

COFFEE TASTING EXPERIMENT FROM THE NEUROMARKETING PERSPECTIVE

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Abstract

Neuromarketing concept has arisen as a result of using not only logical but also emotional responses of consumers while they've decided to purchase. Neuromarketing is a new and interdisciplinary marketing comprehension that benefits from various disciplines as Neurology, Psychology, Sociology and Medicine. It's defined that customers combined the rational and irrational decisions and decide by these occurred data while they are making a purchasing decision.

Neuromarketing can be defined as measuring the emotional responses that provides a purchasing decision of the customer by gathering a various disciplines (Yücel ve Çubuk, 2014: 174). Neuromarketing is finding the way the purchasing button of brain. Neuromarketing is a process that trying to understand how the customers make the purchasing decisions in reality. (Çubuk, 2012:38).

Numerous studies had been done and various results had been put forth on Nero marketing scope. It is thought that these studies are going to provide more contribution to Neuromarketing scope and bring different viewpoints to literate. Therefore, tasting experiment had been done on various coffee brand and it had studied to be determined the emotional responses of subjects.

The study depends on the exploration oriented experimental methodology. First of all, an experimental environment had been formed without any effect in a distanced area for the subjects whom not given any knowledge. By asking the preliminary questions, the brand choice of the volunteer is asked for the coffee. The volunteer, whose choice was determined, had been wanted to say the first five words in ten seconds those appears in his mind when he thought the "Coffee" word. Then the volunteer is connected to EEG device and five cup of different coffee brand had been tasted. There was no premonitory belonging to the brands on the cups. These cups are white in color and there were only numbers from 1 to 5 on them. And the subject hadn't seen these numbers. These coffees had been tasted in row by the volunteer. While the subject had been tasting the coffees, the EEG device had gone on measurement. Also gestures of the subjects had been taken under video record and paired with the EEG outputs. By this experiment, subject's verbal statement was compared with EEG output and it is wanted to find the choice of consumer by this comparison. And also, the subjects were asked to guess the which cup of coffee is belong to which brand. The 30 volunteers, those had been selected by Easy Sampling technic are students attending to Firat University. The sample is consisting of Y-Generation girl and boy students between 18-26 ages.

While the results had been evaluated; the subjects affirmed that they could determine the coffee brand which had been chosen at the pre-questions by them. But it had been determined that they couldn't find the chosen coffee between the unnamed coffee cups. The coffee brands they want to buy had been paired with the brands they had liked according to EEG results. And also, subjects whom wanted to guess the order couldn't guess the brands. Insomuch some coffee brands had been positioned into other ones.

Although this research had been done in Elazığ City, most member of the sample group were the students growth out of Elazığ. For that reason, the results of the research can be generalized only for Y-Generation. But the results can be generalized comprehensively for different age groups, social statutes and other demographic groups by renewing the experiment. This research is an explorative aimed study and can be generalized by performing on bigger sample groups.

Key Words: Neuromarketing, consumer behavior, experimental research, coffee, Y-generation, tasting experiment.

1. The Concept of Neuromarketing

In 1990 Zaltman said that neuroimaging methods can be used in the marketing field. After that expression, the concept of Neuromarketing took place in the literature. With the neuromarketing, the marketing field has evolved into a new direction and has the opportunity to work in different scientific fields. Neuromarketing is an interdisciplinary field where marketing, neurology, sociology, and psychology can work together. Neuromarketing focuses on understanding consumer needs and behaviours through these disciplines (Çubuk, 2012:28). In other words, neuromarketing reveals the purchase decision process which consumers decide consciously or unconsciously (Yücel A., Çubuk, 2014:135).

Neuromarketing is defined as pushing the purchasing button of the brain by Zurawicki (2010), Lindstrom (2012), Hammou et al. (2013). However, growing neuromarketing researches have shown us that neuromarketing is finding the path to the purchasing button of the brain.

According to neuromarketing, when consumers make their purchasing decisions, they follow both rational and non-rational processes. First of all, the brain collects data through 5 senses during the purchase decision process and combines this data with some factors like experiences, personality, and completes the purchasing decision process. This study was conducted using the sense of taste. Therefore, the sense of taste will be described in more details and it provides a clear understanding of the implementation phase.

2. The Sense of Taste

The companies who want to have strong brands should create brands that are appealing to the sense of taste. But this is a hard and demanding process. These kinds of studies are conducted especially in the food industry. The companies provide consumers to try the taste of the product and after the experience divert the consumer to prefer their product. The companies put product tasting booths in shopping centers and steer consumers to taste.

Special structures on our tongue, called "Taste Buds", allow us to taste. Sensing the taste of something on the tongue lasts about 0.2-0.5 seconds. Tongues provide to get the taste of food and to speak (Carter, et al 2013:98). The top of the tongue is covered with epithelial tissue. Taste buds are located in structures called papillae on the tongue. Papillae can be in fungal, vallate, or filamentous forms. Taste buds consist of receptors and support cells. Bitter, sour, sweet, and salty tastes are tasted through taste buds located in certain parts of the tongue. The back side of the tongue tastes bitter, the front part tastes sweet, the back edge tastes sour, and the middle edge tastes salty foods. In order to taste the foods that are consumed, they should dissolve in saliva. This chemical matter reacts with receptor molecules on the taste buds and starts an impulse. These impulses are transmitted with sensory nerves to the relevant centers in the brain and interpreted (Carter, et al 2013:98).

The taste of sense varies according to cultures, lifestyles, habits, etc. There is a quite difference between the taste of a Turkish person and the taste of an Indian person. Indians use spices, on the contrary, Turkish people use less spices. International companies are trying to provide different tastes for different cultures. For example, McDonald's offers "Meatball Burger" for Turkish people at the same time they offer "Curry Burger" for Indian people (Çubuk, 2012:28).

Coca Cola vs. Pepsi sample is an experiment carried out within the scope of neuromarketing research. Pepsi offered a blind taste test in response to Coke's dominance in the soda wars, and the results indicated that people preferred Pepsi over Coca Cola. But Coca Cola's sales were much stronger than Pepsi. In 2005, Martin Gladwell answered this situation. Gladwell opines that the much sweeter tasting Pepsi was more appealing when taken in small doses, but that the more refined Coke worked better with can-sized servings, and therefore was more popular in sales, but less popular in sips (Lindstrom, 2011:32).

Dr. Read Montague, director of the Human Neuroimaging Lab at Baylor College of Medicine, applied fMRI devices to take a deeper look at the Pepsi Challenge in 2003. "First, he asked the volunteers whether they preferred Coke, Pepsi, or had no preference whatsoever. The results almost exactly matched with the findings of the first experiment. The second stage of the Dr. Montague's experiment, the results were quite different. Dr. Montague let the test subjects know whether they were sampling Pepsi or Coca Cola before they tasted it. 75% of the subjects preferred Coca Cola. That experiment proved the brand loyalty of consumers (Lindstrom, 2011:32).

3. Coffee Tasting Experiment

3.1. The Aim of The Research, Universe and Sampling

The aim of the research is to determine consumer's coffee purchasing preferences by using EEG Method. This research based on exploration oriented experimental methodology. The subjects consist of 30 Firat University students with the age of between 18 and 26.

First of all an experimental environment had been formed without any effect in a distanced area for the subjects whom not given any knowledge. By asking the preliminary questions, the brand choice of the volunteer is asked for the coffee. The volunteer, whose choice was determined, had been wanted to say the first five words in ten seconds those appears in his mind when he thought the "Coffee" word. Then the volunteer is connected to EEG device and five cup of different coffee brand had been tasted. There was no premonitory belonging to the brands on the cups. These cups are white in color and there were only numbers from 1 to 5 on them. And the subject hadn't seen these numbers. These coffees had been tasted in row by the volunteer. While the subject had tasted the coffees, the EEG device had gone on measurement. Also gestures of the subjects had been taken under video record and paired with the EEG outputs. By this experiment, subject's verbal statement was compared with EEG output and it is wanted to find the choice of consumer by this comparison. And also, the subjects were asked to guess which cup of coffee belongs to which brand.

3.2. Methodology of the Study

At the first stage of the experiment students' opinions are taken into account to measure the perception of word "coffee". In the analysis of obtained data "content analysis method" was used which is used in the analysis of qualitative researches. The main process practiced in the content analysis is to put into together the same data in the circumstance of certain concepts and themes and to comment this by organizing in an understandable form for the reader. The main aim in the content analysis is to reach the concepts and relations those can explain the collected data. By this way, it is studied to be defined the data and to be discovered the realities those can be hidden in the data (Yıldırım, Şimşek; 2011:227). In the study, first, the answers of the students given on the experiment form had been examined and all data collected from the students (30 forms) had been accepted valid. Then the analysis had been done according to these answers. By giving a row number to each form of these 30 forms, a Word document had been created for each question and answers had been analyzed at statistical data analyze program. At analyze of the students' answers themes had been formed by grouping according to the similarities of the statement. Otherwise, the frequencies about the ideas of the students and their brand choices had been defined. At the final part of the study, the brand forecasts had been sorted for each cup by using of these methods.

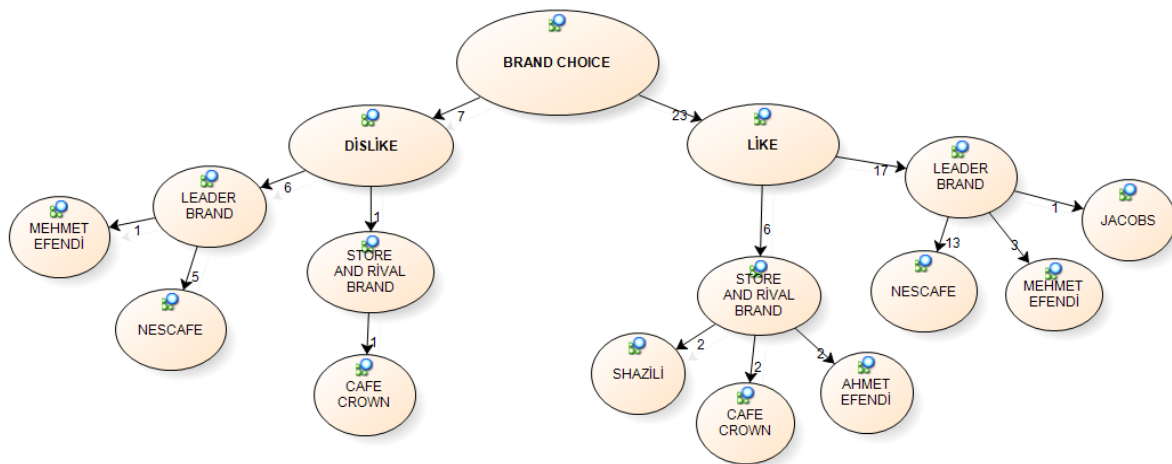
At the second stage of the experiment, the EEG technic had been used. EEG (electroencephalogram) indicates differences according to age, the vigilance of the brain, emotional stimulants, brain diseases, drugs and chemical changes on the body.

EEG wave frequencies changes between 0,5-70 Hz and amplitude changes between 5-400 μ V. When the activate level of the brain rises, the frequency of EEG waves rises and amplitude decreases. Electrodes measure the difference of the voltage on the head skin interval microvolts (μ V). EEG measures the activities of the numerous neurons (cognitrn.psych.indiana.edu/.../PPTs/week4.ppt). The form of EEG waves is related with not only the physiologic and psychological conditions of brain but also with record type. Generally, EEG appliances are produced 8 or 16 channeled for recording the activities of the different sections of the brain simultaneously. In the other hand, the experience of EEG expert is also so important for the correct recording.

3.3. Research Findings

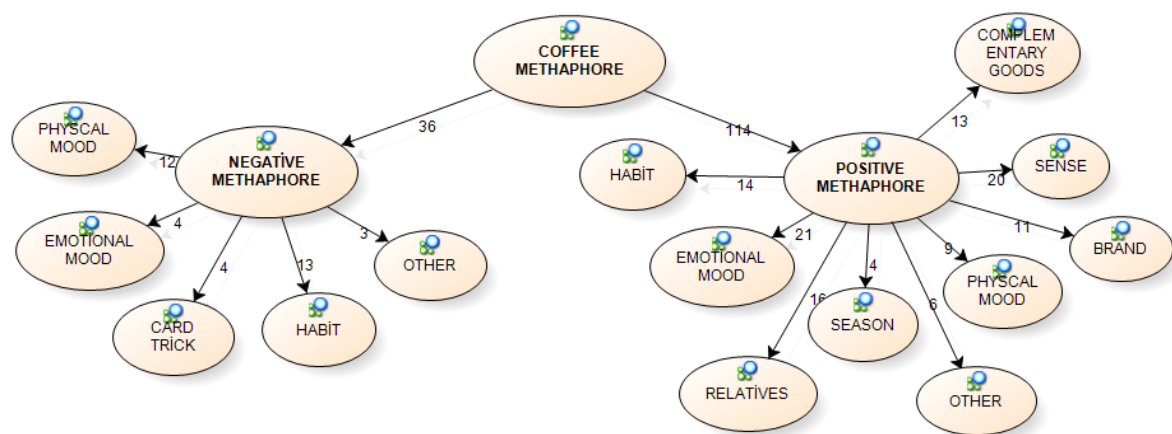
In the experiment, it is asked to the 30 students even if they like or dislike coffee. When the answers to these questions are evaluated, 23 of them declared that they like coffee and 7 dislike. 13 of the 23 volunteers who like coffee prefer Nescafe which is the leader brand. When it is asked which brand coffee they prefer to buy to the 7 volunteer, it is determined that 5 of them preferred Nescafe which is the leader brand.

Graphic 1: Brand Choice



Metaphor study related with coffee words had done on the 30 volunteers. In this study, the volunteers wanted to say the first five words when they hear the ‘coffee’ word. Themes had been formed according to their answers. The word those separate in different groups had been classified according to close meanings. Coffee Metaphor had been separated into two classes according to positive and negative effects. Then these two groups also classified in different categories in themselves. For example, words such as love, like, happiness and joy those describe positive emotions related with coffee word on Emotional Mood class had been defined. The determined 114 of 150 words have positive connotations and 36 of them negative. On emotional category which has the highest values in positive classification, there are twenty words those describe the qualified features of coffee. Especially, those words are related with coffee’s taste and smell. And also in addition to that, words those define emotional cases about coffee are mainly defined.

Graphic 2 Coffee Methaphore



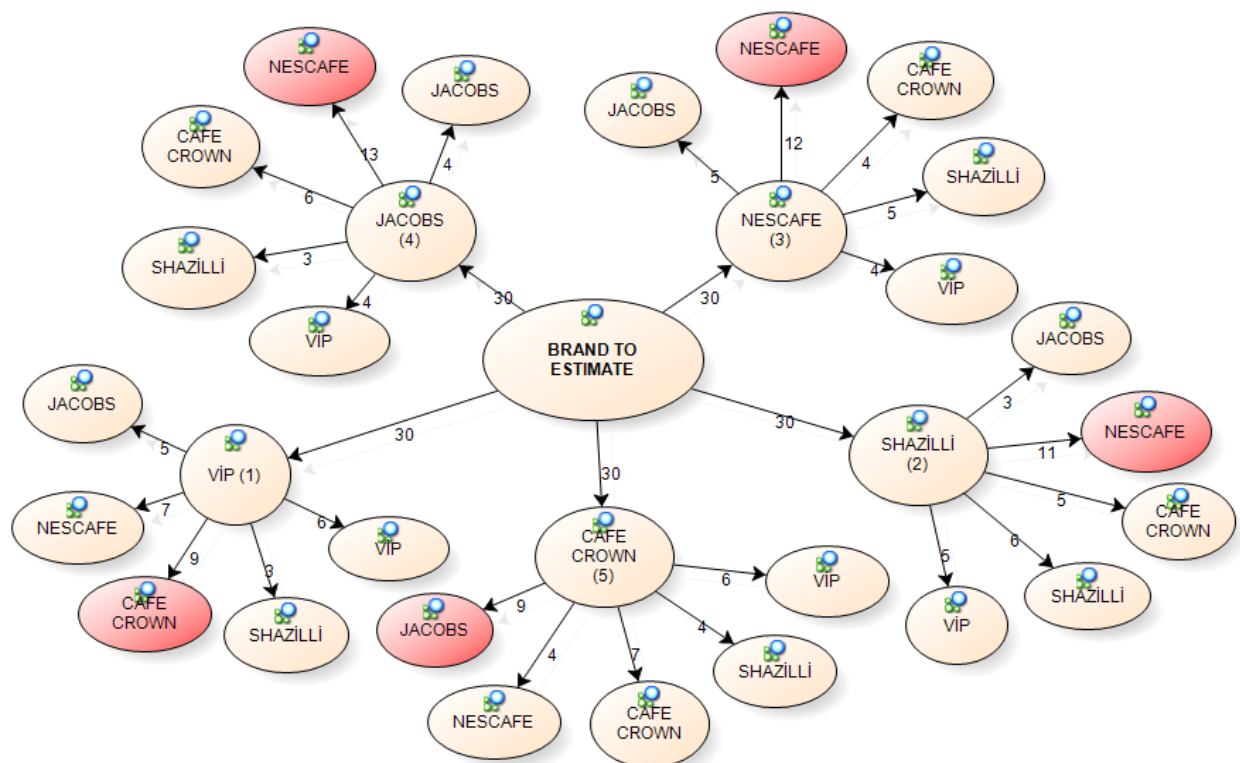
After that, the EEG shooting had been applied on volunteers and they had made to drink those five brand coffee.

Table 1: EEG Shooting and Coffee Brands

Volunteer Count	Activity Beginning Interval (Average)	Wave Type	Wave Frequency Hz (Average)	Coffee Brand Choice
3	4- 6 sec	TETA	7-8	VİP
5	4- 6 sec	TETA	6-7	SHAZİLLİ
13	4- 6 sec	TETA	7-8	NESCAFE
4	4- 6 sec	TETA	7-8	JACOBS
5	4- 6 sec	TETA	7-8	CAFÉ CROWN

At the beginning the normal wavelength had been going on at 9-10 Hz Alfa rhyme. After about four seconds the volunteer drunk coffee, changing on brain wave had been observed. Normally seen waves slow down and brain activity decreases while the volunteer appreciate and show it. The Alfa rhythm that is 9-10 Hz had been decreased to 7-8 Teta rhythm averagely. The volunteers who drunk the coffee they liked, had shown relaxation. And it was determined that slowing down on brain waves parallel to that case and volunteer keeps away the stress. In the other hand, when they drink liked coffee an increasing had been determined on their brain activity and wave changing connected to stress. According to these data, they felt relaxation when they drink the liked coffee but they felt stress at the opposite. Another case that had been seen on the volunteers is the changing time of brain activity of them is about four seconds. It had been determined that brain waves changes in four seconds. So the meaning the taste of coffee occurs in four seconds.

Graphic 3: Brand Estimate



In the experimental area there hadn't been any material that associates the coffee brand. After the EEG shooting the volunteers had been wanted to estimate the brand of the coffee they drank. It is seen that the volunteers estimated Vip Brand as Café Crown in first cup, Shazilli Brand as Nescafe in second cup, Nescafe Brand as Nescafe in the third cup, Jacobs Brand as Nescafe in the fourth cup and Café Crown Brand as Jacobs in the fifth cup. Most of the volunteers hadn't estimated the right coffee brand in the cup they had drunk. Generally, the leader brand comes forward on their estimates. This case shows that the volunteers who are coffee consumers, slant to use the leader coffee brand.

4. Conclusion

When the data analyzed The subjects were largely unable to estimate their preferred brands in the preliminary questions during the coffee tasting. EEG results shows us that the brands they like matches with the brand they prefer to buy the subjects were relieved and their brain activity slowed when they taste the coffee they like and when they taste the coffee they don't like their brain activities increased and they entered into stress condition. The subjects were largely unable to estimate the coffee brand when they were asked to estimate the brands. Besides, some brands were positioned interchangeably.

This study was conducted in Elazığ but the majority of the sample group grew in different cities of Turkey. Therefore, the research results can be generalized only for the y generation. On the other hand, this study can be conducted to different age groups, social status and other demographic characteristics and can be made more comprehensive generalization. This is an exploratory study and can be conducted to the larger sample groups.

Biographies

NURCAN YUCEL

She was born in Karabük in 1975. She successfully completed the Bachelor in Business Administration at the university of Selcuk . She started her academic career as a research assistant in 1998 at the faculty of economics administrative and social sciences at the University of Pamukkale. She has gained his doctorate title by completing her doctoral dissertation ‘The impact of the store branded products on purchasing behaviours of consumers’ in 2010 at the University of Ankara. She is currently working as an assistant professor at the University of Fırat doing researches on the fields of neuromarketing, subliminal advertising, Brand and the behaviours of consumers

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He was born in Elazığ in 1973. He completed the Bachelor in Business Administration at the university of Selcuk . She started her academic career as a research assistant in 1996 at the Faculty of Economics Administrative and Social Sciences at the University of Pamukkale. He has gained his doctorate completing her doctoral dissertation 2006 at the University of Ankara. He is currently working as an assistant professor at the University of Fırat doing researches on the fields of Neuro-marketing, Subliminal Advertising, Brand and the Behaviours of consumers, International Marketing.

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He was born in Elazığ in 1970. He completed the Bachelor in Sociology at Fırat University. He started his career as a teacher on Philosophy. Simultaneously he started his academic career as a master student on sociology in 1998 at the Faculty of Arts and Sciences at Fırat University. He had been a Research Assistant in 2003 at Fırat University. He has gained his PhD by completing his thesis titled “The Reflections of Informal Relations Patterns to Organizational Structures” in 2007 at Fırat University. He had worked as an Assistant Professor at Giresun University between 2008 and 2011. He has been working as an Assistant Professor at Fırat University since 2011 on the fields of management sociology, social behavior, socio-political behavior, voter behavior, city and city branding.

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She was born in Elazığ in 1985. She successfully completed the Bachelor in International Relations at the university of Uludag. She started master degree at the university Kadir Has. She has gained his master of degree title by completing master dissertation " A New Applied and Scientific Approach: Neuromarketing" in 2012. She University of Fırat doing researches on the fields of neuromarketing, subliminal advertising, Brand and the behaviours of consumers.

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He was born in Elazığ in 1988. He graduated from International Relations in Istanbul University. After graduation he started to work in a company as general manager. He studied Business and Administrative Sciences master program in Fırat University. He is currently working in Fırat University as Research Assistant since 2012. His academic scope includes Neuropolitics, Foreign Policy, Middle East.

AHMED İHSAN ŞİMŞEK

He was born in Çorum in 1988. He graduated from Marmara University department of business and administration in 2012. After the graduation he started to work for Turkish airlines as marketing specialist. His scope was east Africa countries. He is research assistant in Fırat University since January 2015. His academic scope is neuromarketing, consumer behavior and sportsmarketing.

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