Exploring Unique Marketing Paradigm - "NeuroMarketing: Today and Tomorrow"

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Abstract: *The modern age of fundamental marketing is creating an information age. Gone are those days when the primary concern of businesses was large production and mass consumption, where the stores were full with inventory and presented the customers with a wild discount. The emergence of modern information technology has made everything within reach for the consumers to compare their preferences with the competitors only a click away. Marketing is not all about selling a product or reaching out to customers but about making a trustworthy and loyal relationship along with customer satisfaction by creating an impressive product. The neuromarketing technique has paved the way for a new age of marketing where more research and studies are being conducted to know the consumers in detail.*

Neuromarketing is an emerging discipline in the area of marketing and social science research representing an amalgamation of three popular disciplines; Psychology, Marketing, and Neuroscience. Neuromarketing offers a deeper understanding of consumer thought processes deriving out of the subconscious mind which is beyond the scope of traditional methods of marketing. While the traditional forms of marketing only explain how a consumer responds to marketing stimuli, neuromarketing answers both the "how" and "why" aspects of consumer behaviour.

This paper introduces the readers to this emerging yet unexplored field of marketing by highlighting its evolution, techniques, and scope in the real world. Further, the study brings forward the ethical concerns faced in the application of neuroscientific techniques for the study of consumer behaviour. The review highlights the concept as a significant contribution to the field of marketing which helps in examining the brain and other activities of the human body. However, the lack of privacy, trust, and harm associated with the use of neuroscientific techniques raise serious concerns about its application.

Keywords: Neuromarketing, Neuroscience, Ethics, Consumer Behaviour

1. INTRODUCTION

Understanding the needs of consumers is not at all a simple task. For certain needs, consumers themselves are not really conscious, and thus, effective marketers have to be keen on diagnosing and analysing their unstated needs. Marketing is always believed to play a significant role in decoding the various aspects of consumer behaviour. Creativity or innovation is another different segment that enriches the study and application of the marketing concept. Innovation means something new or unruly which

could change the perspective of complete phenomena. They thus involve all three major hindrances which are uncertainty, risk, and complexity. The term innovation has its own characteristics namely idea, concept, solution, and market. Ideas are those cognitive processes happening within an individual that will help in future derivation and evaluation of the thought processes. The concept deals with the analysis of those ideas and interpreting the best possible choices or solutions as per the situation. The solution is the next step where the correct interpretations are tested and a new product is developed. Lastly, the market is the final place where we can find the result of novelty emerging in the thought process. Hence, each phase has its own unique characteristics were the initial phases are more creative and less structured in nature while the final phases are more focused and process-oriented.

The neuromarketing technique has paved the way for a new era of marketing where more research and studies are conducted to know the consumers in detail. Marketers are hence keener on how individuals choose to invest their available resources like time, money, and effort. The concept focuses more on the brain activity of consumers who make decisions on what is to be purchased, why it is purchased, where it is purchased, how often it is purchased, and finally how often it is being used. Research on the cognitive thought process shows that there is a huge disproportion between what consumers think and what they say they think. Consumer psychology thus acts as a helpline to the producer right from the stage of product development to the stage of marketing it.

Neuromarketing is an incredible scientific marketing technique that has sparked immense geeks from brands and researchers and all who urge to know more about consumer behaviour. The technique helps to gather high-quality information on consumer behaviour and their cognitive thought process. This particular advantage has attracted the attention of innumerable marketing scholars. Hence, this new technique of interpreting complex human thought processes is crucial to evaluate more about a new product or service and how the consumers react and respond to these offerings.

The whole neuromarketing concept is an asset and positive addition to the field of marketing. This scientific technique enables the researchers to get a proper insight into the consumer minds and their cognitive thought processes. Neuromarketing can overcome the failures faced in traditional marketing campaigns being used for ages. Neuromarketing marks a new revolution in the field of strategic marketing. It has emerged as an interesting area of study where academicians and research scientists use neuroscience techniques to examine marketing strategies and their impact on consumer behaviour. The term neuromarketing was first introduced by Ale Smidts in 2002. It is a scientific discipline that represents a combination of consumer behaviour and neuroscience. Neuromarketing aims to understand how consumers make subconscious decisions about choosing a particular brand. As proposed by Martin Lindstrom in Buy-ology, the purchase decisions are not as rational as people think, nor have they ever been so in the past. Consumer decisions are influenced by a set of complex feelings, emotions, beliefs, attitudes, and values that cannot be measured through surveys. More often, walking by a supermarket, customers pick products based on thoughts and emotions which they are largely

unaware of. They are often attracted to a particular brand without really knowing the reason behind it (Lindstrom, 2008). Additionally, the authors reveal that even satisfied customers leave the firm often, where the explanation for such behaviour lies inside one's brain (Dapkevičius Melnikas, 2009). The extant literature underlines that the traditional methods of marketing fail to gather subconscious information from consumers (Calvert &Brammer 2012; Spanjaard et al., 2014) which leads to the poor prediction of consumer behaviour thus causing a mismatch between the market research findings and the actual consumer behaviour showcased at the point of purchase (Agarwal & Dutta, 2015). Traditional theories of marketing use qualitative research techniques to examine consumers' perceptions, motivations, and decision-making processes (Richie &Goeldner, 1994). However, the theories and models used traditionally in consumer research have evolved intensely throughout the last few years (Bagozzi et al., 1999) leading to the emergence of new theories, tools, and techniques capable of integrating the emotional aspects of human behaviour. The need to gain deeper insights into consumer behaviour gave birth to the new field of marketing popularly addressed as "neuromarketing". The roots of neuromarketing dates back decades ago to the neuroscientist Antonio Damasio who asserted that not only the rational part but humans make use of the emotional part of their brains to make decisions. The authors explain that the striatum in the brain gets used to new stimuli quickly and tends to react only to the unexpected (Coy, 2005). The study provides a neural-based explanation of why marketing experts exhort firms to "delight" consumers rather than just simply satisfying them. The framework of neuromarketing aims to develop a sound neuropsychological theory that will allow people to understand consumer behaviour by combining the neuroscientific techniques, behaviour theories, experimental models, and designs acknowledged by consumer psychology (Plassmann et al., 2012). Neuromarketing is a branch of cognitive neuroscience that depends largely on the ability to visualise how the human brain sees choices and makes decisions (Burne, 2003; Shah, 2005). It is a qualitative research technique that employs the application of neuroscience techniques to marketing stimuli and has emerged as a form of market research that offers a substantial advantage over the traditional forms of market research (Kosslyn, 1999; Taher, 2006). The neuroscience techniques help understand how the state of the brain and other physiological mechanisms are linked to consumer behaviour and decision-making (Stanton et al., 2017). Among many Microsoft, Hyundai, Yahoo, and PayPal are some of the prominent examples of companies using neuromarketing (Burkitt, 2009).Neuromarketing offers strong insights and technological advances in market research, especially in the context of consumer behaviour (Genco et al., 2013).As an innovative field of science, neuromarketing is quickly becoming one of the most valuable research tools to offer modern marketers insights into human thought processes and how it functions in different circumstances (Taher, 2006). Many neuromarketing academicians have published conceptual (Butler, 2008; Garcia & Saad, 2008) and review (Schneider &Woolgar, 2012; Fortunato et al., 2014; Cruz et al., 2016) papers in the area of neuromarketing research.

The concept gained attention as to have a favourable user experience, it is important to know and understand the users' needs, wishes, and cognitive

abilities. The adoption and exploration of neuromarketing have led to an improved understanding of consumer behaviour. However, for a successful application, the field of neuromarketing calls for interdisciplinary cooperation between neuroscientists, academicians, and marketing professionals that comprehend consumer behaviour (Alasdair, 2005). Though there is no universally accepted differentiation between consumer neuroscience and neuromarketing, there is a general agreement amongst the authors that the former represents the academic branch of the discipline while the latter deals more with the application of neuroscientific tools in the business context (Agarwal & Dutta 2015; Harris et al., 2018).This paper interprets the term neuromarketing as a field that deals with the application of neuroscientific techniques to examine and understand the subconscious aspects of human behaviour of which humans are generally unaware. Neuromarketing uses neuroscientific tools to analyze biological signals and biomedical images to evaluate physiological responses to communicative stimuli (Stasi et al., 2017)

2. NEUROMARKETING: AN EVOLUTIONARY REVIEW

The term "neuromarketing" is a combination of two words "neuro" and "marketing" depicting the merger of two disciplines, namely "neuroscience" and "marketing". The concept of neuromarketing was first coined and referred to by Ale Smidts in the year 2002 as "the study of the cerebral mechanism to understand consumer behaviour to improve marketing strategies" (Boricean, 2009, p. 119). Neuromarketing aims to adapt theories and methods from the field of neuroscience and combine them with the theories and methods from marketing, economics, and psychology to develop neuro scientifically sound explanations for the influence of marketing on consumer behaviour (Lim, 2018). It is a new field of marketing that aims to study the consumers' response to marketing stimuli (Kumar and Singh, 2015). Neuromarketing is an evolving branch of neuroscience where researchers deploy medical technology and methods to predict consumer reactions to a certain product, brand, or advertisement. Neuromarketing is widely represented as a combination of three major disciplines; neuroscience, marketing and psychology whose primary function is to explore and investigate the consumer's subconscious mind to understand the decision-making process (Javor et al., 2013;
Khushaba et al., 2013; Sebastian, 2014). It encompasses the application of neuroscientific methods to the subject of marketing (Cruz et al. 2016; Lee et al. 2017, 2018). Neuromarketing reveals insights and information beyond what is revealed by traditional techniques such as surveys, experiments, focus groups, and ethnography to enhance the marketing theory and practice (Yoon et al. 2012; Plassmann et al., 2015) or improve the accuracy of predictions of consumer behaviour (Boksem Smidts, 2015; Venkatraman et al. 2015). Neuromarketing is distinguished from consumer neuroscience in the sense that the former restricts itself to industrial applications while the latter deals with academic research (Plassmann et al., 2012).
Since the emergence of the concept of neuromarketing, multiple definitions have evolved, each explaining the concept differently. Some scholars studied neuromarketing as "the application of neuroscientific methods to analyse and understand human behaviour about markets and marketing exchanges'' (Lee et al., 2007,

p. 200), while some conceptualize it as "the application of findings from consumer neuroscience within the scope of managerial practice" (Hubert & Kenning, 2008, p. 274). It depicts "the intersection of consumer behaviour and cognitive neuroscience" (Garcia & Saad, 2008, p. 398). Neuromarketing is knowledge of mechanisms used to process information received from the brain to arrive to offer a better understanding for company decision-makers (Pop & Lorga, 2012) and "a field that focuses on the marketing implications from understanding the interaction of cognition and emotions in human behaviour based on neuroscientific methods'' (Javor et al., 2013, p. 3). Neuromarketing as explained sometimes is "an extension of traditional marketing methods that seeks a deeper level of manipulation based on instinctive responses' ' (Nemorin, 2017).

Table 1: Evolution of the concept of neuromarketing

Author & Year	**Definition of Neuromarketing**
Lee et al. (2007)	Involves the application of neuroscientific methods to analyze and understand human behaviour about markets and marketing exchanges
Garcia & Saad (2008)	Depicts the intersection of consumer behaviour and cognitive neuroscience
Hubert & Kenning (2008)	Deals with the application of findings from consumer neuroscience within the scope of managerial practice
Javor et al. (2013)	focuses on studying the interaction of cognition and emotions in human behaviour based on neuroscientific methods
Khushaba et al. (2013); Sebastian (2014)	Combination of three disciplines neuroscience, marketing,
	and psychology
Kumar & Singh (2015)	Studying consumer's responses to marketing stimuli
Nemorin (2017)	extension of traditional marketing methods that seeks a deeper level of manipulation based on instinctive responses

3.TECHNIQUES OF NEUROMARKETING: AN OUTLINE

Neuromarketing uses various neuroscientific techniques to study consumer behaviour. The list of techniques available is quite long with each carrying its own set of advantages and disadvantages. The authors classify these techniques according to the process and the tools involved. According to the authors, neuromarketing techniques fall into two major categories namely, euroimaging and non-neuroimaging (Martínez-Navarro et al., 2019). The neuroimaging techniques are the ones involving brain activity and include fMRI, EEG, SST, PET, and MEG. The non-neuroimaging techniques do not use brain activity but other aspects of the subconscious behaviour and include techniques such as facial coding, eye tracking, galvanic skin response, implicit response testing, and FENG.

3.1 Neuro-Imaging Techniques

3.1.1 Functional Magnetic Resonance Imaging (fMRI)

fMRI measures the amount of oxygen consumed by the mind in the different quarters of the cerebrum which shows how the cerebrum is reacting to the changes in brain behaviour as per the stimuli (Stasi et al., 2018). fMRI allows the researchers to measure the neural activity inside the brain via oxygen usage (Madan, 2010). It measures the

amount of deoxygenated haemoglobin (Huettel et al., 2004) and shows the active regions of the human brain when a stimulus is given (Cabeza & Nyberg, 2000). It is a widely available technique (Morin, 2011) that allows neuroscientists to simultaneously scan the brain of multiple subjects (Kenning Linzmayer, 2011; Montague et al., 2002). Reportedly, scientists used fMRI to study consumers' preference for beverage products such as Coca-Cola and Pepsi (McClure et al., 2004). However, fMRI is an expensive technique that restricts its application (Ariely&Berns, 2010; Pradeep, 2010).

3.1.2 Electroencephalography (EEG)
EEG test measures the electric currents sent by one brain cell to another. EEGs measure brain activity at the scalp using multiple electrodes placed on the scalp of the participant (Madan, 2010). It is an X-ray which is highly convenient due to its portability. The test is superior to MRI as it is portable i.e., it can test peoples' responses in public places like shops or cinemas (Stasi et al., 2018). Though this technique is quite old, it is still used conveniently to measure changes in the electric field in brain regions (Ariely & Berns, 2010; Morin, 2011). EEG has been used to study how consumers process television commercials (Rothschild et al., 1986) and see whether the consumers remember the advertisements (Rothschild & Hyun, 1990).

3.1.3. Positron Emission Tomography (PET)
PET is a spatial imaging technique that uses radioactive particles that flow through a person's body and help identify the stimulated part of the brain. PET is considered an expensive and invasive technique leading to a smaller number of researchers using this technique (Tovino, 2007). Due to its high cost, the technique has been rarely used in neuromarketing-specific research (Sebastian, 2014). Before the launch of fMRI, PET was the most widely adopted method for functional neuroimaging. But because of the associated demerits such as high cost, low special resolution, and invasiveness, the technique is used less now in neuroscience research (Lee et al., 2017).

3.1.4 Steady-state topography (SST)
SST is the major cerebrum mapping activity that allows an expert to get a buyer's reaction to stimuli. It enables the experimenter to pick up information from the subliminal mind of the customer (Stasi et al., 2018). The technique provides high temporal resolution and can continuously track rapid changes occurring in the brain activity with a high tolerance for noise and physical disturbance over extended periods (Gray et al., 2003). However, the technique is restricted by limited spatial resolution (Bercea, 2012).

3.1.5 Magnetoencephalography (MEG)
MEG is a neuroimaging technique that registers attractive movements in the cerebrum with a helmet that contains 100 sensors going up to a maximum of 300 sensors (Ariely&Berns, 2010; Kenning & Plassmann, 2005; Solnais et al., 2013). MEG provides a decent temporal resolution to detect small changes in the movement of the mind (Bercea, 2013). However, the technique is not that convenient and has high installation costs compared to EEG. Also, it offers relatively low spatial resolution (Morin, 2011).

3.2. Non -Neuroimaging Techniques:
3.2.1 Facial coding
Facial coding is a non-neuroimaging technique that studies facial expressions rather than studying brain activity. The technique identifies the

minutest of developments in the muscles when the individuals respond to marketing stimuli (Bercea, 2013).

3.2.2 Eye-tracking

This technology is used to track the positioning of eyes as their focus shifts along the surface of a certain visual trigger. Eye-tracking has been successfully used to examine how consumers judge the authenticity of different foods (Ares et al., 2013). Eye-tracking is a technique used to study the movements of the eyes as a subject is exposed to visual stimuli.

3.2.3 Galvanic Skin Response (GSR)

GSR is used by the researchers to examine the intensity of excitement that occurs in a customer after he is exposed to external stimuli such as an advertisement, a movie trailer, or maybe a new product. The technique is based on the electrical activity occurring in the participant's skin. GSR helps understand human behaviour by attaching electrodes to the fingers of an individual which are sensitive to the change in local skin conductance because of sweat (Fontanella et al., 2012). GSR helps the advertisers to measure the adequacy of the marketing behaviour and make alterations if the desired behaviour is not achieved (Bercea, 2013). GSR allows the evaluation of different states related to emotion, attention and cognition (Vecchiato et al., 2010).

3.2.4 Facial electromyography (fEMG)

fEMGis a technique that focuses on measuring and identifying the intentional and automatic movements of facial muscles to comprehend the feelings resulting from a certain external appearance. The technique uses facial sensors to record the electrical reactions delivered by the contraction of muscles.The technique has been used to track positive and negative emotional reactions when a person is subjected to a stimulus (Wolf et al., 2005). The technique was used to study the purchase behaviour and psychophysiological responses of consumers to different price levels (Somervuori & Ravaja 2013).

3.2.5 Implicit Response Tests (IRT)

These tests are the type of devices that give unconscious data on the attitude or behaviour of the customers when exposed to a marketing stimulus. These tests are used to get insights into the inbuilt behaviour of the customers when exposed to two compared characters or brands (Bercea, 2013).

4. NEURO MARKETING: SCOPE AND APPLICATIONS

Neuromarketing research focuses on understanding the facts and insights about consumer buying behaviour. They probe into the fundamentals of non-conscious interpretations of consumers choices. The scope of neuromarketing is diverse in a marketing context. They use highly advanced tools and techniques to guide the researcher and articulate the preferences emerging from the subconscious minds of consumers.

The goals of neuromarketing studies are to obtain objective information about the inner workings of the brains of consumers without resorting to the subjective reports that have long been the mainstay of marketing studies (Dapkevičius&Melnikas, 2009). The use of neuroimaging in the area of marketing research encompassing product development, advertising, sales, loyalty programs, customer service, and market research is becoming more prevalent (Zurawicki, 2010). Neuromarketing techniques have been actively used by companies to study the impact of their marketing strategies on various dimensions of consumer behaviour.

I. Testing advertising effectiveness: Neuromarketing helps in analysing the effectiveness of advertising campaigns run by companies to stimulate positive consumer behaviour. Though conventional testing uses methods such as interviews, focus groups and other traditional tools of market research (Fugate, 2007) neuromarketing uses scientific tools and techniques to examine advertising effectiveness. Frito-Lay used neuromarketing in one of its advertising campaigns for its famous Cheetos brand wherein the company used electroencephalography (EEG) and focus groups to evaluate customers' responses to a new advertising campaign. Surprisingly, in the focus group the participants reported that they disliked the advertisement while during EEG done on the same set of participants, researchers observed positive brain activity showing that participants liked the ad (Burkitt, 2009). It helps the advertisers to see whether the brand can meet the emotional instinct of the customers (Gill & Singh, 2020).

II. Testing product appeal: Neuromarketing is widely adopted by marketers to test the product's appeal to potential customers. Product designers commonly make use of consciously generated consumer preferences to identify which product designs appeal the most to the target customers. In such a scenario, consumers are easy to be influenced by normative expectations and social influences.

III. Predicting consumer choice: Recent research work seems to herald the power of neuromarketing in predicting consumer choice, such as FMRI (Knutson et al. 2007; Soon et al. 2013) and EEG (Telpaz et al., 2015) were successfully used to predict individuals' choices and purchase decisions. Authors reveal that brain activity can predict consumers' choice of food goods above and beyond what is self-reported information about preferences (Knutson et al., 2007) neuromarketing has a lot to contribute to traditional marketing research techniques (Venkatraman et al., 2015).

IV. Testing Celebrityendorsement's effectiveness: Studies explain how neuromarketing helps in analysing the impact of celebrity endorsements on consumer behaviour. The auditory and visual stimuli of the celebrity cause hormonal secretion which results in a positive emotional response and feeling of trust (Fugate, 2007).

V. Studying consumer behaviour: Neuromarketing is used to investigate how the different marketing stimuli affect the buying decisions of the consumers (Venkatraman et al., 2015). The use of neuroscience techniques, it is argued, facilitates a more direct understanding of how brain states and other physiological mechanisms are related to consumer behaviour and decision-making (Stanton et al., 2017). Neuromarketing helps measure the intensity of emotional attachment to a brand and the effect of stimuli that need to be applied at the point of sale to encourage purchases (Kühn et al., 2016).

5. NEUROMARKETING: ETHICAL CONSIDERATIONS

The last few decades have witnessed a surge of interest in the impact of marketing activities on society, especially concerning ethical issues within marketing. However, since its introduction, neuromarketing has evoked discussions about ethical concerns regarding its application in the study of human behaviour. The use of technology that probes into the inner functioning of the human brain raises severe ethical concerns. The authors propose that the ethical concerns

revolving around the use of neuromarketing mainly fall into two major categories: a) protection of consumer autonomy and b) protection of various parties who may get exploited or harmed because of neuromarketing (Murphy et al., 2008). The undisputed criticism about neuromarketing since its introduction includes the use of unethical research practices, unethical applications of technology, and manipulations of consumers. The most frequently observed ethical objection to the use of neuromarketing refers to the risks of harm and violation of human rights. The pertinent harms encompass both immediate effects on the individual customer as well as the long-term effects on society as a whole (Stanton et al., 2017). Because of the ethical implications of designing advertisements to intentionally cause desired neurological effects, consumer protection groups and academicians also view this domain of neuromarketing with caution (Alert, C. 2003). Some authors believe that brain imaging is likely to be used in ways that would infringe the privacy of individuals to a completely unacceptable level (Editorial, 2004). Ethical concerns arise due to a lack of knowledge, understanding, and consent amongst targeted customers (Wilson et al., 2008). Another commonly perceived ethical concern is the fear amongst customers that neuromarketing can be used not just to predict but influence consumer choice. Issues concerning consumer privacy are to an extent inherent in almost all of the methodological approaches (such as biometric technology, and facial recognition) adopted by marketing academicians (Singer, 2015). In research conducted to study the perceptions of marketing academics, neurologists, and marketing professionals about neuromarketing it was found that all the three surveyed parties agreed that neuromarketing is not a manipulative way to sell unnecessary goods/services and ethics is an important area of debate across all the parties (Eser et al., 2011). The authors state that combining the commercial principles of economics with the learning principles of neuroscience and psychology along with proficient ethics being applied to the field of marketing is crucial to having positive outcomes (Madan, 2010).

6. NEUROMARKETING: CHALLENGES

Despite all the attention neuromarketing has received to date, the challenges faced in its application are still high. The researchers believe that since it is impossible to find people who have identical thoughts in the world neuromarketing is more of science fiction than reality (Hubert, 2010). Thoughts are changeable and vary according to individual experiences, character, and values. Not just the application, the interpretation of the results seems to be very difficult considering the scientific approach that neuromarketing uses. As observed, the meaningful interpretation of data and integration of knowledge itself is a serious challenge in the scientific level (Illes& Racine, 2005). Moreover, the high cost, time requirements, and scarcity of resources are other problems posing constraints to the deployment of neuromarketing in the real world.

7. CONCLUSION:

Being an interdisciplinary research domain, neuromarketing helps understand consumer behaviour and the reasons behind a particular behavioural action. The past decade led to the development of a strong base for the study and research of two evolving disciplines, consumer

neuroscience, and neuromarketing. The various interdisciplinary groups worldwide pursue this field of research and work on more challenging marketing problems (Agarwal & Dutta, 2015). However, despite all the attention that neuromarketing has gained over the last few years the subject remains an unexplored and disputed area of research and application. Neuromarketing research is still evolving and needs more research to be conducted to study the various aspects of the subconscious mind of humans. Various reasons inhibit the use of neuromarketing and the application of brain imaging methodologies in marketing science. Through the lens of marketing academics, neuroscience and cognitive psychology can be intimidating subjects (Lee et al., 2007). Considering the lacunae, the purpose of this research work was to offer insights into the development of neuromarketing as a field of research and application.

The central concept of neuromarketing is strongly linked to the brain activities focused on understanding the consumers' subconscious mind and the reasons underlying the showcased behaviour responses to the marketing stimuli. Companies involved in neuromarketing research offer their clients brain-based information about consumers' preferences thereby bypassing the focus groups and other traditional marketing research methods because directly looking into one's mind is a way better predictor of consumer behaviour than surveys or interviews. The authors highlight the significance of measuring unconscious responses of the brain capable of being measured only through neuromarketing techniques (Calvert & Brammer, 2012). The rationale behind the increased acceptance of neuromarketing is the wide consensus that most consumers' decisions are framed in the subconscious mind. In contrast to the traditional marketing methods of research which are largely based on introspection and verbal reports, neuromarketing has been more objectively developed for understanding what happens inside the black box i.e., the human brain (Camerer et al., 2005). However, as the concept is still in its evolution and the details lack clarity, the application of neuroimaging technologies in marketing research has not been so ethically convincing. Though traditional theories on consumer behaviour considered emotions secondary, the latest disciplines of neuromarketing and neuroscience highlight the important role that emotions play in explaining consumer behaviour (Hubert 2010; Martı´n-Santana et al. 2019).

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