NEURO MARKETING: A REVIEW

BY

OKOKON ATTIH

Abstract
The paper examined Neuro marketing, the emerging field in the marketing in the study of consumer behaviour with neurosciences which makes use of brain to detect hidden information about consumer purchase decision. The study is descriptive which reviewed various scientific studies carried out in the field of neuro marketing. It examines the concept of neuro marketing, methods and techniques of neuro marketing such as Functional Magnetic Resonance Imaging (FMRI), Electroencephalography (EEG), Magnetic Encephalography (MEG), Eye tracking, Galvanic skin response etc, and perspectives of neuro marketing, challenges of neuro marketing ad the managerial implication to the use of neuro marketing.

Keywords: Neuro marketing, consumer behaviour, neuroscience, brain research.

Introduction

Competitive and complex business world requires new techniques and methods for understanding and analyzing consumer behaviour. In modern economy, the consumer is confronted with various products, services, and competitors etc to make choice. According to Satish and Sunil (2012), the increasing number of customers, products, competitors and a shorter time to react means that understanding the consumer is more difficult now. Therefore, there is significant value to using neuro marketing as an emerging and promising field of marketing that will give insight in human (consumer) behaviour towards the choice of product/service.

According to Zara and Tuta, 2013, these activities can be classified into two categories, qualitative research which generates detailed stories, and quantitative research which supplies with measurements and possible predictions. In the category of qualitative research, the new science of neuro marketing shapes what we know about consumers and the buying process and consumption is part of our everyday life. Almost all behaviour in human being is directly or indirectly connected to consumption (Jasson, 2010).

Neuro marketing is medical knowledge, technology and a new field in marketing that studies the consumers' response to marketing stimuli. It is application of neuro science to marketing. According to Kumar and Singh (2015), neuro marketing includes the direct use of brain imaging, scanning or other brain activity measurement technology to measure a subject's response to specific products, packaging, advertising or other marketing elements.

It is pertinent to note that many studies have been conducted in the field of neuro marketing and findings shown the importance of neuro marketing techniques in shaping marketing strategies and how to meet and satisfy consumer expectations. According to science daily, neuro marketing is now used to make promotional campaigns more effective and provide detailed knowledge about the consumer preference. These studies have yielded important insight into consumer behaviour and have identified a significant area of research (Zara and Tuta, 2013). From the forgoing, neuro marketing is different from the traditional marketing or market researches which focuses on focus groups, the depth or in-depth interviews, observation, experiment and the surveys that cannot entirely clarify on why consumer buy or how they behave or act (response) to a specific marketing stimuli.

Concept of Neuro Marketing

This concept "neuro marketing" was developed by psychologists at Harvard University in 1990 (Kumar and Singh (2015). Sar (2009) has explained the word neuro marketing was use for the first time by German Professor Ale Smidts of Eramus University in 2002. However, it is considered that the real founder of neuro marketing is Gerry Zaltman of Harvard University who first used FMRI

(functional Magnetic Resonance Imaging) (Krajnovic, Sikiric and Jasic, 2012). Neuro marketing is an emerging branch of neuro science in which researchers use medical technology to determine consumers reactions to particular brands, slogans and advertisements.

The first ever Neuro marketing conference was held in 2004 at Baylor College of medicine in Houston. The base of Neuro marketing is "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 (Kumar and Singh, 2015). Thus, Neuro marketing is important, promising and emerging field with great potential for application in functional areas of marketing, brand management and advertising. Therefore, Neuro marketing is a field of marketing research that studies consumer's sensorimotor, cognitive and affective response to marketing stimuli (en.wikipedia.org/wikineuromarketing). Neuro marketing can also be defined as a marketing branch using neuroscientific methods and techniques for analyzing and understanding human behaviour with regard to marketing and important marketing issues (Krajnovic, 2012).

Sar (2009) stated that, the fact the marketing balances between the products/services, the marketing experts want to sell the consumers' desires and needs. It is of paramount importance for marketing experts to know and understand consumers. In the "traditional" marketing, to know and understand consumer' behaviour towards a specific product/service would use the form of interviews, focus groups, observation, experiment, surveys. Although these methods are very useful they have shortcoming, they are not enough precise and accurate and these will affect generalization of the outcomes. According to Krajnovic *et al*., (2012), the reason of their insufficient accuracy has discovered by neuroscientists who found out that "what people say is often contradictory to the activities of the human brain". That is what we say and what our brain say are two different things. Ariely and Berns (2010) have stated that the brain scanning techniques can provide indications regarding the basic preferences of an individual, which are more accurate than the data gathered by standard market research as these data are subject to prejudice due to subjective approach to values. A sudden expansion of neuro marketing and the interest of scientists are exactly due to it potential of detecting "hidden information" (Krajnovic *et al.,* 2012).

Techniques and Methods of Neuro Marketing

There are many techniques and methods that neuro marketing uses for detecting hidden information and measuring consumer's physiological responses. All the imaging techniques such FMRI, EEG and MEG are non-invasive and therefore can be used safely for marketing research purposes. That is why they constitute the bulk of studies that have been published in the last five years (Morin, 2011). According to Zara and Tuta (2013), the most commonly used methods in neuro marketing studies are the FMRI, the EEG and the MEG.

Functional Magnetic Resonance Imaging (FMRI): FMRI stands for functional magnetic resonance imaging and basically describes a tool, which makes an anatomic representation of the brain by making use of magnets (Postma, 2012). MRI Scanner is used to measure the blood oxygen level, which can give an indication of increased brain activity in certain regions (Ariely and Berns, 2010). FMRI is the most frequent techniques of scanning human brain in neuro marketing. The functional magnetic resonance is a technique using powerful magnetic and radio waves to create high-quality brain images (Krajnovic, *et al.,* 2012).

Electroencephalography (EEG): According to Ariely and Berns (2010), the second most frequently used method of brain scanning is EEG – electroencephalography. This method used electrodes placed on the skull to assess the electrical activity of the neurons. Owing to a very high temporal resolution (Millisecond), EEG can detect a very short neuronal "Spike". Lewis (2004) points out that, EEG technique is the most practical among the currently developed method of brain scanning, it is the most cost-effective and the most suitable, due to the simplicity of use and compactness of the apparatus which is able to make a quantitative assessment of brain activities through the high level of sensitivity and temporal resolution. When observing brain activities with the aid of FMRI and EEG techniques, researches actually detect the brain areas which "Switch on" with regard to certain sounds, scents, images and messages. The gathered information is then

combined with traditional questionnaires and is further analyzed and placed into the correlation and context of consumer behaviour (Krajnovic, *et al.,* 2012).

Magnetic Encephalography (MEG): According to Zara and Tuta (2013), MEG provides an image of the brain by using a magnetic field. These magnetic fields are generated by the electrical signals in the brain. It has high temporal and spatial resolution.

Galvanic Skin Response: Galvanic skin response, or conductance, is used to measure the temperature of the skin and its electrical conductance, which varies depending on the skin moisture level. Skin conductance is used to identify and measure psychological and physiological arousal. The pulse rate is also through galvanic skin response. The fluctuations in the pulse reveal the level of excitement or stress that the person experiences as a response to certain triggers (Kumar and Singh, 2015).

Eye Tracking: According to Kumar and Singh (2015), the eye tracking technology is used to track the eye positioning as its focus shifts along the surface of a visual trigger. Eye trackers are used in research on product design and software design in the field of neuro marketing. The most popular method of measuring eye movement is through the use of a Camera which tracks the movements of the pupil. We use custom made eye tracking devices and software developed by our engineering team. neuro marketing tools recording metabolic activities in brain Position Emission Tomography (PET), Functional Magnetic Resonance Imagine (FMRI) recording electrical activities in brain, Electroencephalography (EEG), Magnetic Encephalography (MEG), Steady State Topography (SST), Transcranial Magnetic Stimulation (TMS), without recording brain activities, eye tracking, skin conductance facial coding, facial electromyography (Kumar and Singh, 2015)

Cognitive Analysis: Cognitive analysis is an analytic digital model that combines the result obtained through EEG, Galvanic skin response and eye tracking to give a holistic view of a person's reaction to a particular trigger. This ensures there is no misreading in any of the biometric readings taken (Kumar and Singh, 2015).

Empathic Design: According to Leonard and Rayport (1997), another method of neuro marketing where human beings are analyzed without making use of any devices is called "empathic design." The meaning of the word empathic can also be referred to as sensitive. Within this method, observation is made in the consumer's own environment so that it can take place in the normal course of daily routine.

Perspectives of Neuro Marketing

Ariely and Berns (2010) identify a few areas where neuro marketing could have a considerable role, particularly in the stage of designing a product/service.

Food: A high potential of neuro marketing lies in designing food and juices which could be created in line with the taste and desire of consumers. As perception of a product is achieved under the influence of a set of factors such as taste, scent, texture, appearance even sound which are so complex that even the respondents themselves would not be able to explain. The brain scanning technology could be of great help of course to make the idea work. We should identify the product dimension (taste, scent, texture) we want to analyze prior to attempt of maximizing the brain response to different variation and dimensions. Such method could be used in food production in order to make food more appealing. (Krajnovic *et al*., 2012).

Advertisement: Neuro marketing displays a true representation of reality, superior to any traditional method of research as it explores subconscious information to determine if products or advertisements stimulate response in the brain linked with positive emotions (Kotler, Burton, Deans, Brown and Armstrong, 2013).

Architecture: This is certainly an interesting and a typical area for using neuro marketing. Some studies using human brain scanning during driving or orientation within buildings have already been conducted in order to produce information on how to design buildings (for accommodation or public use) which would be easier for their users to find their way around. This idea has a great potential and is very useful from social point of view (Krajnovic *et al.*, 2012).

Politics: This is another interesting area which could benefit from the introduction of neuro marketing techniques and methods because it requires a huge fund, if political candidates are observed in the context of market; they are "goods" that should be "sold" to voters. Candidates and their campaigns operate in two stages-before and after the "image designing." Neuro marketing could be used before "designing" when these candidates, their messages and the nature of campaign could be better design owing to previous neuro marketing research (Krajnovic *et al.*, 2012).

Challenges of Neuro Marketing

Understanding the human mind and behaviour in biological term has emerged as the central challenge of neuro marketing. The studies in the neuro marketing field are very complex and involve high financial resources. Due to the complexity of the neuro marketing researches, many of the scientific papers present only theoretical aspects or just assumptions of some patterns. Other challenges of neuro marketing are the measurements of factors not directly affecting the quality of product and does not influence a potential buyer in any way, lack of unify methodology for measuring the brain activity for neuro marketing studies and this means that using various methodologies may result in different outputs.

According to Touhami, Benlafkih, Jiddane,Cherrah, Malki and Benomar (2011), point out that number of respondents in neuro marketing are still low. This is perhaps owing to certain techniques that are used in neuro marketing (e.g. FMRI) which are rather noisy and claustrophobic. They also set forth the information that the testing process is long due to numerous procedures to be carried out prior to testing itself (from signing the consent to the doctor's approval). Finally, to interpret data from neuro marketing studies require high skilled and researchers from different fields such as neurologist, psychologist, economist and software engineers and these posed a serious challenge to the field of neuro marketing.

Managerial Implication

Researches proof the stance and emergence of the field of neuro marketing as a new technique or tool to market research. Analyzing the consumers' brain to understand the stimuli that attract their behaviour to purchase a specific product/service is very important. Some companies have already adopted the neuro marketing as a tool of market research. Managers who have not embraced this emerging field of marketing should do so for positioning their brands (Product/Service) in the subconscious of their consumers. Various techniques of neuro marketing with the application of neuro science as FMRI, EEG, Eye Tracking, Empathy Design and Cognitive Analysis are available to managers for their market research.

Conclusion

Marketing now focus more on consumer and their needs satisfaction and this has further encouraged by the emergence of the new field of marketing called the neuro marketing. Neuro marketing, as a field of market research uses neuro scientific for understanding and analyzing the consumer behaviour with emphasis on "Insights" into human brain to reveal hidden information.

Neuro marketing provides possibility of detecting the data about purchase decision-making and buyers' preferences that have not been known. The use of techniques or tools of neuro marketing such as FMRI, EEG, MRI, Galvanic Skin Response, Eye Tracking, Cognitive Analysis, Empathic Design etc revolutionized the field of marketing. The adoption of the neuro marketing as a tool of market research by various companies such as Coca cola, Pepsi, Ford, Hyundai, Intel, Microsoft, Yahoo, etc. is a welcome development (Kumar and Singh, 2015).

References

Ariel, D. and Berns, G. (2010). Neuro Marketing: The hope of neuroimaging in Business. *Nature Review Neuroscience*. Vol.6, pp. 65-76.

Http://www.en.wikipedia.org/wikineuromarketing.

Jansson, C. (2010). *Consumer Psychology*, McGraw Hill Education, England.

Kotler, P., Burton, S., Deans, K., Brown, L. & Armstrong, G. (2013). *Marketing* Australia: Pearson Education Ltd, Australia.

Krajnovic, A., Sikiric, D. & Jasic, D. (2012). Neuro marketing and customers' freewill. *Proceedings of the 13th Management International Conference, Budapest, Hungary,* pp.1143-1163.

Kumar, H. & Singh, P. (2015). Neuro marketing: An emerging tool of market research. *International Journal of Marketing Research Review*, Vol.3, pp.14-23.

Leonard, D. & Rayport (1997). Spark innovation through emphatic design. Harvard Business Review. pp. 97-105.

Lewis, D. (2004). Everything you wanted about neuro marketing but didn't know who to ask. *Journal of Advertising Research.* Vol. 32, pp. 43-54.

Morin, C. (2011). Neuro Marketing: *The New Science of Consumer Behaviour*. 48(2), pp. 131-135.

Sar, M. (2009). *Neuro Marketing, a contribution of Buzz a New Product*. University for Applied Science, Roterdam.

Satish, B. & Sunil, P. (2012). Study and evaluation of user's behaviour in e-commerce using data mining. *Research Journal of Recent Science*, Vol. 1, pp. 375-387.

Touhami, Z.; Benlafkih, L.; Jiddane, M.; Cherrah, Y.; Malki, O. & Benomar, A. (2011). Neuro marketing: Where marketing and neuro science meet. *African Journal of Business Management.* Vol. 2, pp. 9-14.