ABSTRACT
Possessing the state of the art technology, superior products, excellent service and best marketing do not assure companies that the prospects will always buy their products. Recent years have witnessed advances in Neuromarketing to a great extent that application of neuroscience in marketing termed as Neuromarketing emerged as novel academic and commercial disciplines.

In this article we review the current and past research in the field of Neuromarketing and critically analyze the neuroscience tools and methods used to study directly the intensity, spot in brain and instance of brain activity with great degree of precision and applied for strategizing Neuromarketing. Thus this study identifies the potential of Neuromarketing in the field of consumer behavior applications and attempt to envision the scope of Neuromarketing to wider conceptualization of marketing science. This article also suggests future research directions and commercial scope of Neuromarketing.

Keywords--- Consumers, Equipment, Commercial

I. INTRODUCTION
“People are fairly good at expressing what they want, what they like, or even how much they will pay for an item, but they aren’t very good at accessing where that value comes from, or how and when it is influenced by factors like store displays or brands. Neuroscience can help to understand those hidden elements of the decision process” (Nobel, 2013; Karmarkar, 2014).

Neuromarketing is an emerging branch of neuroscience in which researchers use medical technology to determine consumer reactions to particular brands, slogans, and advertisements. By observing brain activity, researchers in lab-coats can predict whether you prefer Pepsi or Coke more accurately than you can (Phan, 2010). The application of neuroscience in Neuromarketing and in particular to the consumer psychology has emerged as

Neuromarketing (Plassmann et al, 2012). The advancement in neuroscience technology and tools such as eye-tracking, brain scanning and imaging equipment towards understanding how consumers’ brains are responding to products, services, apps, advertisements, buying experiences and brands offered by marketers are being tested and understood with high accuracy. These accurate understanding of consumer psychology and behavior at its origin (brain) through neuroscience tools and methods and applied strategically for marketing has emerged as exponentially growing Neuromarketing field.

Neuroscience research encompasses studies of single brain cells to studies on different parts of brain areas. Plassmann et al. (2014) opine that due to complexity of consumer behavior, insights from system neuroscience are crucial for consumer neuroscience thereby for Neuromarketing. The term Neuromarketing was coined by Erasmus University Professor Ale Smidts in 2002 and the general premises of the research in the field of neuroscience applied to Neuromarketing was not widely recognized until first Neuromarketing conference in 2004.

II. OBJECTIVE
The objective of this study is to provide an overview of the recent and the past research in the area of neuroscience applied to Neuromarketing. Also to provide our view on future scope and potential of Neuromarketing thereby widening the boundaries of Neuromarketing in commercial terrain.

III. METHODOLOGY
This research article systematically reviews, identifies, apprises and synthesizes research evidence and perspectives from individual studies and on a strict protocol and consequently makes a valuable source of information. This rigor approach ensures all important and
relevant research bases have been considered and a valid analysis of the original studies has been made, minimizing the risk of bias, providing a transparent study enable for replication.

This article takes cognizance of the analysis and findings of the research works published in the reputed scholarly journals, magazines in various mediums. Studies pertaining to Neuromarketing in various laboratories are compiled, reviewed and discussed in this article.

IV. OLD BRAIN – THE DECISION MAKER

Renvoisé and Morin (2007), report that brain can be categorized into three distinct parts that act as separate organs with different cellular structures and different functions. According to Renvoisé and Morin( 2007), although these three parts of the brain communicate with each other and constantly try to influence each other, each one as specialized function.The new brain thinks. It processes rational data. The middle brain feels. It processes emotions and gut feelings. The old brain decides. It takes into account the input from the other two brains, but the old brain is the actual trigger of decision. The old brain, in addition to processing input directly from the new brain and the middle brain, responds only to six very specific stimuli, which, if mastered, give you the key to unlocking the decision-making process. 1) Self-Centered; 2) Contrast ; 3) Tangible Input ; 4) The Beginning And The End; 5) Visual Stimuli and 6) Emotion.

V. BRAIN – IMAGING TECHNOLOGIES

Each second we are exposed to an estimated 11 million bits of information that reach us through all our senses, yet humans are capable of processing only around 50 bits of that information, letting most of the input go by unnoticed (Wilson, 2002).

There are multiple types of brain-imaging technologies used in current Neuromarketing studies: fMRI (functional magnetic resonance imaging), QEEG (quantitative electroencephalography), and MEG (magnetoencephalography). All three imaging techniques 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. Each method has its pros and cons.

However, the fMRI method is currently the most popular amongst marketing companies, since it utilizes mainstream technology to produce clear images of real-time brain activity (Bridger and Lewis, 2005). As an imaging technique, the process also translates results more easily into layman’s terms: rather than presenting data in strings of incomprehensible numbers, fMRI technology gives people the opportunity to actually visualize the activity patterns in their brains (Bloom, 2006).

FMRI works by gauging amounts of hemoglobin, the oxygen-carrier on red blood cells, in certain parts of the body. For mental imaging, the machine “measures the amount of oxygenated blood throughout the body and can pinpoint an area as small as one millimeter” (Lindstrom, 2008). The harder a specific area of the brain is working, the more oxygen it requires; so when the MRI machine scans the brain, it picks up on the areas with concentrated amounts of hemoglobin and displays them as regions of high mental activity on the computer screen. These computer images are what researchers use to identify the parts of the brain being utilized. The key element for a marketing researcher to understand is the contrast of the BOLD signal measured by the fMRI. BOLD is an acronym for Blood Oxygen Level Dependant (Morin, 2011).

VI. NEUROSCIENCE TECHNOLOGIES AND NEUROMARKETING

For neuromarketing, scientists use fMRI to observe areas of the brain that respond to consumer-based stimuli, such as particular brands, price ranges, and even taste preferences (Bridger and Lewis, 2005). The researchers have found that the regions in the brain corresponding to the prediction of gain and loss (the nucleus accumbens and the insula, respectively) are indicators of behavior and reaction to finances and economics (Schmabel, 2008 ). In other words, we make our decisions based on cursory judgments of whether we will gain or lose money when purchasing a product. According to Hannaford, ( 2013) the neuromarketing industry isn’t just interested in what makes shoppers choose the products they do in the supermarket. Much of their work is done before they’ve even walked through the door.

Karmarkar (2014) reports that when tracking brain functions, neuroscientists generally use either electroencephalography (EEG) or functional magnetic resonance imaging (fMRI) technology. EEG measures fluctuations in the electrical activity directly below the scalp, which occurs as a result of neural activity. By attaching electrodes to subjects’ heads and evaluating the electrical patterns of their brain waves, researchers can track the intensity of visceral responses such as anger, lust, disgust, and excitement.

Lee et al (2006) suggest that applying neuroimaging to marketing research problems should allow us to understand far more clearly the impact of marketing techniques, as well as gain insight into key problems concerning business relationships, answers to which have previously remained elusive.
VII. CONCLUSION

The body of knowledge in the field of neuroscience and Neuromarketing which are endowed by continuous studies and experiments conducted worldwide have given impetus to commercial application of neuroscience in novel, reliable and valuable solutions for marketing thereby establishing strong foundation for Neuromarketing. Neuro prototyping solutions are provided by professionals using neuroscience to select individuals, build creative teams and improve creative potential. Neuroscience is applied for creative ideation and for prototype development. Neuroscience tools and theory are applied to measure and understand consumers’ responses to the new solutions. Virtual Reality and augmented Reality techniques of Neuromarketing are applied for product testing to assess the consumers perception prior to launch of products on commercial basis. High tracking, heat map techniques of neuroscience are used to test advertising success across different media and channels. This article reinforces and emphasis the wide application of Neuromarketing and its enormous scope and potential in the field of marketing activities of business world.

REFERENCES