin (1977) as a set of techniques for the analysis of communications that use systematic procedures and generate a description of the messages' contents.

A recurring point in the articles was the definition of neuromarketing as a new technique for market research.

Because neuromarketing is described as a marketing research engine for which it is important to study consumers' behaviour, the following keywords were used: neuromarketing, marketing research and consumer behaviour. After reading the articles, seven categories were established based on the criteria of exclusivity, homogeneity, relevance, objectivity and productivity (Bardin, 1977).

Presentation of Results

The results from the content analysis technique are presented, grouped into the identified categories: definition of neuromarketing, importance of neuromarketing to marketing studies, advantages of neuromarketing over traditional methods of research, ethical issues of neuromarketing, neuromarketing techniques, and studies carried out with the application of neuromarketing.

Definition of Neuromarketing

The first reports of the use of neuromarketing techniques came out in June 2002. Specifically, an advertising company from Atlanta (USA), Brighthouse, announced the creation of a department for the use of functional magnetic resonance images (fMRI) to conduct marketing research (Fisher, Chin & Klitzman, 2010). Even before the technique received the prefix "Neuro", some companies already used neurophysiologic techniques, such as electroencephalography (EEG), to solve marketing problems (Fisher et al., 2010).

However, with advances in technology, neuromarketing techniques have been used to explore consumers' preferences (Murphy, Illes & Reiner, 2008). This potential to analyse consumer preferences attracted great interest among marketing research companies. In addition to the interest of the companies in exploiting this market niche, the theme raised curiosity among academic researchers and left some individuals in society uncomfortable (Murphy et al., 2008; Fisher et al., 2010; Lee et al., 2007).

Among the texts analysed, many conceptions of neuromarketing were found. Neuromarketing was described as a research field (Murphy et al., 2008), a field of neuroscience (Perrachione&Perrachione, 2008), a field of study (Lee et al., 2007 and Eser, Isin&Tolon, 2011), a part of marketing (Fisher et al., 2010), an interconnection of perception systems (Butler, 2008), a scientific approach (Senior & Lee, 2008), a subarea of neuroeconomics (Hubert & Kenning, 2008) and a distinct discipline (Garcia & Saad, 2008). As to its purpose, some authors see neuromarketing mainly as a means of acquiring scientific knowledge (Lee et al., 2007; Murphy et al., 2008; Fisher et al., 2010; Butler, 2008; Senior & Lee, 2008; and Eser et al.; 2011), while others view neuromarketing more as a potential tool for commercial marketing (Perrachione&Perrachione, 2008; Hubert & Kenning, 2008; Fugate; 2007; Orzán, Zara & Purcarea, 2012; Green & Holbert, 2012; Vecchiato, Kong, Maglione, & Wei, 2012).

Despite the differences in the authors' views, it is possible to observe that some notions about neuromarketing are convergent. Among the most recurring themes in the category "definition of neuromarketing" were the understandings of neuromarketing as the measurement of brain activities; a research tool; research on consumers' behaviour; a field belonging to neuroscience; a marketing tool; the measurement of emotions and psychological processes; a commercial technique; the analysis of physiological and cognitive processes related to the nervous system;

and a form of representing behaviours in images and colours.

The relationship between the field of study of neuromarketing and cerebral activity is evident in the very etymology of the word. Even so, many authors reaffirm this relationship. Murphy et al. (2008), for instance, say that companies are emerging that provide information about consumer preferences based on the brain. Butler (2008), Senior & Lee (2008), Hubert & Kenning (2008) and Morin (2011), on the other hand, associate neuromarketing with a neuroscience technique that identifies the cortical regions responsible for consumers' behaviour.

Neuromarketing is also described as a research tool that provides direct observations of brain reactions during marketing stimuli (Hubert & Kenning, 2008). According to certain researchers, the brain is a black box that hides consumers' emotions and preferences (Marci, 2008; Javor, Koller, Lee, Chamberlain & Ransmayr, 2013; Fugate, 2007 and Green & Holbert, 2012), and neuromarketing works as a window that unveils and gives access to these emotions (Green & Holbert, 2012; Ohme & Matukin, 2012; Fisher, Chin & Klitzman, 2010). When obtaining insights from the brain processes of individuals, researchers will be able to understand, assess and predict the consumers' behaviour (Fisher et al., 2010, Hubert & Kenning, 2008; Perrachione & Perrachione, 2008).

Neuromarketing was also recurrently defined as the neuroscience of consumers (Babiloni, 2012; Ohme & Matukin, 2012). However, some authors emphasise the difference between the two fields. Fisher et al. (2010) classify neuroscience more broadly as a neuroscientific field that studies consumers, whereas neuromarketing is defined as the simple application of these results to administrative practices. Lee et al. (2007) make clear the distinction between the terms: neuromarketing can be defined as the application of neuroscientific methods to analyse and understand

human behaviour in relation to markets and marketing trades.

Other definitions approach neuromarketing as a field resulting from the association between two or even more sciences. According to Senior & Lee (2008), neuromarketing consists of the marketing research domain based on social psychology, econometrics and social sciences. Page (2012) represents neuromarketing as the convergence between neuroscience, experimental psychology and experimental economics, while Garcia & Saad (2008) and Hubert & Kenning (2008) associate neuromarketing with the sciences of consumer behaviour and cognitive neuroscience, i.e., consumer behavioural sciences and neurobiology, respectively. However, the vast majority of articles approach neuromarketing as the connection between neuroscience and marketing (Hubert & Kenning, 2008; Garcia & Saad, 2008; Lee et al., 2007; Fisher et al., 2010; Ohme & Matukin, 2012; Senior & Lee, 2008; Fugate, 2007; Butler, 2008; Morin, 2011; Page 2012; Perrachione & Perrachione 2008 and Vecchiato et al., 2012).

Many authors still use the terms "study of brain imaging" (Hubert & Kenning, 2008; Perrachione & Perrachione, 2008; Babiloni, 2012; Reynolds, 2006; Garcia & Saad, 2008; Green & Holbert, 2012), "study of neuroimaging" (Eser et al., 2011 and Vecchiato et al., 2012), and "neuro-technology" (Murphy et al., 2008 and Fisher et al., 2010) to refer to neuromarketing (Perrachione & Perrachione, 2008; Green & Holbert, 2012; Javor et al., 2013; Orzán et al., 2012; Fugate, 2007 and Morin, 2011). This usage most likely occurs because fMRI is the most prominent technique under the academic and market spotlights, although the neuromarketing studies identified in this work go beyond brain imaging.

In this broad definition approach, several authors provide more detailed explanations of neuromarketing. For example, some authors report neuromarketing as a way of revealing the cognitive emotional processes (fear, motivation, recognition, well-being and reward)

underlying human conscience (Lee et al., 2007; Murphy et al., 2008 and Butler, 2008). Fugate (2007) approaches the topic so as to convey the notion of neuromarketing in two ways (simple and elaborate). He asserts that neuromarketing travels between the emotional and rational parts of the person and that it is a technique that makes it possible to show that the physical and the psychological are co-dependent through images that record the rational and emotional responses to marketing stimuli.

Literature review

Neuromarketing can be described as a field of research that creates a bridge between the fields of neuroscience and marketing (Butler, 2008; Senior & Lee, 2008 and Hubert & Kenning, 2008). The main purpose of neuromarketing is to establish relations between marketing stimuli, the brain areas in which these stimuli were developed and the physiological consequences related to the nervous system, so that such areas can be associated with cognitive, psychological and emotional processes and can generate an understanding about the consumer (Lee et al., 2007, Murphy et al., 2008 and Senior & Lee, 2008). Neuromarketing refers to the use of principles of neuroscience in the field of marketing.

Neuromarketing is the formal study of brain activity in response to various advertising messages and branding.

It measures the impact of marketing and advertising on consumers by using various technologies such as functional magnetic resonance imaging (fMRI), electroencephalography (EEG) and Steady state topography (SST). Neuromarketing involves use of neuroimaging tools which helps marketers understand their consumers' mind. An example of this Frito Lay potato chips packs. The PepsiCo's executive use neuromarketing to test commercials, products and packaging in the U.S. and the overseas. Using Neuromarketing techniques the company found that the matte beige packs of potato chips doesn't attract customers. Therefore, company switched for shiny packaging in the U.S.

Neuromarketing is about how the human brain works and how potential consumer's brain works, so that firms can be more effective during decision-making process of the brain.

Neuromarketing help companies to improve the quality of their products and services through making use of techniques like fMRI (Adhami, 2013). Companies having Neuromarketing techniques can choose the products labelled as winners without any clutters (Eser, Isin & Tolon, 2011). With help of this technology, companies are motivated to take more risk to engage more boldly with their consumers and hence this will captivate their consumer's behaviour. (Green & Holbert, 2012).

The study found out that the left hemisphere activates before the right hemisphere of the brain (Pileliènè, 2012). Hence, the price of the product has to be stressed before the unique features of the product (Pileliènè, 2012). This is due to reason that price is associated with the left hemisphere while the creative or unique components are associated with the right hemisphere (Pileliènè, 2012).

According to NeuroFocus (2011) as cited in "Brain Whisperers: Cutting through the Clutter with Neuromarketing" (Andrejevic, 2012) with Neuromarketing, marketers now can peep into the brain and know how the brain of a consumer responses to a particular product or advertisement.

Companies like Motorola, Delta Airlines, Proctor & Gamble and Buick are some of the biggest reapers of fruitful Neuromarketing outcomes (Boricean, V., 2009).

Through Neuromarketing it has been found that a consumer cling to a certain product not only because of its unique features, cost or the advertising message but mainly on the basis of an intuitional relation with the product's brand. Consumer perceptions towards the brands are built gradually not suddenly with time and enriched experiences that help extract evaluations in the

customer's mind. This is why, for example, certain people go to McDonald's or Pizza Hut or wear fashionable sneakers or traditional style; it is not because of the way the product looks, tastes, or fits but rather because of the way the product or the service perfectly matches their lifestyle (Hammou, Galib and Melloul, 2013). Researchers subsequently hypothesized that the main motive behind the outstanding sales of BMW's Mini Cooper was, at least subconsciously, its adorable design (Hammou, Galib and Melloul, 2013). The study findings have also demonstrated that pictures of highperformance cars such as the Ferrari 360 Modena and the BMW Z8 have stimulated some specific brain areas related to the concepts of wealth and social power. Such findings have provided the key insights to the companies with absolute emotional responses that no focus group or survey could ever find out. (Hunt, 2008).

Neuromarketing techniques will help to refine our understanding of the unique characteristics of services; such as intangibility. Many of the tangible, product-based explanations of consumer decision making are inappropriate for intangible purchases. Service researchers used this technique to develop more effective pricing strategies. Once emotional responses are attained, rational appeals can then be presented; it is all a matter of sequencing and timing; decisions that can be greatly facilitated by neuromarketing techniques which visually depict which brain areas are active during presentation of specific marketing stimuli.

Importance of neuromarketing to marketers

Eser et al. (2011) indicate that neuromarketing uses state-of-the-art resources in brain scanning to understand the consumer buying process. Schneider & Woolgar (2012) claim that neuromarketing is the newest medium used by marketing researchers to understand consumer behaviour. In fact, understanding consumer behaviour is the most recurrent purpose found in the literature reviewed. The second major important contribution of neuromarketing studies is to understand how consumers make choices during the purchase process. Lee et al. (2007) claim that neuromarketing has become a popular

technology to establish the probability and non-probability of purchasing decisions.

Neuromarketing has also been identified as a way of shaping companies' marketing strategies (Eser et al., 2011). Publicity and advertising have been described as the areas of marketing that have benefited the most from neuromarketing techniques. Neuromarketing makes it possible to identify advertising elements that trigger positive feelings (Senior & Lee, 2008, Fugate, 2007 and Ohme&Matukin, 2012). In addition, it helps avoid elements that should not be present in the communication, such as elements that cause consumer aversion to the products. It also helps with the selection of visual and sound features, as well as the timing and selection of appropriate media (Fugate, 2007).

Neuromarketing has also the ability to identify consumers' needs and, in this way, develop more useful and pleasant products (Eser et al., 2011).

Branding or brand positioning strategies can also be enriched with the aid of neuromarketing. Branding research is engaged in examining how brand information affects decision-making (Hubert & Kenning, 2008). Neuromarketing can answer this question with a study to determine which neural processes are involved in the brain during the processing of brand information (Hubert & Kenning, 2008). The potential of neuromarketing to adjust strategies of pricing and product development is demonstrated by Lee et al. (2007) and Senior & Lee (2008).

Finally, neuromarketing is formed by a group of techniques that seek to identify the brain areas activated during a marketing stimulus and the cognitive processes that occur in those areas, as well as the various related biological markers. Therefore, neuromarketing has great potential to identify the causes of purchasing disorders such as compulsivity (Senior & Lee, 2008; Garcia and Saad, 2008; Fugate, 2007 and Fisher et al., 2010). Other possible applications of neuromarketing include the development of more effective social campaigns, such as

the encouragement of the use of seat belts in cars or smoking cessation (Orzán et al., 2012)

Costs associated with incorrect market research can be cut down if the marketers could understand consumers' mind without a social filter. Thus neuroimaging can be an efficient replacement for market research which can be used in knowing what their customers want. Neuromarketing uses neuroimaging techniques to view areas of brain which get activated by a given marketing stimuli. These neuroimaging machines work by responding to the activity of neurons to trace those areas which are responsive to given stimuli. Neuroimaging technology detects the increased electricity, blood oxygenation levels and physiological and chemical measurements. McClure et al. (2004) performed an experiment on Pepsi vs. Coca-Cola to study the reasons behind brand preferences. This experiment clearly shows that two identically favoured drinks were not equally preferred by the consumers. Making use of fMRI technique, this brain stimulation was studied for the two tests (i) blind and (ii) the person knows the beverage he/she was in taking. The readings proved that most of the consumers liked the taste of Pepsi but they were subconsciously believed that they preferred Coca-Cola ahead of Pepsi. Researchers claimed that "a preference for Coke is more influenced by the brand image than by the taste itself" (Bridger D., 2005). This experiment proves the strong influence of ads on the behaviour of consumers.

NEUROMARKETING: AMALGAM OF BUSINESS AND SCIENCE:

The definition of Neuromarketing has been divided into two segments one considering it as a pure science field while others considering it as a business activity by researchers. (Lee et al., 2006). It is more likely a real business world practical implication of extensively researched scientific brain imaging techniques. There is also an argument regarding whether it should be considered as an academic field or it more or less confined to a business activity (Fisher et al., 2010). The definition of Neuromarketing is most likely as follows:

"Neuromarketing is widely defined as the science that uses MRI, EEG, TMS, MEG, fMRI techniques and other brain wave tools to view how the human brain's responses to marketing stimuli and to figure out what customers' thoughts are toward a product, service, advertisement, or even packaging and accordingly construct marketing campaigns that are based on the human brain's response" (Hammou, K.A. et al., 2013).

Conceptually, Neuromarketing research considers both qualitative and quantitative aspects of research methodology (figure 1). Qualitative aspects covers issues like the content, medium and mode of delivery of contents to customers and quantitative research stresses issues like duration of exposure of advertisement to the consumers etc.

FIGURE 1



Neuromarketing techniques

fMRI – functional Magnetic Resonance Imaging measures the brain activity by detecting changes in blood flow by using MRI technology. Brain area consumes more oxygen when it is more active and to meet this increased demand of oxygen blood flow increases.

Electroencephalography (EEG) – This test evaluates the electrical activity in the brain. Electrodes are placed along with the scalp to record the brain wave patterns. These electrodes analyse the electrical impulses in the brain and then sends it to the computer screen where the results are shown. Hyundai, uses EEG- tests in designing

their cars to measure consumers' reactions, when looking at different parts of a car's exterior design.

Steady state topography (SST) –It is a technique which observes and measures brain activity. In a typical SST study, brain electrical activity (electroencephalogram or EEG) is recorded while participants view audio visual material and/or perform a psychological task.

Physiological and chemical measurements- In this marketers and scientists use technologies to check hormone secretions, eye tracking, heart rate, etc., which help them to know how the human body responds to various stimuli. Marketers either by increasing or decreasing the levels of various chemicals within the consumer's body track and monitor various neurotransmitters and follow the effects these chemicals have on their moods and actions.

Neuromarketing – A Marketing Tool

Rational consumer model, follows that people follow their own interest and their decisions are based on rational thinking. However, according to recent research consumers' decisions are mostly irrational. The role of emotions in consumer decision making is being emphasized by the marketers. Traditionally, marketing concentrated on the value and competitive advantages of a product or service. However, recent approach to marketing, includes the emotional component of the decision making process. Neuromarketing not only focuses on decision making processes but evaluates whether a person positively to marketing efforts and potential impact of marketing elements.

Neuromarketing on consumer buying behaviour

Neuromarketing has all the potential to satiate us. This much about the potential that neuromarketing has instore for all of us brand/marketing/advertising professionals.

Consumers are not able to phrase their needs and desires when asked explicitly, that is assumed that brain itself encloses internal information, which could explain their true desires. Thus neuromarketing influences the

marketing tool consumer buying behaviour by using the techniques to learn more about mental processes behind consumer purchasing behaviour.

Neuromarketing on pricing

Price is regarded as an important indicator in decision making process as costs are evaluated against benefits (Lee, Broderick, & Chamberlain, 2007). In order to decide the price of the product, it is necessary to know consumers' willingness to pay. In this regard, application of neuromarketing can be helpful in determining consumers' willingness to pay. Thus marketers can adjust their prices accordingly.

Neuromarketing on advertising

The way of presentation of certain decisions made by for instance role models in an advertisement can have tremendous effects on the actual decision being made by a consumer (Ariely and Berns, 2010). Neuromarketing using various neuroimaging techniques is considered to be helpful instrument for marketers. Using neuroimaging techniques, it is possible to find out whether the advertisement is perceived to be attractive or not. Marketers use various neuromarketing techniques like fMRI or EEG to check the effectiveness of the advertisements.

Neuromarketing on product design

Product's design and its packaging are the first thing which the consumers' perceive. Therefore, designing the product and its packaging requires careful analysis. Various neuromarketing tools are used in this regard in designing the product. Different designs of a product can be presented to consumers' and their positive effects in the brain can be analysed.

Conclusion

Neuromarketing with its limitless scope and applicability helps in drawing instantaneous and precise feedback on consumers' behaviour and feedback when compared to traditional marketing strategies. Neuromarketing with the use of neuroimaging techniques seeks to understand how marketing stimuli impact people by observing and

interpreting their emotional reactions. It focuses on the fact that emotional processes in the brain decide the willingness to buy something.

Neuromarketing indeed is a need of hour, with its limitless scope and applicability it provides immediate and accurate feedback on consumer's preferences and behaviour when compared to traditional marketing strategies. Neuromarketing is able to provide key insights into issues concerning business sustainability development and how to maintain relationships with other business environment elements. This helps organizations to be in better position to foresee the future of their products and prepare themselves to any cautious situations. Future of Neuromarketing is very promising and it would be too early to envisage the extent of success that can be achieved by it in near and distant future.

In nut-shell, Neuromarketing is phenomena that is required by each companies in this increasing competitiveness with in the global organizations.

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