Neuromarketing: Tracking Brain activities to understand Consumer decision making Process
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ABSTRACT

Recently, Cognition has been utilized in marketing research and a new field of neuromarketing has evolved. This new concept gains momentum both in the academic and practical fields. The concept of neuromarketing proves to be hot piece of cake for advertisers in early 2000s, this concept emerges as an effective concept in assessing the buying behavior of today’s intelligent buyer. This paper is written with a desire to explore the role of neuromarketing and its measures in assessing consumer buying behavior. The measures taken as neuroimaging, EEG, FMRI, Eye Tracking, Galvanic skin response etc. This paper also assesses consumer buying behavior and further delves into finding the cognitive interference in buying decisions. Assessments were designed on four components of consumers as: physical body, mind, heart and spirit with the help of practices of Neuromarketing. The study is based on primary data and utilized the capabilities of SPSS 20 and Lisrel 8.80 with a sample size of 40 Subjects.

Keywords--- Neuromaketing, Brain research, Neuroimaging, Eye Tracking, EEG, FMRI

I. INTRODUCTION

As any new concept evolves and passes through various stages of thesis and anti thesis, similar phases and stages were also followed by neuromarketing. This concept is a proper blend of Medical science, technology and marketing. It studies the consumer’s response to marketing stimuli. It 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. Although it has been argued that these techniques does not disclose full information as the subject didn’t perceive the full information about the products; hence, this data may be more revealing than self-reporting on surveys, in focus groups, etc.
II. CONCEPT OF NEUROMARKETING

The concept of neuromarketing is developed at Harvard University in 1990 and the term is coined by Ale Smidts in 2002. It is an evolving branch of neuro sciences deals with the reactions of consumer when exposed to different types of advertisements. After some time when the concept gains currency, spate of conferences and academic discussions took place and the first ever Neuromarketing conference was held in 2004 at Baylor College of Medicine in Houston.

Researchers found that an average brain with average I.Q can remember any short advertisement or meme if exposed for one time for 2 to 3 days. If the meme flashed I second time or more in the span of 2 to 3 days the retaining capacity increases immensely to 15 to 20 days. By repetitive flashes of advertisements this can help the customer to remember the meme for lifetime. The basic informational unit in Neuromarketing is “meme”. Meme is a unit of information stored in the brain. These units are effective in influencing humans who makes choices and decisions within 2.6 seconds.

From the above discussion it can be safely concluded that neuro marketing is a promising line of enquiry utilized in marketing, branding and advertising management. The field in its journey of more than two decades started to utilize inputs from the sophisticated field of neuro chemistry.

“Understanding the human mind in biological terms has emerged as the central challenge of science in the twenty-first century.”-By Dr. Eric Kandel, Neuroscientist and winner of the Nobel Prize for Physiology or Medicine.

The whole crux or emphasis of neuromarketing is on decision making process. The “yes” and “no” of the customers and the reasons behind them. Other outstanding researcher was quoted saying “We have learned more about the brain in the last five years than in all human history combined”. -By Charlie Rose
With the advent of technology has really widened the scope of Neuromarketing. The languages of consumers change from country to country and culture to culture, however the language of human brain is the same i.e. universal. Thus, Neuromarketing has greatly affected products, brands, packaging, and advertising as well.

III. RESEARCH OBJECTIVES

- To study the impact of neuromarketing on consumer decision making process.
- To identify the measures of neuromarketing and consumer decision making process.
- To develop the scale for the measurement of above measures.
- To refine the scale developed in the study
- To interpret results on the basis of data analysis.

IV. RESEARCH METHODOLOGY

This study is exploratory in nature as it is desired to explore measures of neuromarketing and consumer decision making process. This study is also an attempt to lay the groundwork that will lead to future studies, or to determine if what is being observed might be explained by and examine in the light of the existing literature. Thus qualitative research is conducted with the help of secondary data, previously existing literature review, facts sheet journals and magazines.

V. RESEARCH CONSTRUCTS

This study explores measures of neuro marketing and its impact on consumer decision making process. For this purpose, research constructs were identified and studied.

**Galvanic Skin Response**: Galvanic Skin Response, or skin conductance, is used to measure the temperature of the skin and its electrical conductance, which varies depending on the skin moisture level. It’s most common use is in lie detecting technology. The pulse rate is also measured through galvanic skin response.
**Eye Tracking** 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 neuromarketing.

**Cognitive Analysis** Cognitive Analysis is an analytic digital model that combines the results 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 mis-reading in any of the biometric readings taken.

### VI. STUDY MEASURES

#### 6.1. Independent Variables: Measures of Neuromarketing- 3-item scale

Following the footsteps of other researchers in the area, impact of Neuromarketing is measured through 3 measures each containing 5 items.

#### 6.2. Dependent Variable: Consumer Decision Making Process 5-item scale each

In the context of present study this scale is derived in the context of free market with consumer having full information.

Five point Likert scale is frequently used in HRM researches [17]. It is tried to keep all the items of questionnaire specifically simple and according to the objective.

### VI. SAMPLING TECHNIQUE AND PROCEDURE

A rigorous sampling technique was adopted to generate valid and reliable responses.

#### 7.1 Sampling Element

The questionnaire was filled by senior level Doctors with clarifications from subjects. One respondent from each Hospital/Diagnostic lab were taken as they are regarded in a best position to respond on this issue.
7.2. Sampling Approach and Sample Size

Census approach was used. the whole sampling frame (i.e. 40) was contacted. Data from the respondents belonging to sample units was collected. Contacts were arranged from different social networks in the country.

VII. DATA COLLECTION METHOD

A total of 10 e-mails bounced back due to many reasons, making a final study sample of 52 respondents. Overall, 44 usable questionnaires were received. Four questionnaires were inappropriate and were not completed were discarded. The remaining 40 questionnaires were used contributing to 8.5 % response rate. Response rate for Indian studies remains low as 7 percent. This kind of response rate is consistent in e-mail surveys. However, in this type of studies cautious interpretation of results is necessary. The confidentiality of respondents was secured to increase the response rate [18].

VIII. RESEARCH HYPOTHESES

The hypotheses were framed according to research objectives and the justification is sought from the literature. Measures of Neuromarketing are taken as independent variable and Consumer decision making process as dependent. CDMP as dependent variables are widely used and endorsed in many previous studies

**H1:** Results of Galvanic skin response (GSR) analysis directly affects Consumer decision making process.

**H2:** Results of Cognitive Analysis (CA) directly affects Consumer decision making process.

**H3:** Results of Eye tracking (ET) directly affects Consumer decision making process.
IX. METHODS OF ANALYSIS

Initially SPSS 17.0 was used for obtaining descriptive statistics of measures. Thereafter measurement model and structural model were assessed.

Exhibit 01: Measurement Model and Structural model

X. CONCLUSION AND DISCUSSION

Results of the data analysis suggest strong presence of impact of neuro marketing components in consumer decision making. The research models proposed and hypothesized assumes positive relationship between Neuromarketing measures and consumer decision making process measures. Actual findings also support these relationships. The data also shows NM measures strongly affect CBDP. The findings are consistent with market dynamics and can be interpreted as during Covid 19 the scope of neuromarketing through technology is widening.
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