

# PSYCHOSENSOMETRIC STUDY (EYE TRACKER) ON THE LEVELS OF PERSUASION IN THE WOMEN'S PERFUMERY INDUSTRY

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## Abstract

Thanks to technological progress, communicational activities are more efficient, because before being published they are studied through psychosensometric equipment such as an eye tracker, which allows knowing what advertising content the consumer really looks at. The research determines the level of persuasion that has a well-designed advertising against the feminine perfumery of the brands Lancome, Caroline Herrera, and Chanel. For this purpose, neuromarketing tools were used, such as the EyeTracker, which allowed to know the exact points of fixation in each of the advertisements and at the same time it was complemented with elements of traditional market research (survey). This allowed obtaining more field data on the communication designed by the brands under study; therefore, it was identified that the people under study prefer Carolina Herrera's advertising since its advertising is better designed, its elements are distributed in a better way and it does not contain distracting points.

**Keywords:** Neuromarketing; advertising; sight, tracking, and persuading.

## INTRODUCTION

Companies around the world focus their efforts to understand the secrets or mysteries of the human mind to sell their goods or services, but this is not possible with traditional methods, techniques, and tools, so this need has led science to seek alternatives and neuroscience has become an effective ally (Santos et al., 2013; Selani et al., 2016; Stone et al., 2012; Tarancón et al., 2015; Tenenhaus et al., 2005; Kleef et al., 2006; Varela, 2012; Vidal et al., 2015; Worch and Punter, 2010). Neuromarketing in the last decade has allowed the design of codifications to understand the mysteries hidden in the human brain, and in this way, deliver to the consumer better experiences when buying goods and services with the proper use of communication and emotional connection, with the purpose that brands are placed in the mind and the heart.

In addition, neuromarketing helps to understand individual and group thoughts, emotions, and subconscious desires, and to understand that components such as the aforementioned aspects are a fundamental part of the decision-making process when making a purchase. For this reason, for the companies that make their advertisements and for the agencies that design them, it is of vital importance to know not only the global impact of the advertisement but also to know the impact on consumers every second of the advertisement.

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An advertisement should always be designed to capture the attention of viewers; therefore, it is and will be one of the great challenges that companies face every day around their brands and their competition. The purpose of communication is to stand out within the industry and get the attention of customers, which is sometimes complicated, however, the key to achieving it or making it possible will be with the application of Neuromarketing. Therefore, the domain of perfume advertisements generates greater interest due to its distinctive characteristics of graphic composition: high degree of iconicity in advertisements, presence of the human element as the main actor, visual predominance in the construction of its messages, the relationship of the product with the brand, in short, some communicative resources that are encompassed at the time of being analyzed to specify its particular form of codification and signification.

Based on the above, the purpose of the study is to analyze advertising through eye tracking to identify the level of persuasion in women's perfumery within 3 advertisements of the following brands: Lancôme, Carolina Herrera, and Chanel.

## Theoretical aspects

Advertising and sales force are market strategies that in one way or another are always present within the market system, today are supported by the science of Neuromarketing as it studies all the mental processes of the consumer related to perception, memory, learning, emotion, and reason (Manzano et al., 2012). That is to say that the part of the understanding of all these elements trying to explain the components that intervene and affect feelings, thoughts, desires and needs to know their influence on buying behavior, in addition, that determines the emotional response of people to certain stimuli (Ashanin et al., 2010; Boloban, 1990; Cafarelli, 1992; Kozina, 2009; Maglevaniy et al., 2010; Maglovykh et al., 2012; Makarenko, 1995).

Within neuromarketing according to Páramo (2020), a company must manage to bring a product closer to the level of hope and reward, to that extent it can make its product successful. Therefore, if your product represents a real solution to specific customer needs, the customer will be able to forget bad experiences with other products, and may even anticipate a benefit and give it properties that the product does not have.

For this to happen, it is necessary to understand the behavior of the human being from the plane of psychology and anatomy, in this case, according to Clark et al. (2012), the adult brain weighs between 1,100 and 2,000 grams, and contains approximately 100,000 million neurons, which on average have up to 10,000 synapses. Within this field, at least one-third of this system is dedicated to the functioning of behavior. Two types of cells make up the nervous system: neurons and neuroglial cells, the former specializes in

transmitting bioelectrical messages, while glial cells play an interactive and supportive role; both are involved in the production and maintenance of neurotransmitters that generate certain behaviors in people and are the cause of originating a purchase. Figure 1 shows the behavior of the triune brain at the moment of making a purchase.

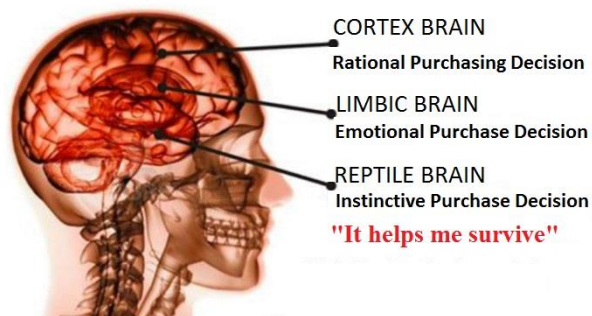


Figure 1. Elements of persuasion.

The brain reacts in a way in which it always satisfies the basic needs of people and when it comes to buying the three cerebral hemispheres act in a coordinated way, there is an emotional discharge of satisfaction and a feeling of comfort, therefore, advertising must be designed to please all this. The consumer's decision-making is made by an interaction between the rational system and the limbic system, when there is more or less attention, and less or more stress, the process of receptors is taken into account through the ascending reticular activating system (A.R.A.A) that filters 95% of the stimuli of the senses, at the end of the time the decision depending on the event could be taken from different areas, but always rationalizing.

Advertising-oriented neuromarketing for positioning

In advertising, neuromarketing has become the tool of choice for many experts in the creation and innovation of persuasive advertising. The value of Neuromarketing in advertising lies directly, as it helps provide data that are not appreciable or visible at first glance but show the level of emotional reaction numerically and more objectively. For Malgar (2018), neuroscience aims to gather knowledge about the structures and functions of the brain. A specific branch of neuroscience is neurocognitive which seeks to understand the neural mechanisms behind processes such as reasoning, emotion, memory, decision making, etc.

In the same way, Malgar (2018) states that when neuroscience is applied in marketing and advertising, it can help in brand positioning and brand loyalty. That is, neuromarketing is very important at the time of advertising the different brands since through them they will persuade and seduce their customers and will make known the product they offer, in addition to this, through advertising the consumer will be excited to encourage their decision to purchase.

The union of neuromarketing with advertising gives way to a new discipline such as neuroadvertising to refer to the elements of marketing and advertising to know the logic of purchase and measure its effects. (Pineda, 2018). Neuroadvertising helps to develop communication strategies, since it reaches the deepest part of the human being through advertising applied with neurosciences since the same allows to explain very well the positioning that different brands have in the mind of the consumer and why they prevail within them (Monserrat et al., 2015).

In this context of positioning, Guerra (2019) states that business, products, production costs, and exact definition of the supply chain must be a priority for business analysis and management since markets are becoming more competitive every day, their requirements are multiple and companies are exposed to very aggressive competition. This is due to the influence that ICT bring to make information fast, allowing users and consumers to manage it agilely, knowing first-hand the detail of their products or services that they have placed in the market, and the strengthening of the industrial sector. In addition, Guerra (2019) argues that positioning will always be related to the distribution and communication channels that an organization uses to distribute and promote its products and services.

This means that Neuroadvertising is a discipline that, through neuroscientific tools, can evaluate communication products in general and the perception of people when they are impacted by the dissemination of content objectively and unconsciously. In addition, "Neuroadvertising" does not try to achieve amazing formulas from the knowledge of the brain, but it can make recommendations for communication to be more efficient in terms of advertising, getting and retaining the attention of consumers and at the same time allowing organizations to get more out of their efforts with the firm purpose of maximizing their profitability.

In the neuromarketing laboratory located in the city of Riobamba, Ecuador, undoubtedly advertising is one of the components under study, and thanks to psychosensometric tools such as the Eye Tracker it is possible to identify the level of attention and the elements that have more power to capture the attention of the consumer, to measure the impact and advertising effectiveness in terms of power, attraction, and effectiveness since the movement of the eyes is closely linked to visual attention (Carrillo, 2017, p. 199). This tool is an eye-tracking technology that allows knowing the visual behaviors of individuals when viewing a product or advertisement, i.e., it helps to know what consumers look at first and thus optimize resources in an organization (human, financial, technological, and material).

#### Eye tracking and advertising optimization

Nowadays, obtaining reliable data on communication for the design of new strategies has become one of the most common drawbacks when studying users. This is because the subject cannot specify his unconscious behavior or because he does not tell the truth when asked through a

survey or other technique. With technological advancements, the use of the Eye Tracker has been implemented, which allows obtaining more accurate and detailed data regarding what the subject observes, the trajectory of the gaze, observation time, and even the dilation of the pupil in front of external stimuli, in real time. In other words, this tool allows for studying the impact of advertisements in visual media, merchandising, and industrial design, among others, since unbiased data is obtained.

#### Heat maps, their evolution, and applicability

Eye-tracking and heat maps are crucial when publishing a communicational product. For PuroMarketing (2016), in the 90s Luis Emile Javal, an ophthalmology expert discovered that people not only read using their eyes as they moved forward while seeing the words but also read using saccadic movements and with a series of short stops before the text using a primitive method since he could only observe what he saw in front generating several debates about what is done when reading and allowed to establish a new method of work. In 1908, another expert named Edmund Huey published a scientific article on this subject creating a primitive device called Eye-Tracking that allowed to follow the gaze less subjectively since then things have advanced a lot and the devices are becoming more sophisticated when analyzing the visual path or fixations as can be seen in Figure 2, being these reliable and interesting.

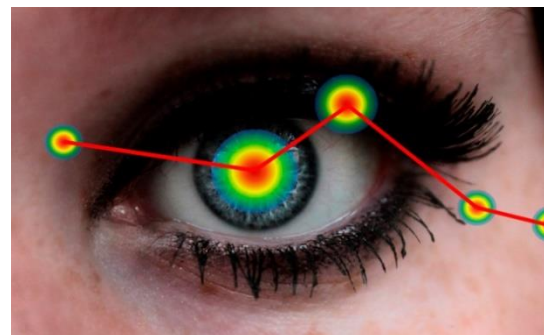




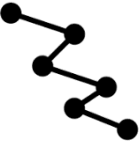
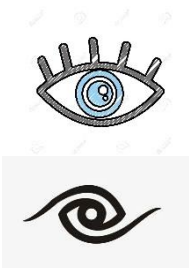
Figure 2. Heat maps.

Consequently, considering the new advances, it is possible to state that the Eye Tracker is a technological instrument that refers to a set of technologies that allow monitoring and recording of how a person looks at a certain essence or image, specifically in which areas he/she fixes his/her attention, for how long and in what order he/she follows in his/her visual exploration (Romero et al., 2018, p. 7). Likewise, authors Arbulú and Del Castillo (2013) state that using the Eye tracker involves the analysis of visual attention patterns in terms of fixations and saccadic movements, terms that refer to typical eye movements. Fixation describes the location of the gaze in a given static position, while saccadic movements allude to the change from one position to another (Arbulú & del Castillo García, 2013). Thus, it can be deduced that an eye tracker is a tool that records and evaluates the eye movements on which a person fixates. In addition, it records in particular

the periods in which the gaze remains longer on a certain point or the points in which the eyes move from one side to another, quickly or slowly known as saccadic movements.

In the same way, Gutierrez (2019), in Table 1 shows that eye movements are linked to fixation, saccadic movements, tracking, and resetting eye twisting.

Table 1. Types of information records

	Concept	Criteria
<p><b>Fixation</b></p> 	<p>It is the action by which it is possible to focus images or objects in the fovea. It occurs for about 300 msec, during which time the eye remains relatively immobile. Data on duration and frequency can be obtained from fixation. It is also linked to the study of attention.</p>	<p>Fixation is the action of remaining the gaze fixed on the same place for a certain time to take in information.</p>
<p><b>Saccadic movements</b></p> 	<p>These are small, rapid, and precise jumps subject to both voluntary and involuntary or induced control, responsible for the recognition and processing of visual information, and associated with head movements.</p>	<p>Saccadic movements or saccades are those simultaneous or rapid movements made by the eyes when they move from one point to another in space.</p>
<p><b>Follow-up</b></p> 	<p>These are slow conjugated tracking eye movements aimed at maintaining fixation on a moving target.</p>	<p>The tracking or also considered a visual path is the sum of fixations and saccades. Movement made with the eyes to fully appreciate the object of study.</p>
<p><b>Restoration of eye torsion</b></p> 	<p>This movement was discovered by a group of scientists in 2016. It is synchronized with blinking, helps the eye readjust after a twist is generated, and allows the image to stabilize. It occurs automatically when blinking.</p>	<p>Restoration of eye twisting deals with the rapid closing and opening of blinks, i.e., it is possible to analyze the greater and lesser demand for attention in terms of the object of study.</p>

Source: Own elaboration based on Gutierrez (2019).

Advertising in the purchase decision

When reviewing social networks or watching a program on television, advertising is present 24 hours a day and is considered a phenomenon similar to oxygen for the

environment, but to consumerism, since advertising is from home to any destination. According to Guerra (2019), in marketing and specifically, promotion, it is necessary to consider that the corporate image is relevant to define a differentiating value proposition from other businesses that

are within the industry, even more so for the positioning of the brand in customers, thus complementing the interests of the organizations.

At the moment, an advertisement is shown before the retina of the eye, some areas of the brain are intensely activated, however, this is an inherent condition of the human being, and it does not mean that leaving a trace of the advertisement in the brain, the consumer compulsively acquires the article or product exposed for sale. It is here where the key to neuromarketing lies in the manipulation of the study of the brain, accessing the areas where the desire to buy is concentrated (Velasco, 2011). In this way, neuromarketing and advertising are particularly emotional, and although

many customers indeed believe that the campaigns that are exposed by the various brands respond to rational analysis and studies, it is not so, since emotions are those that guide and accompany consumers in making a purchase decision.

Relevant elements in advertisements

The main function of advertisements is to publicize the product or service that a company offers, if this is done properly and subtly it will attract more customers to the company; these ads must have relevant information that captures the attention of customers, in addition to being creative and achieving interaction with them. Table 2 shows the elements that an advertisement should contain (Mesa, 2015).

Table 2. Advertising Elements

ELEMENTS	CHARACTERISTICS
<b>Bullet</b>	It is characterized by being a phrase that has attractive elements for the public. They can also summarize, in a few words, the essence of the message. That is to say, it synthesizes the nature that contains the advertisement and the details that accompany it, managing to extract to the minimum the idea that is wanted to be communicated
<b>Header</b>	The main idea should be expressed here. It is important that its structure is not too elaborate or contains many punctuation marks (such as periods and commas), it is also necessary that it is not too short, since, in general, it provides a complete idea of its purpose.
<b>Logo</b>	Although it may seem basic to include, it is necessary to include it, because if it is missing, the public could be confused about the company that is providing a service or product. They are usually located in the upper corners. The location of the logo is of utmost importance in advertising campaigns since it shows which company is in charge of the advertisement and it is easier to identify the product.
<b>Slogan</b>	The catchy phrase must allude to a product, and cannot be forgotten. The slogan revolves around the product that is offered and how it performs with people. It should be no longer than seven words and should not talk about the features or benefits of the product, but rather focus on how the customer perceives the product or service.
<b>Information</b>	This approach should provide good information about everything that is being advertised, it will give the customer a better concept and will not have doubts about the product or service that is being offered. On the other hand, this point also refers to all contact information for example if an offer is being announced, it should contain what it consists of, and which stores and products are participating.

**Illustrations**

Images are eye-catching for the public, they have the virtue of transmitting a message without the use of words. Illustrations must match the message to be conveyed and be of high resolution.

Source: Own elaboration.

**Communication persuasion**

Persuasion is a type of communication that is characterized by being intentional, having specific objectives, and pursuing the creation, decrease, increase, or conversion of opinions, attitudes, and/or behaviors of the target audience (D'Adamo & Freidenberg, 2007). When speaking of persuasion, this refers to thoughtful and conscious communication towards an individual, since its objective is to reach the individual's mind and influence at the moment of making a purchase decision.

Among the effects of persuasion are the creation of opinions and attitudes where they did not exist before, the increase or decrease of the intensity of pre-existing attitudes, or the operation of conversion effects by shifting opinions from one position to its opposite (D'Adamo & Freidenberg, 2007). That is to say that through the implementation of messages which are endowed with adequate arguments, a person's attitude can be changed since this makes him/her believe or express opinions that at the beginning he/she did not even think or believe.

**Methodology**

The research uses the deductive method because the analysis is made from the general to the particular, in this case, starting from neurosciences to identify the level of persuasion, which was supported in a bibliographic way, information was obtained from more than 40 primary sources such as books, articles, and specialized web. The type of research is quasi-experimental because it was carried out with biometric equipment (Eye Tracker) in the Neurolab laboratory of the Escuela Superior Politécnica de Chimborazo (ESPOCH), in which one or more independent variables were intentionally manipulated within a control situation created by the researchers (Escribano, 2004, p. 348).

The research is descriptive since it works on relating the reality of situations, events, people, groups, or communities that were approached and analyzed, and the processes involved in the analysis have been defined. It also has a qualitative approach that focuses on the collection of mainly verbal information at the place of measurement. Then, the information obtained is analyzed in an interpretative, subjective, impressionistic, or even diagnostic way and a quantitative approach gathers information that could be measured, providing numerical values from surveys, experiments, and interviews with concrete answers to perform statistical studies and see how their variables

behave (Garcia, 2011). In addition, an analytical method was used at the time of making a diagnosis and analysis of the information that was collected in such a way that conclusions could be drawn, as well as to establish a proposal that would benefit the solution of a problem and the development and organizational growth.

The unit of analysis that was taken into account to implement the survey and conduct the study with the Eye tracker was only women of the Economically Active Population (EAP) with occupation, people who have a steady job and maintain purchasing power in the urban parishes of the city of Riobamba. To calculate the sample, the data for 2013 was taken into account and projected for 2020, calculating a growth rate of 2% (INEC, 2010). The projection for 2020 was 32,837 women.

In the study with the biometric equipment, an eye tracker was applied to 10% of the total sample obtained, projecting 4 advertising images, i.e., 3 of each brand of perfumes and one combined them, the display time was 5 seconds per image to determine the level of persuasion in women's perfumery. In addition, to support the research, a survey of 380 women was conducted, consisting of 3 closed questions. The hypothesis to be tested is the following: An adequate distribution of the elements in the advertising design allows for defining the correct elements for an effective persuasion at the moment of the purchase decision.

**Results****Eye Tracking**

The patterns of visual exploration within an advertisement are known as "heat maps" or heat maps. Figure 3 shows the advertisements designed by the brands under study, while Figure 4 shows the most intense hot spots that indicate where the subjects of the study have most frequently fixed their attention, and Figure 5 shows the visual path taken by each one of them; parameters that categorically demonstrate that the Chanel brand has the best distribution of the elements that make up its advertising.



A: CAROLINA HERRERA

B: CHANEL

C: LANCOME

Figure 3. Perfume advertising



A: CAROLINA HERRERA

B: CHANEL

C: LANCÔME

Figure 4. Perfume advertising heat maps



A: CAROLINA HERRERA

B: CHANEL

C: LANCÔME

Figure 5. Visual Route.

In Table 1, they indicate that when testing the three advertisements of the companies at the same time, the Areas of Interest (AOI) stand out as Areas of Interest (AOI): the brand, the name of the perfume, and the figure of the product; these indicate that the Lancôme brand is the first to attract attention in an average time of 1.8 seconds; regarding the name of the perfume Carolina Herrera the average is 1.3

seconds, presenting an advantage over the other two; when comparing the time of the first fixation on the product itself, instead it is Chanel who is noticed first in an average of 0.58 seconds resulting to have better persuasion in consumers, all these results are in close coincidence with the survey conducted.

Table 1. Average time of the first fixation in the AOI measured in 5 seconds.

	CAROLINA HERRERA	CHANEL	LANCÔME
<b>BRAND</b>	1.83	2.89	1.80
<b>NAME</b>	1.30	2.34	3.06
<b>PRODUCT</b>	1.96	0.58	1.23

Source: Own elaboration

First fixation on name, brand, and product

In the previous study, all the elements of the advertisements under study stand out; however, it is necessary to know which of the three has a greater impact on consumers and persuades them immediately. For this reason, when implementing the Eye Tracker, in Figure 6, it was possible to identify the first fixation which, when carrying out this type of research and with this tool, will always be important to know because it will be technically known which is the element that attracts attention at first sight, being able to improve it if necessary or change it.

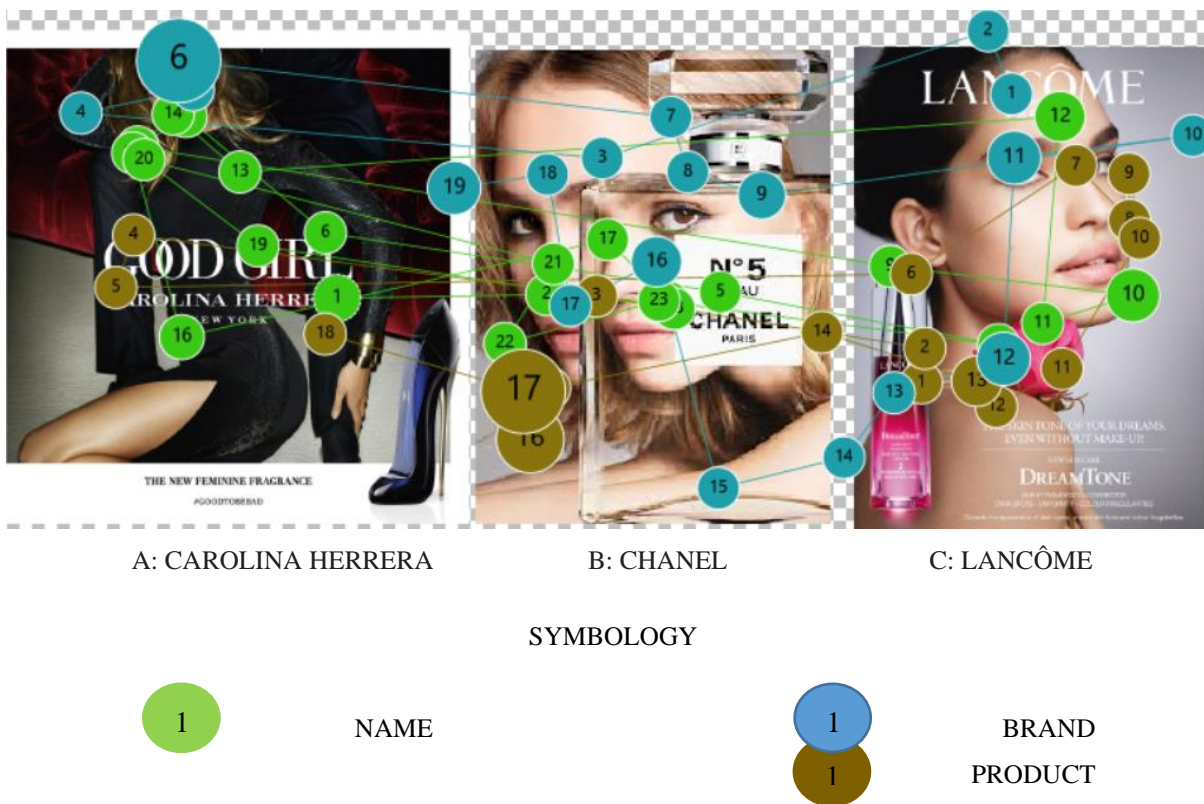


Figure 6. First fixation.

The value of the first fixation that serves for these studies is the shortest time and therefore demonstrates the interest in the advertising elements, the metric under study is the duration of the first fixation analyzed above (Table 2).

Table 2. Duration of the first fixation in the AOI, measured in 5 seconds.

	CAROLINA HERRERA	CHANEL	LANCÔME
<b>BRAND</b>	0.26	0.30	0.20
<b>NAME</b>	0.17	0.19	0.20
<b>PRODUCT</b>	0.22	0.20	0.16

Source: Own elaboration

The results show that in consideration of the perfume brand, it is Chanel who has the best duration with an average of 0.3 seconds despite the fact that in the previous metric we had that it was the last to be noticed; as for the name of the perfume the results between Chanel and Lancôme are very similar so they will be studied separately later and on the product itself Carolina Herrera has the best duration of the first fixation with an average of 0.22 seconds.

Average time of first fixation

For the analysis of the average time of first fixation, both Carolina Herrera and Lancome advertisements were used because in the previous study (Figure 7) it was found that both have an adequate distribution of their elements in the

advertisement. The average time of first fixation is intended to identify how long it takes the person to observe the element that most attracted his attention or impact. Furthermore, it is the time it takes each person to fix their attention for the first time on the object of study.



A: CAROLINA HERRERA B: LANCÔME

Figure 7. Perfume advertising



A: CAROLINA HERRERA B: LANCÔME

Figure 8. Heat maps



A: CAROLINA HERRERA B: LANCÔME

Figure 9. Visual Route

Given the similarity at the time of the first fixation between Carolina Herrera and Lancôme, a new comparison was made, this time only with the advertising of both brands (Figure 4). In this case, the difference is more favorable to

Lancôme with an average time of the first fixation of 1.44 seconds compared to the 2 seconds average of Carolina Herrera, concluding the advantage in this metric of Lancôme over the other two brands under study.

Average total duration of fixations



Figure 10. General visual tour of perfume advertisements.



Figure 11. General Perfume Advertising Heat Maps.

Table 3. Average total duration of fixations in the AOI, measured in seconds

	C.H	CHANEL	LANCOME
<b>BRAND</b>	0.30	0.35	0.53
<b>NAME</b>	0.28	0.25	0.42
<b>PRODUCT</b>	0.30	1.13	0.26

Finally, the total duration of fixations in the areas of interest is examined. In branding, Lancôme has the best average total fixations with 0.53; although it happens to be the last brand to be noticed out of the 3, it is the one that in general captures better the attention of the people under study; on the other hand, the total observation time in the names of the perfumes has its best time in Lancôme with 0.42 seconds; this is almost double the average time achieved by the competitors. When scrutinizing the average total observation time of the products in the advertising, the Chanel perfume far exceeds the time achieved by the other two products, with an average of 1.13 seconds, and it was also the product with the best time for the first fixation.

Interpretation of survey results

The survey shows that the advertising with the best visual components is Carolina Herrera with 47.37%, then Chanel with 31.58%, while the least preferred is Lancôme with 21.05%; at a glance, the results regarding the perception of the communicational products with the application of this technique also coincides with the test carried out through the eye tracker, where Carolina Herrera adequately constructs the

advertising elements that persuade users in the best way.

In the same way, it can be identified in the data that customers are fixed within a product advertisement 50%, the brand 34.2% and very few with 15.8% in the product name either because it is not very visible or does not call their attention, while 86.8% of people when purchasing a perfume is by the aroma that has the same, which means that very few of them to focus on the product design or brand rather are guided by the positioning of the brand over the years.

## Conclusions

Neuromarketing should be considered as a very important process within the organization for the design of advertising and help decision-making in consumers before purchase while making the purchase, and even more so after it, this can be concluded with the use of biometric equipment Eye tracker, identifying areas of interest in each of the advertisements of women's perfumes presented by the brands Carolina Herrera, Chanel, and Lancôme. Within the advertisements, it is necessary to mention that within the advertisements, it is important the location of each of the elements since if they are used in non-strategic places, they will not capture the attention and it will be difficult to be remembered by the clients.

On the other hand, in an advertisement, the most important element is the brand, which is why it must be simple, communicative, legible, and captures the attention of users. In this sense, carried out with the eye tracker and the survey it was possible to identify that the advertisement that best captured the attention of the participants is that of Carolina Herrera since the design of the same is better structured in its elements and does not contain points of distraction within the same. Therefore, the level of persuasion in people in the face of advertising is very important because it defines a buying behavior according to business interests and therefore the application of neuromarketing in perfumes is of utmost importance since it can be identified in which of the elements are more fixed and which attracts their attention and can achieve a better position in the mind of the consumer and improve sales through persuasion.

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