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# Neuro-Marketing's Perspective on Consumer Behavior

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**Abstract**: The progress of neuroscience has allowed neuro-marketing to employ neuroimaging methods, whether for marketing or to examine people's daily behavior. This review's main contribution demonstrates how to successfully use neuroscience methods to study an individual's decision-making processes. For that purpose, we will describe the time of neuro-marketing development and its use in analyzing the perception of marketing stimuli. Beyond that, we can review the techniques for monitoring brain activity and non-brain activity, their advantages and disadvantages, their measures, and when they are employed. This presentation will also cover several pieces on the issue of neuro-marketing. Moreover, this article will identify the ethical concerns created by employing these technologies to evaluate human behavior during purchasing decisions. In conclusion, it will discuss the challenges of this field and the possible future situations.

**Keywords**: Neuro-Marketing, Neuro-Marketing tool, Ethical Issues, Decision-Making
**JEL Classification**: M10

## Introduction

The success of applying neuroscience technology to better understand consumer behavior in response to various stimuli in the first decade of the twenty-first century is undeniably intriguing (Cherubino et al., 2019a). Tallis and Taylor invented the term "neuro mania" (2011). It refers to the fascination with neuroimaging technologies in various research to understand consumer mind responses. However, until the last ten years, these applications were regarded as theoretical research with little practical use outside the laboratory. Neuroscientific approaches have become a powerful tool for investigating unconscious reactions in the consumer's brain, such as how a consumer sees, processes, and assesses external inputs in everyday decision-making (Gluth et al., 2012).

It is back to technology innovation and the development of innovative neuroimaging solutions, such as less intrusive and wearable equipment like eye-tracking (Di Flumeri et al., 2019).

One of the most pressing issues in today's market is determining what inspires customers to pick one product over another or why they connect with a specific brand. As a result, there is a growing interest in understanding how brain reactions reflect consumer decision-making processes. As a result, marketing has advanced beyond analyzing customer behavior to examining consumer brain responses to marketing stimuli. This process is known as "neuro-marketing" (Stanton, Armstrong, and Huettel, 2017).

Neuro-marketing is the application of neuroscience technologies in marketing research to analyze and comprehend customer behavior in response to marketing stimuli. On the one hand, neuro-marketing is described as the commercial field of consumer neuroscience (Plassmann et al., 2015). This article differs from previous Neuro-Marketing publications in that it summarizes the state-of-the-art marketing research. It summarizes the critical analysis performed in the area over the last two decades. This article provides more detailed knowledge of neuroimaging technologies, how and why we use them, and how we may utilize them appropriately to investigate consumer behavior in a real-world marketing setting.

Neuro-marketing studies explore different brain regions' activity toward marketing stimuli to find the relationship between consumer behavior and their neurophysiological system. It is possible to determine the neuronal activity underlying an individual's behavior using neuro-imaging technology such as fMRI. Scientists and researchers can compare the activation regions in the brain during a specific task to develop models that can describe the person's decision mechanisms and the incompatibility between thoughts and actions of an individual. (Jordo et al., 2017).

## 1. History of Neuro-Marketing

The history of neuro-marketing began in the United States in 1998, when Gerald Zaltman, a marketing researcher, and Stephen Kosslyn, psychologist and cognitive scientist, filed a patent application entitled "Neuro-imaging as a marketing tool," which was awarded to them in August 2000. In Atlanta, Bright House, a marketing company, opened a neuro-marketing division headed by addiction specialist Clinton Kilts the following year. The objectives were to answer marketing questions related to trust, consumer choices, and decision-making. It was also about understanding how to influence these behaviors using brain imaging or other neuroscience techniques.

The first high-profile study published in 2004 looked at Coca-Cola / Pepsi Cola preferences. It showed that two separate systems came into the preference process: taste and brand responses.

This famous experiment aimed to compare the reactions of 67 people towards the Pepsi and Coca-Cola brands. The testers proceeded to a blind tasting followed by a tasting where only the Pepsi or Coke brand was revealed, and the taste of both brands was displayed. MRI images showed strong activation of "putamen," the primitive region of the brain that responds to immediate pleasure, for Pepsi when individuals blindly tasted. In this configuration, 50% of testers said they preferred Pepsi. However, when the brands were displayed, the previously activated "putamen" no longer became activated. 75% of testers then attributed their preference to the Coca-Cola brand. The study showed that the difference was more for the brand one thought to taste rather than the taste.

### 1.1. The advantages of Neuro-marketing Technology in Marketing Research

Recently, there has been a growth in knowledge about the brain and an interest in the issue of neuro-marketing. Consequently, this analysis evaluates the additional value of neuro-marketing methods in marketing research. Also, today's lifestyle differs from the past, which will vary in the future. As a result of technological advancements, the competitive atmosphere among businesses has become more intense. As a result, new difficulties, possibilities, and constraints have significantly altered marketing management. Each organization strives to find innovative approaches to explain what is going on in its customers' minds to satisfy their demands and outperform the competition. The American Marketing Association defines consumer behavior as "the dynamic interactions between humans and the environment in terms of the effect, awareness, and behavior affected by environmental elements (e.g., goods, brands) through their exchange aspects." The inability of people to explain their feelings as a way of ego is one of the trick reasons that describe how much marketing could be helpful. Another reason cited is that people's brains store secret information about their genuine preferences. Such information is necessary to influence their purchasing decisions.

Furthermore, neuro-marketing might modify its pricing strategy and build brand and product awareness. Additionally, neuro-marketing has a high potential for identifying the root cause of a marketing problem, obsessive buying disorder, and the negative characteristics in advertising that produce an individual's aversion to the items. For example, they assess their visual and acoustic qualities, identify the harmful

elements in advertising that cause an individual's aversion to the products, determine their visual and audio features, and select appropriate media.

Notably, by adopting neuroimaging methods, businesses may better understand customer behavior as decision-making mechanisms and what processes in the brain are impacted by decision-making. However, contrary to what other academics and journalists said, it cannot potentially determine the "buy button" in the consumer's brain, alter their minds, or convince them to purchase unwanted items or services.

Kahneman has undertaken some decision-making studies to identify how customers make decisions. It concluded that individuals are not rational decision-makers, although he used the sentence "rationality restricted." It has created a great model (systems 1 and 2) of decision-making mechanisms in the brain (Table 1). Traditional marketing research emphasized system 1, whereas neuro-marketing emphasized system 1.

Table 1. The Model of the Making-Decision in the Human Brain

| System 1 | System 2 |
|---|---|
| Fast | Slow |
| High capacity | Low capacity |
| Unconscious | Conscious |
| Implicit | Explicit |
| High effort | Low effort |
| Automatic | Controlled |

Source: Adopted by Kahneman (2011)

### 1.2. Neuro-Marketing tools

Nowadays, neuro-marketing companies such as Millward Brown, iMotion, Emsense, and Nielsen research specialized laboratories for the most prominent brands (Google, Campbell's, Estée Lauder, and Fox News) (Plassmann et al., 2015). Lindstrom (2010) emphasized the advantages of neuro-marketing techniques for consumers and businesses.

They proposed that goods and advertising campaigns based on neuro-marketing technologies will assist customers rather than influence them by simplifying their decision-making. Establishments can ensure that they will save a significant portion of their money, which is now being spent on unproductive and costly advertising initiatives.

The two most common methods for scanning the brain are fMRI and EEG. The former (functional magnetic resonance imaging) uses high magnetic fields to follow changes in

blood flow throughout the brain is completed while the patient is lying within a machine that collects continuous measurements over time.

An electroencephalogram (EEG) uses sensors on the head to measure brain-cell activity. For example, it can track changes in activity over fractions of a second. However, it is ineffective at defining where the action occurs or detecting it in deeper, particular brain locations (where much exciting fractionates place). Although an fMRI can view deep into the brain, it is time-consuming and only captures activity for a few seconds, which means it may miss transitory neuronal events.

The cost and ease of using tools for assessing physiological markers for brain activity are often lower. Eye-tracking can assess attention and arousal using eye movement and facial expression. Coding the minute movement of muscles in the face may measure emotional reactions; heart rate, breathing rate, and skin conductivity can be used to evaluate excitement.
In the mid-2000s, business school academics began to show that advertising, branding, and other marketing practices may have measurable effects on the brain, sparking a surge in interest in consumer neuroscience. Coca-Cola and Pepsi were offered to individuals in an fMRI machine by Emory University researchers in 2004.

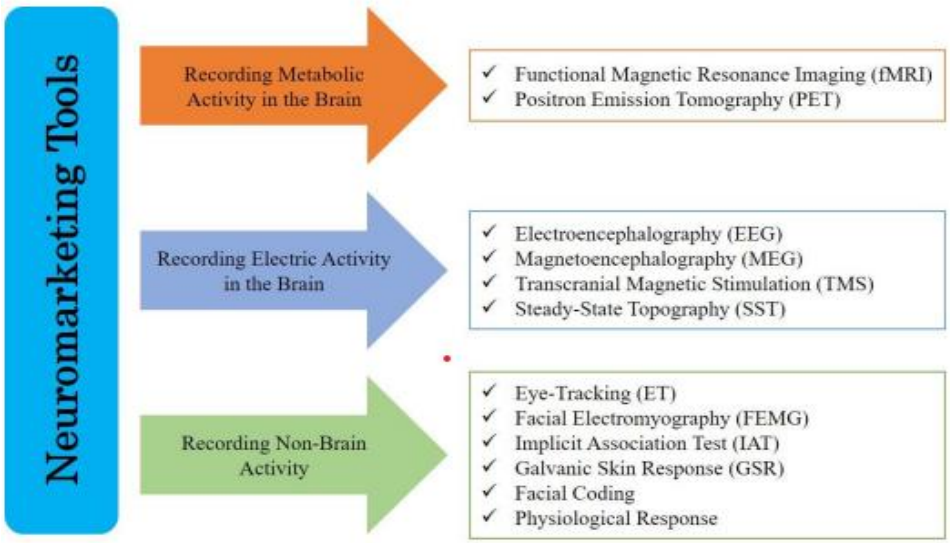


**Figure 1. Classification of Neuromarketing Tools**

Source: Own illustration

The following questions frequently surface while developing advertising campaigns: Do we manage to do everything honestly and helpfully for the consumer? Will the activities we undertake successfully reach the customer without causing harm to others? Do we assist the buyer in purchasing a product that he will not regret in the future? Neuro-marketing ethics and research indicate that marketing campaigns have little impact if the answers to these questions are negative or ambiguous. Promoting a good product or service for a consumer is not a query for neuro-marketing but advertising. It is essential to find the answer to the question: Is my product the priority need of a consumer accompanied by my service? This is the question for neuro-marketing, whose response may appear scarcely in research.

## 2. Literature review

### 2.1 Brand identity

Branding and neuro-marketing have always been for each other. Both are concerned with forming and linking concepts in the human brain.

When the mind introduces to a brand, it may form a memory of that experience. This memory may connect numerous aspects, such as advertising promoting the brand, a product sold under the brand, a packaging design, or a consumption or user experience. Whichever parts have been in memory are linked and interconnected by brand memory. Understanding brand identity and branding is a perfect fit for neuro-marketing. Brands are just concepts in the mind that gain strength by connecting to the other ideas. A strong brand generates deep links with connecting concepts that keep the brand on "top of mind" for customers.

The physical aspect of a product or service may assess the brand identity. This physical aspect might lead to a high-low perception in the minds of buyers (Martinez, 2002) and includes all aspects of the identity brand, such as brand association favorability, strength, and uniqueness.

### 2.2. Marketing Strategy

Marketing strategy begins with a detailed analysis of an organization's capabilities, the strengths and weaknesses of rivals, the economic and technical factors that impact the market, and the prospective customers in the market. The company discovers groups, families, or businesses with similar requirements due to the consumer study. Then, one or more of these segments are selected based on the company's potential competitors.

As a result, the marketing mix is developed, including identifying the product qualities, pricing, communication, distribution, and services that will provide value to the client. This combination of features, called the "total product," is given to the target market, which would be continually digesting information and making purchasing decisions. Based on the characteristics described by (Hawkins et al.2009), the following subjects are designated as marketing classics and critical for the market communication of marketing strategies: brand equity, segmentation, product decisions, price decisions, location and promotion considerations, and social marketing.

The favorability of the brand, the strength of brand association, and the uniqueness of brand association are all characteristics of brand identity in connection to brand association. The simplicity of saying the brand, the capacity to keep the brand in the customers' minds, and the compatibility between the brand impression in the customers' minds and the intended corporate image of the brand are all key attributes factors in the favorability of the brand association. While the physical look of products, the functional facilities of products, product price, support facilities, and product presentation are all the essential factors of strength. Diversity in the services provided, a difference in price, and a differentiation in the product's image are all characteristics of uniqueness (Kotler, 2005). Furthermore, believe that a positive brand image will gratify purchasers. Because the brand image is related to product appearance, if consumers are satisfied with it, they will stay loyal to the brand even if they have other brands to pick from (Vinhas and Faridah, 2008). According to (Earls et al. 2004), a strong brand identity can also make customers loyal. Customers will move to another brand if their demands change and the brand is unable to meet their needs, according to (Steel, 2004).

Building a great brand identity may lead to client loyalty, influencing repeat purchases. Furthermore, according to (Schultz,2005), customers who are devoted to a brand will suggest it to others and are not readily swayed by competitors to make purchases ( Sondoh et al., 2007).

According to the framework described above, there is a link between brand image and consumer loyalty. A strong brand image (1998) will increase consumer loyalty (Miller and Muir, 2004). According to (Kotler,2005) and (Keller, 2003), three variables contribute to brand image formation related to the brand association: favorability of brand association, the strength of brand association, and originality of brand association.

### 2.3. Conceptual Framework and Hypothesis

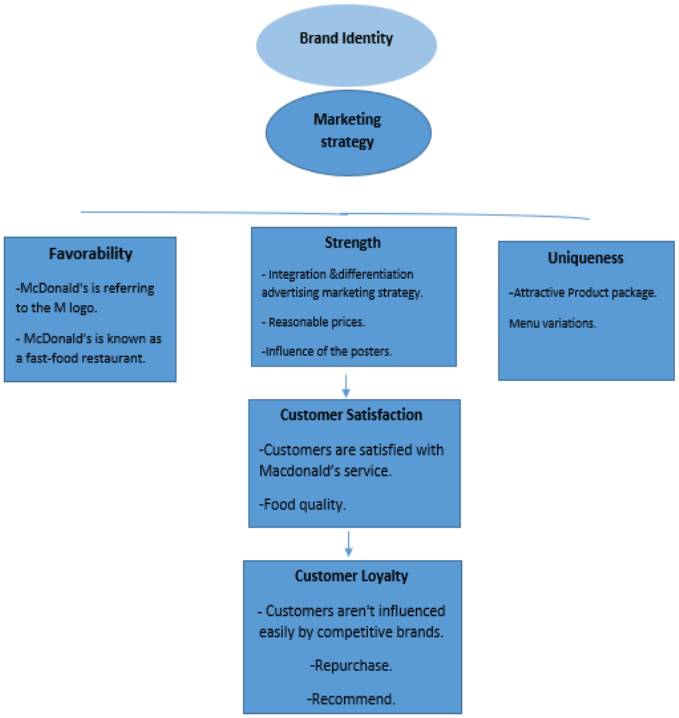


**Figure 2 Conceptual Framework** (Davies et al. 2003)

## 3. Research methodology

### 3.1. Purpose of study

The survey aims to examine the impacts of neuro-marketing on the human brain and how they affect it. Following that, we will look at some approaches used in neuro-marketing research to evaluate brain activity.

### 3.2. Importance of study

The main finding of this study is that neuro-marketing enables us to understand the customer's reactions in terms of brain activity and the impact of McDonald's marketing strategy on customer loyalty and satisfaction.

### 3.3. Hypothesis

For testing, the following hypotheses were suggested:

H1.0: Satisfaction with McDonald's does not significantly differ according to age.

H1.1: Satisfaction with McDonald's shows a significant difference according to age.

H2.0: Satisfaction with McDonald's does not show a significant difference according to gender.
H2.1: Satisfaction with McDonald's shows a significant difference according to gender.
H3.0: Satisfaction with McDonald's does not show a significant difference according to marital status.
H3.1: Satisfaction with McDonald's shows a significant difference according to marital status.
H4.0: Satisfaction with McDonald's does not significantly differ according to education level.
H4.1: Satisfaction with McDonald's shows a significant difference according to education level.
H5.0: Satisfaction with McDonald's does not significantly differ according to employment status.
H5.1: Satisfaction with McDonald's shows a significant difference according to employment status.
H6.0: Satisfaction with McDonald's does not significantly differ according to household income.
H6.1: Satisfaction with McDonald's shows a significant difference according to household income.

This research is a causal quantitative study that uses hypothesis testing to draw results. This study will investigate the influence of brand identity on customer loyalty, using customer satisfaction as a mediator or mediating variable. In this study, the population comprises all McDonald's customers aged 17 to 60 who are aware of and use the company's products and services.

To determine answers, many factors have been identified to evaluate the impact of neuro-marketing on customer behavior. The questionnaire was developed based on previous research extracted from earlier studies. The questionnaire is divided into four sections; in the first section, the respondents were asked for basic information such as their age, qualifications, and gender. In the second section, we interviewed consumers about McDonald's food and their purchase decisions. In the third section, questions were about McDonald's consumption, assessing brand loyalty, customer satisfaction, and loyalty. To better evaluate the effect of neuro-marketing on customer behavior, ask questions in the fourth section on the impact of advertising's intent on consumers.

Customer loyalty. In the fourth section, questions were about the impact of advertising's intent on consumers to evaluate the effect of neuro-marketing on customer behavior.

## 4. Data Analysis Technique

Validity and reliability are the Statistical Package for Social Science (SPSS) tools employed to assess the validity and reliability of the questionnaires. Validity if the measurement is appropriate and applicable to the questions.

### 4.1. Findings and discussions

#### 4.1.1. Respondent's Profile Description

This study had 260 respondents. The majority were males (137 respondents), aged 17 and 60. (110 respondents) had a graduate degree.165 of the respondents were affected by the smell of McDonald's, which made them hungry and gave them the desire to eat at McDonald's. Seventy-four of the respondents feel addicted to McDonald's food, and 71 of the respondents confirm that they are affected by McDonald's posters and can eat at McDonald's just after seeing the banners.

#### 4.1.2. Validity and Reliability Testing

The SPSS program is used in this study to assess the validity and reliability of the questionnaires. The findings demonstrate that the corrected item-total correlation of all questions is more than or equal to 16.it signifies that all of the items are correct. Additionally, Cronbach's Alpha is used to assess its reliability because its scores are > 700. All of the items in the questionnaire are credible and could be employed for other studies.

The Likert scale is a psychometric measure used to investigate the respondents' attitudes towards a particular behavior. The current study makes use of a Five-Point Likert scale. All the items in the Likert scale are supposed to be ranked consistently. This is what is called reliability. The latter concerns "whether an instrument can be interpreted consistently across different situations" (Field, 2013). Data was collected from the Online Survey. The data was downloaded in an excel spreadsheet and imported to SPSS (Statistical Package for Social Sciences).

Table 2. Reliability

| Scale | Number of items | Cronbach's alpha |
|---|---|---|
| Likert scale | 16 | .940 |
| Total | 16 | >.700 |

#### 4.1.3. Research description

Cronbach's alpha produced internal consistencies that exceeded the minimum value of .70 required for acceptable reliability (Cronbach and Shapiroo, 1982).

If one Item has a lower reliability score, it can be removed or replaced with another one. However, all items in the current study show good reliability coefficients.

Table 3. Item-Total Statistics

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| Is McDonald's food that good? | 52.64 | 249.494 | .782 | .934 |
| Do you go to McDonald's frequently? | 53.11 | 252.330 | .785 | .934 |
| McDonald's pricing is affordable to anyone and everyone | 52.67 | 268.057 | .537 | .940 |
| Is the price a factor in the menu choices? | 52.19 | 263.704 | .639 | .938 |
| McDonald's has the fastest service | 52.28 | 262.663 | .661 | .937 |
| Does the smell of McDonald's food make you hungry? | 52.25 | 254.421 | .800 | .934 |
| Do you feel any addiction toward McDonald's food? | 52.69 | 260.561 | .670 | .937 |
| Celebrities who eat McDonald's have a strong influence on you | 53.17 | 251.971 | .703 | .936 |
| Have you ever been influenced by your family to consume McDonald's | 53.36 | 263.209 | .502 | .942 |
| You always like eating at McDonald's, whether alone or with a group | 52.94 | 257.768 | .658 | .937 |
| Do children love the Happy Meal Menu? | 52.08 | 256.879 | .744 | .935 |
| Are kids satisfied with the space toys at McDonald's? | 52.22 | 260.749 | .804 | .935 |
| Is advertising affecting your consumer behavior | 52.53 | 258.542 | .768 | .935 |
| Do advertisements convince you that the food is healthy? | 53.53 | 267.056 | .585 | .939 |
| You went to McDonald's after seeing the posters | 52.81 | 251.190 | .778 | .934 |
| Does The ads of McDonald's affect teenagers more | 52.03 | 270.199 | .564 | .939 |

Accordingly, all items in the scale can be maintained. Therefore, the online survey can be administered to a larger sample with an edit.

**Table 4. Distribution of Participants by Demographic Characteristics**

| | | f | % |
|---|---|---|---|
| **Age** | 17 or younger | 38 | 14,6 |
| | 18-25 | 80 | 30,8 |
| | 25-35 | 68 | 26,2 |
| | 35-45 | 36 | 13,8 |
| | 45-55 | 27 | 10,4 |
| | 60 or older | 11 | 4,2 |
| **Gender** | Female | 123 | 47,3 |
| | Male | 137 | 52,7 |
| **Marital status** | Divorced | 24 | 9,2 |
| | Married | 88 | 33,8 |
| | Never Married | 131 | 50,4 |
| | Separated | 17 | 6,5 |
| **Education level** | Less than a high school degree | 19 | 7,3 |
| | High school degree or equivalent | 63 | 24,2 |
| | Bachelor degree | 68 | 26,2 |
| | Graduate degree | 110 | 42,3 |
| **Employment status** | Not employed, looking for work | 79 | 30,4 |
| | Employed, working 1-39 hours per week | 68 | 26,2 |
| | Employed, working 40 or more hours per week | 101 | 38,8 |
| | Retired | 12 | 4,6 |
| **Household income** | 0-282 USD | 56 | 21,5 |
| | 282- 500 USD | 44 | 16,9 |
| | 500 - 750USD | 52 | 20,0 |
| | 750 - 1000USD | 53 | 20,4 |
| | More than 1000USD | 55 | 21,2 |

When the table is examined, most participants are in the 18-25 and 25-35 age groups. 47.3% of the participants are female, and 52.7% are male. 50.4% of the participants stated that they were not married. A large proportion of the participants (42.3%) said they graduated. A large proportion of the participants stated their working status as "employed, working 40 or more hours per week" (%38,8). 21.5% of the participants has 0-282 USD, 16.9% has 282- 500 USD, 20% has 500-750USD, 20.4% has 750-1000USD and 21.2% has more than 1000USD income.

### 4.1.4. Statistical Analysis

The distribution of satisfaction scores was analyzed based on the skewness and kurtosis coefficients. To meet the assumption of normal distribution, it is sufficient for the

skewness and kurtosis coefficients to be in the range of ±1.5 (Tabachnick and Fidell, 2007). This study's skewness and kurtosis coefficients were within the specified range (Table 5). Based on the results, it is decided to use parametric analysis techniques to analyze the data.

**Table 5. Skewness and Kurtosis Coefficients**

| Variable | Skewness | | Kurtosis | |
|---|---|---|---|---|
| | Statistic | Std. Error | Statistic | Std. Error |
| Satisfaction | -0,83 | 0,15 | 1,17 | 0,30 |

Descriptive analysis techniques were used to determine the satisfaction levels of the participants. An independent sample t-test was applied to compare the satisfaction level by gender. One-way analysis of variance was applied to reach the satisfaction level according to age, marital status, education level, employment status, and household income variables. Analyzes were carried out using the SPSS 24.0 statistical package program.

### 4.1.5. Results

**Table 6. Descriptive Statistics**

| Variable | N | Minimum | Maximum | M | SD |
|---|---|---|---|---|---|
| Satisfaction | 260 | 16 | 80 | 57,63 | 11,28 |

When the table is examined, it is understood that the satisfaction scores vary between 16 and 80. The mean satisfaction level score was calculated as 57.63 (SD=11.28). This result showed that the satisfaction levels of the participants were high.

**Table 7. Comparison of Satisfaction Scores by Age, ANOVA Results**

| Variable | Age | N | M | SD | F(5;254) | p | Scheffe Post-Hoc |
|---|---|---|---|---|---|---|---|
| Satisfaction | 17 or younger [a] | 38 | 68,13 | 6,73 | 11,89 | 0,00 | a>b, a>c, a>d, a>e, a>f, |
| | 18-25 [b] | 80 | 58,18 | 11,02 | | | |
| | 25-35 [c] | 68 | 54,49 | 11,48 | | | |
| | 35-45 [d] | 36 | 57,47 | 7,92 | | | |
| | 45-55 [e] | 27 | 52,41 | 10,15 | | | |
| | 60 or older [f] | 11 | 50,09 | 13,14 | | | |

When the table is examined, it is understood that there is a significant difference in satisfaction scores according to age groups ($p<0.05$). The average satisfaction score of the participants in the 17 of younger age group is significantly higher than that of the

participants in the 18-25, 25-35, 35-45, 45-55, 60 or older age groups. H1.0 hypothesis was rejected.

**Table 8. Comparison of Satisfaction Scores by Gender, Independent Sample t-Test Results**

| Variable | Gender | N | M | SD | t(258) | p |
|---|---|---|---|---|---|---|
| Satisfaction | Male | 137 | 58,44 | 10,15 | 1,22 | 0,22 |
| | Female | 123 | 56,72 | 12,39 | | |

When the table is examined, it is understood that the satisfaction scores do not show a significant difference according to gender ($p>0.05$). It was observed that the satisfaction levels of male and female participants were similar. The H2.0 hypothesis was accepted.

**Table 9. Comparison of Satisfaction Scores by Marital Status, ANOVA Results**

| Variable | Marital Status | N | M | SD | F(3;256) | p | Scheffe Post-Hoc |
|---|---|---|---|---|---|---|---|
| Satisfaction | Divorced [a] | 24 | 54,58 | 9,80 | 3,39 | 0,02 | c>a |
| | Married [b] | 88 | 55,44 | 10,08 | | | |
| | Never Married [c] | 131 | 59,77 | 11,91 | | | |
| | Separated [d] | 17 | 56,71 | 11,72 | | | |

When the table is examined, it is understood that there is a significant difference in satisfaction scores according to marital status ($p<0.05$). The average satisfaction score of the participants with never married is significantly higher than the average score of the participants with divorced. H3.0 hypothesis was rejected.

**Table 10. Comparison of Satisfaction Scores by Education Level, ANOVA Results**

| Variable | Education Level | N | Ort | Ss | F(3;256) | p |
|---|---|---|---|---|---|---|
| Satisfaction | Less than a high school degree | 19 | 58,84 | 11,90 | 1,27 | 0,29 |
| | High school degree or equivalent | 63 | 59,62 | 10,84 | | |
| | Bachelor degree | 68 | 55,94 | 12,16 | | |
| | Graduate degree | 110 | 57,32 | 10,80 | | |

When the table is examined, it is understood that the satisfaction scores do not significantly differ according to education level ($p>0.05$). It was observed that the satisfaction levels of the participants who started their education with less than a high school degree, high school degree or equivalent, bachelor's degree, or graduate degree were similar. H4.0 hypothesis was accepted.

**Table 11. Comparison of Satisfaction Scores by Employment Status, ANOVA Results**

| Variable | Employment Status | N | M | SD | F(3;256) | p | Scheffe Post-Hoc |
|---|---|---|---|---|---|---|---|
| Satisfaction | Not employed, looking for work [a] | 79 | 60,51 | 13,04 | 3,95 | 0,01 | a>d |
| | Employed, working 1-39 hours per week [b] | 68 | 57,10 | 11,16 | | | |
| | Employed, working 40 or more hours per week [c] | 101 | 56,62 | 8,50 | | | |
| | Retired [d] | 12 | 50,08 | 15,52 | | | |

When the table is examined, it is understood that there is a significant difference in satisfaction scores according to employment status ($p<0.05$). It was observed that the satisfaction levels of the participants who indicated their employment status as not employed or looking for work are significantly higher than the average score of the participants who confirmed their employment status as retired. H5.0 hypothesis was rejected.

**Table 12. Comparison of Satisfaction Scores by Household Income, ANOVA Results**

| Variable | Household Income | N | M | SD | F(4;255) | p | Scheffe Post-Hoc |
|---|---|---|---|---|---|---|---|
| Satisfaction | 0-282 USD [a] | 56 | 63,21 | 9,90 | 5,73 | 0,00 | a>d, a>e, |
| | 282- 500 USD [b] | 44 | 58,43 | 14,22 | | | |
| | 500 - 750 USD [c] | 52 | 56,71 | 8,79 | | | |
| | 750 - 1000 USD [d] | 53 | 55,60 | 10,25 | | | |
| | More than 1000 USD [e] | 55 | 54,11 | 11,16 | | | |

When the table is examined, it is understood that there is a significant difference in satisfaction scores according to household income ($p<0.05$). The satisfaction scores of participants with a gain of 0-282 USD are significantly higher than those of participants with an income of 750 - 1000 USD and more than 1000 USD. H6.0 hypothesis was rejected.

### 1.1.1. Limitations and recommendations:

1- McDonald's should pay more attention to its consumers' perceived value since they desire convenient pricing to attract all types of customers.

2- According to the research, advertising does not persuade consumers that the meal is healthful. It is recommended to include more product variations, such as salads and Nutritious sandwiches, to entice older people who care too much about consuming healthy food.

3- McDonald's uses sugar and salt to make their meals tastier as a fast-food chain. Those menus lead to increasing cases of diabetes and high blood pressure. However, consumers are aware of that.
4- From the study, McDonald's made several marketing missteps in its advertising. It does not influence all sorts of consumers; thus, it is suggested that advertisements be changed to reach all customers.

## Conclusion

Neuro-marketing research must be conducted to achieve medium and long-term goals compatible with human society's long-term evolution. It is necessary to ask one follow-up question: does neuroscience in general and neuro-marketing in particular lead to clear progress in marketing research based on customer behavior? The answer is decisive: yes. Conversely, the neuroscience theoretical framework gives a cohesive explanation of consumer behavior, more accurate than the explicative linguistic approaches and procedures and imaging and imaging-related methodologies. On the other hand, it allows you to achieve outcomes that would be impossible through any other type of study. In today's environment, any company's success depends on paying attention to client behavior and understanding the true causes of buying decisions. Companies must reduce their reliance on traditional focus groups and other conventional marketing tactics to receive fast input on goods and brands. Even if you have a favorite brand, a short advertisement or even an advertisement poster in the subway can change your mind in no time. Whatever we do is filtered by our emotions. Firstly, what we see and pay attention to is filtered by the emotional situation we find ourselves in. In short, neuro-marketing means ensuring that when someone thinks of a product or service, your name comes to mind first.

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