International Journal of Trend in Research and Development, Volume 4(3), ISSN: 2394-9333
www.ijtrd.com

Neuromarketing: Physiological Response of Human Brain Using Quantitative Electroencephalogram (QEEG) in Consumers Decision Making

[1]Norsiah Fauzan, [2]Tri Prabowo Broto, [3]Muhammad Sophian and [4]Nursyafiqa Muhammad,
[1,2,3,4]Faculty of Cognitive Sciences and Human Development, University of Malaysia Sarawak, 94300 Kota Samarahan

Abstract: In Asia, the most popular method of market research is survey and interview. The outcome rely on the consumers to express their hidden feelings on their preferences for the products. This presents a challenge to the marketers, researchers and advertisers to tease out the consumers' hidden feelings from their conscious mind or to understand their preference and their real needs. With this challenge, this research intend to tapp into the consumers' unconscious mind and the neural circuit at the Frontal temporal regions using quantitative Electroencephalogram (QEEG). Six subjects volunteered for the recording of the brain wave during the decision making task. The reaction from this region reflect the subjects feelings (calmness, anxiety, anger, excitement and disgust). The findings revealed highest delta and theta band power at the frontal area Fp1 and Fp2 , temporal and occipital area while visualizing and performing the decision making task to the marketing stimuli. Alpha dominant wave at the temporal region (T5, T6) reflecting excitement in response to the products shown . However, the results slightly differed in response to the second or third products, Delta were highest at Fp1-Fp2, Alpha, beta1, beta2 and Gamma were highest at T4, the information processing area reflecting the judgment and decision making process in the given task.

I. INTRODUCTION

Neuroscience provides predictive scientific perspective to marketing and businesses. The nascent neuromarketing uses a scientific neuroscience tools to determine the consumers preference for their products. Previous research on Asian, Americans and Europeans cultural values and communication styles suggested Asian less direct communication and higher adherence to emotional self-control versus the European Americans counterparts [1]. In the Asian society, the choice is guided by ethics of modesty (sense of shame and shyness in speech, conduct and desires) which begin with the heart. In this research, all the volunteered were Asians and the intent is to look at the brain response during the decision making task. This article reports on a case study on neuromarketing using the portable piece of machine to peep into the brain areas or neural circuit that response to the Visual images and decision making tasks given to a group of young adults who volunteered for the tasks. The subjects were given the alternative choice to choose the one that best fits their goals, objectives, desires and values [2]. The processes entailed in choice all involved human cognition and psychological theories concentrated on explaining how people make choices, in particularly the cognitive processes that underlie choice [3]. By using QEEG, the electrical activity of the brain and their degree or localization of arousal activation creating our mental process are tracked to measure the frequency, amplitude and intensity of the brain activation. [4] Besides, this EEG is useful in the evaluation involving patient with several types of neurological disorder namely seizure, encephalopathy, and focal cerebral abnormalities [5]

Objectives

The main objectives of the study is to look into the brain region that respond to the visual images and decision making tasks using the quantitative electroencephalogram (QEEG).

II. METHOD

A quantitative electroencephalogram (QEEG) is a measurement that used digital technology of electrical wave pattern at the surface of scalp [4] . It is defined as a topographic EEG, or brain electrical activity mapping (BEAM. Six participants volunteered for the study and their brain wave were recorded while observing the different pictures of watches projected on the screen.

Visual Images Task: Visual images task were given once the electrodes are placed on the scalp of the participant. In this task, there are three visual images of different watches categorized as Watch A, Watch B, and Watch C. These three images were shown in four minutes for each and participant was asked to observe each image carefully. Participant also was asked to look at dot (.) sign on the monitor screen for four minutes before proceeded to observe the next images of the watches. This task was carried for 30 to 45 minutes. Thus, there are 6 experimental tasks were conducted as well as 6 participants that were involved in this research. The spectral analysis were generated in tabular form in the form of frequencies and HZ from different band and sub bands from all the subjects for data analysis.

After the completion of the task, participant was given one minute to make their final decision task on their preference on three visual images of the watches. During this decision making process, another Quantitative Electroencephalogram (QEEG) test were conducted to capture the participants' brain wave order to observe the activated brain region during the decision making task.

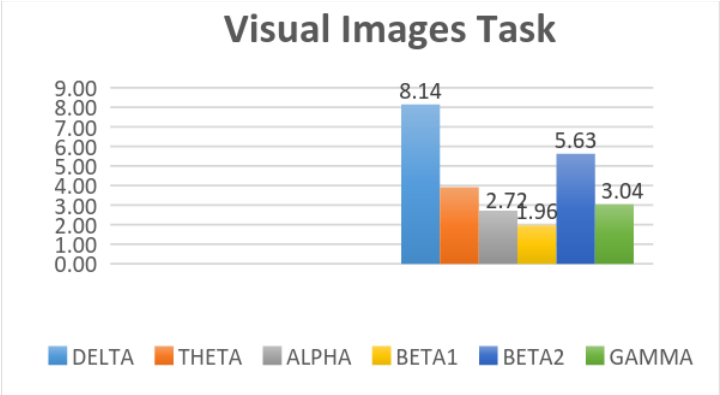

Figure 1: Averages of all brainwaves for Visual Images Task