

## Neuromarketing as a platform for the internationalization of hotel services in Colombia

Neuromarketing como plataforma para la internacionalización de los servicios hoteleros en Colombia

Campo Elías López-Rodríguez\*  
Fernando Augusto Poveda Aguja \*

### ABSTRACT

The objective of this article is to analyze the incidence of neuromarketing in organizations that internationalize hotel services in the city of Bogota, Colombia, based on the importance of this activity as an emerging alternative for market research. Methodologically, Spearman's Rho correlation coefficient is used to associate the size of the companies studied with the influential factors provided by neuromarketing in the internationalization of hotel services in the Colombian capital. The main results determine that elements such as business development, eye-tracking, product and web page design as an application of neuromarketing for the internationalization of hotel services are fundamental for these organizations. It is concluded that ensuring a favorable user experience when obtaining the hotel service and facilitating service decision making through stimuli are relevant benefits of neuromarketing for the hotel market.

**Keywords:** Neuromarketing, internationalization, services hotels.

\* Research leader of the Specialisation in Financial Management programme of the Corporación Universitaria Minuto de Dios - UNIMINUTO. E-mail: clopezr3@uniminuto.edu.co Orcid: <https://orcid.org/0000-0003-4061-2979>

\* Posdoctorado en currículo, discurso y formación de investigadores, PhD. Educational in Technology education, Doctorando Administración de la universidad de la Salle, Corporación Unificada Nacional CUN , Chia Bogotá– Colombia. Fernando\_poveda@cun.edu.co , <https://orcid.org/0000-0001-8149-9963>

JOURNAL OF BUSINESS  
and entrepreneurial  
**studies**

ISSN: 2576-0971



Atribución/Reconocimiento-NoComercial- CompartirIgual 4.0 Licencia Pública Internacional — CC

**BY-NC-SA 4.0**

<https://creativecommons.org/licenses/by-nc-sa/4.0/legalcode.es>

Journal of Business and entrepreneurial  
Enero - Marzo Vol. 7 - 1 - 2023  
<http://journalbusinesses.com/index.php/revista>  
e-ISSN: 2576-0971  
[journalbusinessentrepreneurial@gmail.com](mailto:journalbusinessentrepreneurial@gmail.com)  
Receipt: 09 May 2022  
Approval: 12 November 2022  
Page 20-35

## RESUMEN

El objetivo de este artículo es analizar la incidencia del neuromarketing en las organizaciones que internacionalizan servicios hoteleros en la ciudad de Bogotá, Colombia, a partir de la importancia de esta actividad como alternativa emergente para la investigación de mercados. Metodológicamente, se utiliza el coeficiente de correlación Rho de Spearman para asociar el tamaño de las empresas estudiadas con los factores influyentes que aporta el neuromarketing en la internacionalización de los servicios hoteleros en la capital colombiana. Los principales resultados determinan que elementos como el desarrollo empresarial, eye-tracking, diseño de producto y página web como aplicación del neuromarketing para la internacionalización de servicios hoteleros son fundamentales para estas organizaciones. Se concluye que asegurar una experiencia favorable del usuario al obtener el servicio hotelero y facilitar la toma de decisión del servicio a través de estímulos son beneficios relevantes del neuromarketing para el mercado hotelero.

**Palabras clave:** Neuromarketing, internacionalización, servicios hoteles.

## INTRODUCTION

From the perspective of Boz et al., (2017) the objective oneuromarketing is to analyse the mind of the consumer as a strategy to understand what they want, the decisions they make when making a purchase and to be able to carry out marketing strategies that are satisfactory; Hence Lim (2018) highlights that most of the thoughts, learning and emotions are produced at an unconscious level, and in traditional marketing, most of the statements are verbal, unlike the inputs obtained from neuromarketing, being an activity that is also known as the study of the brain and the influence of this when making a purchase, this supported in neuroscience that studies the functioning of the brain and nervous system (Meyerding & Mehlhose, 2020). Ortegón-Cortázar & Rodríguez (2016) highlight the high relevance of emotions in marketing as an organisational function; it is for this reason that the sciences are so important for marketing, especially neuroscience, given that it allows us to know how much attention the consumer is paying, to determine preferences and with this, to develop a more effective marketing strategy with potential buyers (Neme-Chaves & López-Rodríguez, 2021).

According to Monfort Barboza et al., (2013), in order for hotels to optimise their market share, it is necessary to know the public and innovate in their relationship processes with consumers in order to increase customer satisfaction, which is closely linked to marketing and the value proposition of these business offers.

In 2019 the services sector had encouraging figures, as for 2017 Colombia's services exports reached USD 9,536 million, for 2018 they were USD 10,617 million, and USD 10,589 million in 2019; however, in 2020 due to the COVID-19 contingency travel decreased drastically, and the hotel occupancy rate was 7.9% being lower by 43.7 percentage points with respect to May 2019 (World Bank, 2020).

It is not only important for the hotel sector the valuation of consumers, but also for the different existing offers in the consumer market, therefore, Shigaki et al., (2017) mention that if customers are dissatisfied with the good or service offered, they will not only stop buying it, but they will discredit it in front of others; Hence, an effective practice to recognise the true needs and desires and try to meet these perspectives would be implementing neuroscience technologies to marketing, considering that satisfying the customer and the value he gives to the product is essential to manage and maintain relationships with the consumer (Kotler & Armstrong, 2012).

Considering the above, the following question arises: What is the impact of the use of neuromarketing activities in the commercial development of organisations that internationalise hotel services in Bogotá Colombia? To do so, it is necessary to develop a conceptual approach associated with neuromarketing and the internationalisation of services, characterise the level of importance of the factors associated with neuromarketing in organisations that internationalise hotel services in the Colombian capital, correlate the factors that determine the incidence of neuromarketing in the organisations studied according to their size, and finally determine the benefits that the implementation of neuromarketing activities can bring in organisations that wish to internationalise hotel services in Bogotá Colombia.

Veloso et al., (2016) understand neuromarketing as a transdisciplinary field of knowledge, which represents the interaction of areas such as anthropology or psychology specialising in neuroscience to study the consumer, which is understood as the adaptation of behavioural methods and theories, combined with neuroscientific theories and modern psychology (Stasi et al., 2018). Neuromarketing is currently an emerging field in marketing research, as it studies the sensory and cognitive response to advertising and marketing stimuli (Sreedevi et al., 2013).

Consumer neuroscience is presented as a new case of study and approach to markets, as it is a research approach that makes use of neuroscientific procedures (Shigaki et al., 2017), hence Sebastian (2014) asserts that marketing stimuli influence the moment of decision to purchase a product, which can be measured in brain wave patterns and acute emotions. Neuromarketing is considered a fascinating technique to get into the consumer's mind and find out what they want, due to the application of neuroscientific technology (Ruanguattanun, 2014).

According to Rivas-Vallejo & Guijarro-Cagua (2017) neuromarketing in addition to being a strategy for market research, provides the necessary information to design products and investigate consumer behaviour for the success of companies; as it could help organisations in their development and innovation with the objective information it provides to understand the needs and desires of their customers (Burgos-Campero &

Vargas-Hernández, 2013). Some well-known companies are known to have ventured into the topic of neuromarketing with the aim of recognising the emotions of their consumers when using a product or viewing advertising (Castro-García & Loo-Zambrano, 2020).

For Salas (2018) neuromarketing studies arise at the time when the human being is considered as an emotional and rational being, not as only one of the two; and it has been shown that consumers usually make their purchasing decisions by their unconscious, so it is necessary that the company activates subconscious emotions through their products or advertising (Mendoza-Vargas, 2018). This is similar to the comments of Canorea-Tiralaso & Cristofol-Rodríguez (2018) who state that neuromarketing guarantees the in-depth study of emotions in the individual when it comes to consumption; in decision-making, it is observed that, for the buyer, consumption is emotional rather than a rational decision (Veloso et al., 2016). Table 1 lists different conceptual positions on neuromarketing

**Table 1.** Definitions of neuromarketing

Author	Definitions
Rivas-Vallejo & Guijarro-Cagua. (2017)	Neuromarketing is a strategy that serves to decode and understand the mind and behaviour of every consumer, thus finding needs and satisfying them.
Salas (2018)	Neuromarketing is the fusion of marketing and neuroscience and aims to study the factors that lead a consumer to the process and completion of a purchase.
Stasi et al. (2018)	Neuromarketing refers to commercial interest in tools such as electroencephalography (EEG) and imaging techniques such as functional magnetic resonance imaging (fMRI) to understand consumer behaviour.
Calderón & Rondón (2016)	Neuromarketing is the process of incorporating improvements in marketing and neuropsychology.
Castro-García & Loo-Zambrano, (2020)	Technological changes and innovations have impacted marketing, giving rise to neuromarketing.
Kumar & Singh (2015)	Neuromarketing uses consumers' brains for research in a commercial context, making it a shortcut for advertisers, as probing into the minds of customers is facilitated.
Mañas-Viniegra et al., (2020)	Neuromarketing makes it possible to recognise the reactions of customers in different situations, in order to develop strategies to retain and attract the market.
Ferrer-López (2020)	Neuromarketing could be the answer to pricing a product correctly and finding out how much the customer is willing to pay for a business offer.

Source: own elaboration

The information in the human brain is complex, which is why technologies are used to obtain more data on what is happening in the psyche, depending on the stimuli received (Casado-Aranda et al., 2021). Based on the above, Bastiaansen et al. (2018) think that neuroscience, together with marketing and psychology have provided new strategies to analyse consumer behaviour in order to create tactics and competitive advantages. Veloso et al., (2016) explains that in neuromarketing it is not only dispensable to use classical data collection elements, it is necessary to take into account the complexity of the human brain and how it works. Some of the main neuromarketing techniques are functional Magnetic Resonance Imaging (fMRI), encephalography (EEG), Magneto Encephalography (MEG) and Tomography (PET) (De Andreis, 2012).

Neuroimaging techniques such as fMRI, EEG and MEG are excellent methods for collecting information, being more efficient and faster than conventional methods (Niedziela & Ambroze, 2021). With this, Burgos-Campero & Vargas-Hernández, (2013) state that fMRI observes changes in cerebral blood flow by means of a scanner while the individual is exposed to stimuli. According to Ares & Vidal (2021) fMRI together with EEG are methods used to measure neurophysiological activity, which consist of calculating neuronal activity when photographic stimuli are received.

One difference between fMRI and EEG is that fMRI is reliable when dealing with the inner brain, while EEG has limited spatial resolution (De Andreis, 2012). Coca Carasila (2010) comments that EEG captures the electrical currents produced by neurons when exposed to a stimulus, whether it is a product or a TV commercial via electrodes. MEG is very similar to EEG, but it senses the magnetic fields of neurons, i.e. it records the magnetic fields that are generated by the brain's electrical activity and has similar temporal resolution to EEG, but better spatial resolution (Sebastian, 2014).

For Coca Carasila (2010) neuromarketing also implements the analysis of facial expressions, eye tracking and skin behaviour. There are tools such as Eye Tracking, which indicates where the consumer's attention is most focused and, with the help of other technologies, records information about sensations and emotions in a negative or positive way (Dos Santos et al., 2015). Mañas-Viniegra, Núñez-Gómez & Tur-Vines (2020) also mention Galvanic Skin Response (GSR) as a neuromarketing technique that records areas of interest according to a subject's eye movements (AOI). Similar to the above, bioelectrical activity is also mentioned, which is known to easily capture through the skin the emotion and attention paid to an advertisement or other stimulus (Ferrer-López, 2020).

Gani (2017) states that the internationalisation of services could be a boost for the economic competitiveness of a country; services, especially for emerging countries, are a platform for their economy to grow, and there is recognition of the country brand at the international level (López-Rodríguez & Neme-Chaves, 2021). For Dávila et al., (2014) these intangibles contribute to the generation of employment and the development of the productivity of nations, although in some developing countries internationalisation is

difficult due to the lack of cooperation between companies and foreign countries (Moreno et al., 2017; López Rodríguez & López Ordoñez, 2022).

Trade in services has grown because it represents a large amount of employment in developed economies and reduces the balance of payments deficit (Barcenilla, 2005). As commented by López et al., (2014), the services sector was previously known as a sector of low innovation and productivity, except for services related to tourism and transport. For the internationalisation of services, it is important to take into account the product to be offered and the specific characteristics it needs for a successful export process (Salazar et al., 2012).

For Garay et al., (2019) there is a need for companies to access new knowledge-intensive services that offer innovation and competitiveness, and with this, a need for internationalisation; the export of services is beneficial for innovation, since by reaching international commercial scenarios, new markets can be covered that allow the life cycle of services to be increased (Grüning, 2018); Therefore, it is stated that some important variants for the successful internationalisation of services are the management of foreign languages and promotion and investment policies, as well as labour legislation (López-Rodríguez et al., 2021).

One of the main reasons for the internationalisation of services is the reputation, positioning, reliability of the company and market diversification (Sobral et al., 2019) and according to Barcenilla (2005) these exports of services are closely linked to three fundamental factors: relative prices, exchange rate and income, since internationalising services involves certain difficulties, such as the valuation of intangibles, cost, the need for qualified personnel, equipment and externality (Gani, 2017).

As mentioned by Salazar et al., (2012), an important limitation for emerging countries is the provision of services internationally, due to the mobilisation of citizens between countries and the non-negotiated points of international agreements; in addition to the fact that companies in some countries do not have the appropriate technology to provide services, since most of their processes are manual (Moreno et al., 2017). This is why it is pertinent to highlight that as service export figures increase, institutional reforms will have to be carried out so that there is a greater flow of internationalisation of services (Dávila et al., 2014).

## **MATERIALS AND METHODS**

The methodological structure of the research is initially based on a bivariate correlational scope, in which the factors that determine the incidence of neuromarketing in organisations that internationalise hotel services in Bogotá Colombia were identified, with which there is a significant level of association with the size of the company included in the study, this from a quantitative approach, being appropriate for the analysis of data extracted from a sample of a specific population, analysing behaviours or patterns that follow the participating subjects (Binda & Balbastre, 2013).

The selected population consisted of representatives of companies in the city of Bogotá whose economic activity is the internationalisation of hotel services. According to MinCIT (2020) the number of organisations with these characteristics is 668. Taking into account a confidence level of 95%, a margin of error of 5%, and according to the coefficient of positive and negative variation of 50% each, the sample applied was 245.

A survey was used to collect the information, which is divided into two parts: the first presents three items that aim to characterise the participating companies in terms of their size, time in the market and participation of the portfolio of services in the international market based on nominal questions; secondly, thirty-eight items are presented that characterise the variables that determine the incidence of neuromarketing in the organisations that internationalise hotel services in Bogotá Colombia based on a Likert scale (1: not at all important, 2: not very important, 3: neutral, 4: important, and 5: very important) organised into six dimensions with their respective variables.

The data collection was carried out in the second quarter of the year 2021 and the validation of the instrument was developed with a pilot test of 10% of the sample through the Cronbach's Alpha test, obtaining satisfactory results for each of its dimensions, as shown in table 2. Cronbach's Alpha is an index that allows the measurement of the relationship between two elements, i.e. it evaluates the volume or intensity of connection between certain parts (Oviedo & Arias, 2005). The statistical analysis was developed using the statistical package SPSS version 26.0.

**Table 2.** Reliability statistics for each dimension of the instrument.

Instrument dimensions	Cronbach's Alpha	Cronbach's based standardized items	Alpha on	Number of elements
Benefits of neuromarketing for organisations	0,722	0,721		6
Importance of neuromarketing techniques in the hotel industry	0,857	0,857		7
Relevance of possible applications of neuromarketing for the internationalisation of hotel services	0,685	0,696		5
Benefits of neuromarketing for customer relations in the hotel industry	0,787	0,793		6
Reasons for the use of neuromarketing in internationalisation processes	0,801	0,800		7
Keys to neuromarketing for international brand positioning	0,793	0,800		7

Source: own elaboration

## RESULTS

48% of the surveyed population refers to small hotels, micro-enterprises obtain 10 percentage points less than these, with a number between 11 and 50 employees; on the other hand, only 12% are medium-sized companies and the remaining 2% correspond to large companies, i.e. the majority of these companies have around ten employees and only 2% of these have more than 200 employees. Companies less than three years old and more than fifteen years old each accounted for 6% of the hotels surveyed; companies more than twelve years old and up to fifteen years old that have been open to the public accounted for 11%. In addition to this, companies older than nine to twelve years and those older than six to nine years differed by six percentage points, with the latter accounting for 35% of the 245 hotels surveyed, while the former accounted for 29%.

Few hotels have a contribution of more than 81% of their portfolio in the international market, with only 10% of the surveyed population fulfilling this element. Half of the hotels that participated in the instrument sample have a participation in the internationalisation of their services between 0% and 40%. On the other hand, between 41% and 60% of the total number of guests are foreigners for 27% of the 245 hotels surveyed.

For the correlational analysis, Spearman's Rho test was used, which is a "measure of linear association that uses the ranks, order numbers, of each group of subjects and compares these ranks" (Martínez Ortega et al., 2009, p. 6) and the factors that determine the incidence of neuromarketing in organisations that internationalise hotel services in Bogotá Colombia and their level of association with the size of the companies studied were taken into account. Highlighting that the significance (bilateral) of Spearman's Rho is equal to or less than 0.05, the null hypothesis is rejected and the alternative hypothesis is accepted, finding significant relationships at a level of 95% reliability and 5% error (Páramo-Morales, 2015). These associations are shown in table 3.

**Table 3.** Association between firm size and the influencing factors provided by neuromarketing in the internationalisation of hotel services in Bogotá Colombia.

Variable	Influencing factors in neuromarketing	Significance (bilateral)
Company size	It facilitates the sale of products without the need to look for other reasons to justify the purchase and convince the customer as a benefit of neuromarketing for organisations.	0,036
	Eye-tracking as a neuromarketing technique in the hotel sector.	0,007
	Product design as an application of neuromarketing for the internationalisation of hotel services.	0,006
	Web design as an application of neuromarketing for the internationalisation of the hotel service.	0,001
	Ensuring a favourable user experience when obtaining the service, as a neuromarketing benefit for hotel customers.	0,001



Helping to make service decisions through stimuli, as a neuromarketing benefit for hotel customers.	0,001
Global trade is growing faster than global output, as a rationale for the use of neuromarketing in internationalisation processes.	0,001
Accelerated technological change as a rationale for the use of neuromarketing in internationalisation processes.	0,036
Simplicity is the key to neuromarketing for international brand positioning.	0,038
Organic forms are well received, being a key neuromarketing tool for international brand positioning.	0,006
The brain needs to touch to believe, which is a neuromarketing key to international brand positioning.	0,010

Source: own elaboration

Table 4 shows the bivariate correlations between the factors that determine the impact of neuromarketing in organisations that internationalise hotel services and the size of the companies. The relationship ranges are determined as follows: from 0 to 0.25 is considered to be weak or null; from 0.26 to 0.50 is a weak link; between 0.51 and 0.75 is considered to be in the middle of moderate and strong; and the range between 0.76 and 1.00 represents a strong to perfect relationship (Martínez Ortega et al, 2009). Regarding the size of the firms and the "ease of selling products", a significant linear relationship was found, null and inversely proportional ( $r_s = -0.197$ ,  $p < 0.05$ ). The correlation between the variables "eye-tracking" as a neuromarketing technique ( $r_s = -0.252$ ,  $p < 0.01$ ), "product design" ( $r_s = -0.254$ ,  $p < 0.01$ ) and "organic forms are well received" ( $r_s = -0.254$ ,  $p < 0.01$ ) in terms of company size, had a much more significant, weak and inversely proportional relationship.

Regarding the factors determining the incidence of neuromarketing such as "website design" ( $r_s = -0.306$ ,  $p < 0.01$ ), "ensuring favourable user experience when obtaining the service" ( $r_s = -0.304$ ,  $p < 0.01$ ), "helping to make decisions regarding the service through encouragement" ( $r_s = -0.362$ ,  $p < 0.01$ ) and "world trade grows faster than world output" ( $r_s = -0.349$ ,  $p < 0.01$ ) have a much more significant, weak and inversely proportional correlation with linear firm size. In contrast, for factors such as "accelerated technological change" ( $r_s = -0.197$ ,  $p < 0.05$ ), "simple likes better" ( $r_s = -0.195$ ,  $p < 0.05$ ) and "the brain needs to touch to believe" ( $r_s = -0.240$ ,  $p < 0.05$ ) their relationship is significant, weak or null and inversely proportional.

For the correlation of "facilitates product sales" with factors such as "eye-tracking" ( $r_s = 0.486$ ,  $p < 0.01$ ), "website design" ( $r_s = 0.337$ ,  $p < 0.01$ ), "ensuring favourable user experience" ( $r_s = 0.484$ ,  $p < 0.01$ ), "helping to make decisions regarding service by stimuli" ( $r_s = 0.471$ ,  $p < 0.01$ ), "world trade is growing faster than world output" ( $r_s = 0.273$ ,  $p < 0.01$ ), "accelerated technological change" ( $r_s = 0.366$ ,  $p < 0.01$ ), "simple likes best" ( $r_s = 0.265$ ,  $p < 0.01$ ) demonstrate a much more significant, weak and directly proportional relationship; However, for "product design" ( $r_s = 0.557$ ,  $p < 0.01$ ) and "organic shapes are

well received" ( $r_s=0.515$ ,  $p<0.01$ ) the relationship is also more significant but is moderate to strong, and directly proportional to "makes it easier to sell products".

Regarding the correlation of "eye-tracking" with the factors "ensure favourable user experience" ( $r_s=0.577$ ,  $p<0.01$ ), "organic forms are well received" ( $r_s=0.551$ ,  $p<0.01$ ) is a highly significant relationship, moderate to strong and directly proportional; while for the factors "product design" ( $r_s=0.428$ ,  $p<0.01$ ), "website design" ( $r_s=0.386$ ,  $p<0.01$ ), "helping to make service decisions through stimuli" ( $r_s=0.475$ ,  $p<0.01$ ), "world trade grows faster than world output" ( $r_s=0.314$ ,  $p<0.01$ ), "simple likes better" ( $r_s=0.484$ ,  $p<0.01$ ), "the brain needs to touch to believe" ( $r_s=0.361$ ,  $p<0.01$ ), there is also a highly significant relationship, although weak and directly proportional.

In reference to "product design", having the factors "website design" ( $r_s=0.395$ ,  $p<0.01$ ), "ensuring favourable user experience" ( $r_s=0.407$ ,  $p<0.01$ ), "world trade is growing faster than world output" ( $r_s=0.326$ ,  $p<0.01$ ), "accelerated technological change" ( $r_s=0.361$ ,  $p<0.01$ ), and "organic forms are welcome" ( $r_s=0.405$ ,  $p<0.01$ ) reflect a highly significant relationship. However, for the factor "help to make decisions about the service by means of stimuli" ( $r_s=0.516$ ,  $p<0.01$ ), a very significant, moderate to strong relationship is directly proportional, and for the factor "simple things are more liked" ( $r_s=0.225$ ,  $p<0.05$ ), a significant, weak or null, but directly proportional relationship is observed; both elements correlated with "product design".

In the case of the variable "website design", covering the factors "ensuring favourable user experience" ( $r_s=0.368$ ,  $p<0.01$ ), "helping to make decisions regarding the service through stimuli" ( $r_s=0.385$ ,  $p<0.01$ ), "world trade is growing faster than world output" ( $r_s=0.325$ ,  $p<0.01$ ), "accelerated technological change" ( $r_s=0.385$ ,  $p<0.01$ ), "simple likes more" ( $r_s=0.456$ ,  $p<0.01$ ), "organic forms are welcome" ( $r_s=0.358$ ,  $p<0.01$ ), and "the brain needs to touch to believe" ( $r_s=0.352$ ,  $p<0.01$ ) a highly significant, weak and directly proportional relationship is found.

For the factors "world trade is growing faster than world output" ( $r_s=0.506$ ,  $p<0.01$ ), "accelerated technological change" ( $r_s=0.327$ ,  $p<0.01$ ), "simple likes more" ( $r_s=0.472$ ,  $p<0.01$ ) and "the brain needs to touch to believe" ( $r_s=0.370$ ,  $p<0.01$ ), a highly significant, weak and directly proportional relationship is observed, while a highly significant but moderate to strong and directly proportional relationship is observed for "helping to make service decisions through stimuli" ( $r_s=0.607$ ,  $p<0.01$ ) and "organic forms are well received" ( $r_s=0.667$ ,  $p<0.01$ ) in reference to "ensuring favourable user experience".

In reference to factors such as "world trade grows faster than world output" ( $r_s=0.362$ ,  $p<0.01$ ), "accelerated technological change" ( $r_s=0.314$ ,  $p<0.01$ ), "simple likes best" ( $r_s=0.371$ ,  $p<0.01$ ) and "the brain needs to touch to believe" ( $r_s=0.364$ ,  $p<0.01$ ), a very significant, weak but directly proportional relationship can be perceived in terms of "helping to make decisions regarding service through stimuli"; On the other hand, "organic forms are well received" ( $r_s=0.546$ ,  $p<0.01$ ) also shows a highly significant, but moderate to strong relationship with "helping to make decisions regarding the service through encouragement".

With regard to the factors "rapid technological change" ( $r_s=0.299$ ,  $p<0.01$ ), "simple things are more appealing" ( $r_s=0.483$ ,  $p<0.01$ ), "organic forms are welcome" ( $r_s=0.498$ ,  $p<0.01$ ), "the brain needs to touch to believe" ( $r_s=0.402$ ,  $p<0.01$ ), it can be noted that there is a fairly significant, weak and directly proportional relationship for the factor "world trade is growing faster than world output".

In the case of the factor "organic forms are welcome" ( $r_s=0.394$ ,  $p<0.01$ ), there is a highly significant, weak and directly proportional relationship; while the factor "the brain needs to touch to believe" ( $r_s=0.207$ ,  $p<0.05$ ) reflects a significant, weak or null and directly proportional relationship, all in reference to "accelerated technological change". The factors "organic forms are welcome" ( $r_s=0.436$ ,  $p<0.01$ ) and "the brain needs to touch to believe" ( $r_s=0.450$ ,  $p<0.01$ ) show a highly significant, weak and directly proportional relationship with reference to "simple is more pleasing". While the factor "the brain needs to touch to believe" ( $r_s=0.431$ ,  $p<0.01$ ) shows a fairly significant, weak and directly proportional relationship with respect to "organic forms are well received". From a theoretical point of view, neuromarketing has been emerging in marketing research because it analyses the sensory and cognitive responses of advertisements (Sreedevi et al., 2013); in addition, it is considered a necessary tool to design products that meet consumer needs (Burgos-Campero & Vargas-Hernández, 2013), due to its relevance for the analysis of the emotions of individuals at the time of purchasing goods and services (Velooso et al., 2016). Neuromarketing is recognised for its ability to obtain accurate information, unlike other traditional market research methods (Mañas-Viniegra et al., 2020; Nilashi et al., 2020; Ramsøy, 2019; Rodríguez et al., 2022).

Neuromarketing techniques tend to be more efficient and faster than traditional methods for consumer studies (Quaresima & Ferrari, 2019); in addition to this, they have the facility to analyse their emotional traits being an added value for the identification of elements that influence the purchase decision of each consumer (Stasi et al., 2018); however, a limitation of these techniques is that they are carried out in laboratories and it is possible that the response in individuals changes in real situations (Meyerding & Mehlhose, 2020).

This approach to neuromarketing allowed us to identify it as a strategy that works as an interpreter to understand the mind and behaviour of the individual when buying, allowing us to find their needs in a categorical manner for the full satisfaction of these (Rivas-Vallejo & Guijarro-Cagua, 2017; Niedziela & Ambroze, 2021), which is why this practice works as an ally for organisations in their development and innovation with the objective information it provides to understand the real demands of their markets (Lim, 2018; López-Rodríguez et al., 2020).

Particularly in this research process, it was relevant to analyse the incidence of neuromarketing in organisations that internationalise hotel services in the Colombian capital, in terms of its implementation in the different processes carried out by these, identifying their perception regarding the benefits of neuromarketing, the importance of its techniques in the hotel sector, the relevance of its possible applications for

internationalisation, its benefits for customers in the hotel sector, fundamentals of its use in internationalisation and its keys to international brand positioning.

Taking into account the benefits of neuromarketing, knowing and analysing the processes that occur consciously and unconsciously in the brain of customers during the purchasing process is an important factor for organisations that provide hotel services; However, for them, it is even more relevant to facilitate the sale of products without the need to look for other reasons to justify their purchase, to recognise the subconscious of customers and effectively prepare offers, to optimise and integrate advertising resources and techniques in a more rational and logical way, to provide more tangible and irrefutable data than traditional measurement techniques, and to adapt products and advertising campaigns to the real needs of consumers.

In terms of the importance of neuromarketing techniques for the hotel sector, it became clear that methods such as electroencephalography, magnetoencephalography, functional magnetic resonance imaging and positron emission tomography could be relevant for these organisations for their commercial development, while eye-tracking, galvanic skin response and cardiac rhythm are much more important techniques. Branding, product design, hotel and facility design, advertising and website design are all very important factors in the possible applications of neuromarketing for the internationalisation of hotel services.

Among the benefits that neuromarketing could bring to customers, the way in which it could improve the shopping experience, strengthen brand communities, strengthen the customer's relationship with the company and also with the tourism sector, avoid the use of surveys or intrusive tools, ensure a favourable user experience and help to make decisions associated with the service by means of stimuli, which are aspects that are very important for hotel organisations, are highlighted. It was also evident that each of the fundamentals for the use of neuromarketing in internationalisation processes had the highest level of importance for hotels, highlighting that global trade is growing faster than global output, that the structure of global trade has changed, that there are differentiated products for particular markets, that there are relatively more open markets and better informed and more demanding consumers, in addition to the existing accelerated technological change.

## CONCLUSIONS

The ability to understand consumer preferences, whether consumers like simpler products, whether organic forms are well received by their brains, whether sensory and emotional elements are more important than functional ones in the purchasing process, were extremely important aspects for the organisations studied with respect to international brand positioning, elements that can be managed from neuromarketing. Using Spearman's Rho correlation, some factors were identified that determine the impact of neuromarketing in the organisations studied according to their size. Firstly, the factors "website designs", "ensuring favourable user experience", "helping to make decisions about service through stimuli" and "global trade grows faster than global

product" stand out, obtaining a very significant correlation. The implementation of neuromarketing activities in organisations wishing to internationalise hotel services in the capital of Colombia could bring benefits such as adapting advertising campaigns and services offered to the real needs of the consumer, taking into account that intangibles will be offered to customers from different parts of the world with different customs and cultural tastes. In addition, the resources invested in advertising campaigns by these companies would have better results since the study of the consumer's mind would provide fundamental inputs for their development and application. As mentioned by Gountas et al. (2019), neuromarketing could reduce economic losses for companies through the execution of activities associated with integrated marketing communications by analysing users' consumption decisions, which would allow them to understand their preferences in order to design and implement successful commercial strategies.

Among the limitations that arose in the development of the research, it is worth highlighting that due to COVID-19, the application of the instrument was mostly carried out via the web and it is estimated that the responses obtained may not have been objective due to the labour situation: in addition to this, some of the small and medium-sized hotels were not aware of the neuromarketing techniques mentioned in the survey. Several of the hotels stated that, due to the pandemic and the decrease of the market in the sector, occupancy by foreigners was very low and therefore the number of employees had to be reduced.

Based on this research, methodological strategies are proposed aimed at developing experimental studies based on different neuromarketing techniques, with the purpose of obtaining information and establishing alternative tactics aimed at products, prices, distribution activities and advertising processes that allow the value proposition to be strengthened in terms of the market. Likewise, it is pertinent to deepen the study of the internationalisation of services with the aforementioned neuromarketing techniques focused on the tourism sector, focusing on regions with significant market growth, so that companies have a better scope and use of resources in their integrated marketing communications.

## REFERENCES

- Ares, G., & Vidal, L. (2021). Commentary on "The future of consumer neuroscience in food research" by Niedziela and Ambroze. *Food Quality and Preference*, 92, 104176.
- Banco Mundial (2020). Exportaciones e Importaciones de servicios en Colombia. Recuperado de [https://datos.bancomundial.org/indicador/BX.GSR.NFSV.CD?end=2019&locations=CO&name\\_desc=false&start=2009](https://datos.bancomundial.org/indicador/BX.GSR.NFSV.CD?end=2019&locations=CO&name_desc=false&start=2009)
- Barcenilla, S. (2005). Exportaciones de servicios: evidencia empírica para los países de la Unión Europea, Información Comercial Española. *Revista de Economía*, número 824, 39-48

- Bastiaansen, M., Straatman, S., Driessen, E., Mitas, O., Stekelenburg, J. & Wang, L. (2018). My destination in your brain: A novel neuromarketing approach for evaluating the effectiveness of destination marketing. *Journal of destination marketing & management*, 7, 76-88.
- Boz, H., Arslan, A. & Koc, E. (2017). Neuromarketing aspect of tourism pricing psychology. *Tourism Management Perspectives*, 23, 119-128.
- Binda, N. y Balbastre, F. (2013). Investigación cuantitativa e investigación cualitativa: buscando las ventajas de las diferentes metodologías de investigación. *Revista de Ciencias económicas*, 31(2), 179-187
- Burgos-Campero, A. A. & Vargas-Hernández, J. G. (2013). Analytical approach to neuromarketing as a business strategy. *Procedia-Social and Behavioral Sciences*, 99, 517-525.
- Calderón, J. A., & Rondón, I. G. (2016). Prospectiva de Marketing, Neuromarketing y Programación Neuro Lingüística. *Revista Ciencia UNEMI*, 9(19), 99-105.
- Canorea-Tiralaso, H. & Cristofol-Rodriguez, C. (2018). La felicidad en publicidad desde la perspectiva del neuromarketing. *Revista de la asociación española de investigación de la comunicación*, 5(18), 47-57.
- Casado-Aranda, L. A., Sánchez-Fernández, J. U. A. N., & Bastidas-Manzano, A. B. (2021). Tourism Research after the COVID-19 Outbreak: Insights for More Sustainable, Local and Smart Cities. *Sustainable Cities and Society*, 103126.
- Castro-García, P. E., & Loor-Zambrano, H. Y. (2020). El Neuromarketing en la Empresa Funeraria Jardines de Manabí SA. *Dominio de las Ciencias*, 6(2), 4-24.
- Coca Carasila, A. M. (2010). Neuromarketing: Las Emociones Y El Comportamiento De Compra. *Perspectivas*. 25 (2010), 5-13.
- Dávila, M. A., Moral, E., & Muñoz, M. (2014). La Exportación de Servicios Intensivos en Conocimiento en los Países de la OCDE. Análisis Empírico de sus Determina. *Revista de economía mundial*, (38), 147-173.
- De Andreis, A. (2012). Neuromarketing: Una mirada a la mente del consumidor. *Ad-Gnosis*, 1(12), 51-57.
- Dos Santos, R. D., De Oliveira, J. H., Rocha, J. B., & Giraldi, J. D. (2015). Eye tracking in neuromarketing: a research agenda for marketing studies. *International journal of psychological studies*, 7(1), 32.
- Ferrer-López, M. (2020). Neuromarketing y la medición del efecto de la publicidad de influencers en adolescentes. *Revista mediterránea de comunicación*. 11 (2020), 241-259.
- Gani, A. (2017). The logistics performance effect in international trade. *The Asian Journal of Shipping and Logistics*, 33(4), 279-288.
- Garay, U., González, M., & Rosso, J. (2019). Country and industry effects in corporate bond spreads in emerging markets. *Journal of Business Research*, 102, 191-200.
- Gountas, J., Gountas, S., Ciorciari, J., & Sharma, P. (2019). Looking beyond traditional measures of advertising impact: Using neuroscientific methods to evaluate social marketing messages. *Journal of Business Research*, 105, 121-135.

- Grüning, P. (2018). Heterogeneity in the Internationalization of R&D: Implications for Anomalies in Finance and Macroeconomics. *Finance Research Letters*, 26, 132-138.
- Kotler, P. & Armstrong, G. (2012). Marketing. Decimocuarta edición. Ed. Pearson Educación. México.
- Kumar H. & Singh P. (2015). Neuromarketing: An Emerging Tool of Market Research. *International Journal of Engineering and Management Research*. Volume-5, Issue-6. 530-535
- Lim, W. M. (2018). What will business-to-business marketers learn from neuro-marketing? Insights for business marketing practice. *Journal of Business-to-Business Marketing*, 25(3), 251-259.
- López, A., Niembro, A., & Ramos, D. (2014). La competitividad de América Latina en el comercio de servicios basados en el conocimiento. *Revista Cepal*, (113), 23-41
- López Rodríguez, C. E., & López Ordoñez, D. A. (2022). Financial education in colombia: challenges from the perception of its population with socioeconomic vulnerability. *Economics & Sociology*, 15(1), 193-204.
- López-Rodríguez, C. E., & Neme-Chaves, S. R. (2021). El employer branding en las organizaciones que internacionalizan servicios de operación logística en Bogotá Colombia. *Contaduría y Administración*, 66(2), 1-22.
- López-Rodríguez, C. E., Moscoso-Aldana, R. A., & Pulido-Ríos, R. V. (2021). Mercadeo Verde: Protagonismo en la Internacionalización de Productos de Bioseguridad en Bogotá Colombia. *Producción+ Limpia*, 16(2), 47-62.
- López-Rodríguez, C. E., Poveda-Aguja, F. A., Beltrán-Bejarano, D. V., & Cárdenas-Calderón, L. F. (2020). Internationalization of Contact-Center Services: A Look to Colombian Organizations. In *European Conference on Knowledge Management* (pp. 484-XIX). Academic Conferences International Limited.
- Mañas-Viniegra, L., Núñez-Gómez, P., & Tur-Vines, V. (2020). Neuromarketing as a strategic tool for predicting how Instagramers have an influence on the personal identity of adolescents and young people in Spain. *Heliyon*, 6(3), 35-78.
- Martínez Ortega, R. M., Tuya Pendás, L. C., Martínez Ortega, M., Pérez Abreu, A., & Cánovas, A. M. (2009). El coeficiente de correlación de los rangos de Spearman caracterización. *Revista Habanera de Ciencias Médicas*, 8(2), 1-19.
- Mendoza-Vargas, E. Y. (2018). Estudio del Neuromarketing: asignatura pendiente en universidades ecuatorianas. *Polo del Conocimiento*, 3(8), 365-382.
- Meyerding, S. G., & Mehlhose, C. M. (2020). Can neuromarketing add value to the traditional marketing research? An exemplary experiment with functional near-infrared spectroscopy (fNIRS). *Journal of Business Research*, 107, 172-185.
- MinCIT (2020). Colombia. 26 mayo de 2020. Recuperado de <https://www.mincit.gov.co/getattachment/1c8db89b-efed-46ec-b2a156513399bd09/Colombia.aspx>
- Monfort Barboza, M., Defante, L. R., Lima Filho, D. & Mantovani, D. (2013). Satisfacción del Consumidor de Servicios Hoteleros. *Estudios y Perspectivas del Turismo*, 22, 276-293.

- Moreno, S. E. Castell, O. P. & Ramírez, A. P. (2017). El sector servicios en Colombia: Una exploración de la relación entre innovación e internacionalización. *Dimensión empresarial*, 15(2), 117-140.
- Neme-Chaves, S. R., & López-Rodríguez, C. E. (2021). Employer branding an exploration of the field of knowledge from bibliometric indicators. *Suma de Negocios*, 12(26), 83-92.
- Niedziela, M. M., & Ambroze, K. (2021). The future of consumer neuroscience in food research. *Food Quality and Preference*, 92, 104124.
- Nilashi, M., Samad, S., Ahmadi, N., Ahani, A., Abumalloh, R. A., Asadi, S., ... & Yadegaridehkordi, E. (2020). Neuromarketing: a review of research and implications for marketing. *Journal of Soft Computing and Decision Support Systems*, 7(2), 23-31.
- Ortegón-Cortázar, L., & Rodríguez, A. G. (2016). Gestión del marketing sensorial sobre la experiencia del consumidor. *Revista de Ciencias Sociales (Ve)*, 22(3), 67-83.
- Oviedo, H. & Arias, A. (2005). Aproximación al uso del coeficiente alfa de Cronbach. *Revista colombiana de psiquiatría*, 34(4), 572-580.
- Páramo-Morales, D. (2015). La teoría fundamentada (Grounded Theory), metodología cualitativa de investigación científica. *Pensamiento & gestión*, (39), 1-7.
- Quaresima, V., & Ferrari, M. (2019). Functional near-infrared spectroscopy (fNIRS) for assessing cerebral cortex function during human behavior in natural/social situations: a concise review. *Organizational Research Methods*, 22(1), 46-68.
- Ramsøy, T. Z. (2019). Building a foundation for neuromarketing and consumer neuroscience research: how researchers can apply academic rigor to the neuroscientific study of advertising effects. *Journal of Advertising Research*, 59(3), 281-294.
- Rivas-Vallejo, C. E., & Guijarro-Cagua, M. A. (2017). Características del neuromarketing como herramienta de posicionamiento empresarial. *Polo del Conocimiento*, 2(2), 96-106.
- Rodríguez, C. E. L., Aldana, R. A. M., Lozada, N. A. R., & Cárdenas, W. J. A. (2022). Brand personality: a theoretical approach in the Latin American international trade scenario. *Revista Investigación, Desarrollo, Educación, Servicio y Trabajo*, 2(1).
- Ruanguttamanun, C. (2014). Neuromarketing: I put myself into a fMRI scanner and realized that I love Louis Vuitton ads. *Procedia-Social and Behavioral Sciences*, 148, 211-218.
- Salas H. J. (2018). Neuromarketing: Explorando la mente del consumidor. *Revista Científica de la UCSA*, 5(2), 36-41.
- Sebastian, V. (2014). Neuromarketing and evaluation of cognitive and emotional responses of consumers to marketing stimuli. *Procedia-Social and Behavioral Sciences*, 127, 753-757.
- Shigaki, H.B., Gonçalves, C.A. & Santos, C.P. (2017). Consumer Neuroscience and Neuromarketing: Potencial de adopción teórica con la aplicación de métodos y técnicas de neurociencia. *Revista Brasileira de Marketing*, 16 (4), 439-453.



- Sobral, F., Chambel, M. J., & Castanheira, F. (2019). Managing motivation in the contact center: The employment relationship of outsourcing and temporary agency workers. *Economic and Industrial Democracy*, 40(2), 357-381.
- Sreedevi, V., Jayasree, K. V., & Auguskani, P. L. (2013). Neuro marketing-An effective marketing strategy. *International Journals of Marketing and Technology*, 3(6), 63-70.
- Stasi, A., Songa, G., Mauri, M., Ciceri, A., Diotallevi, F., Nardone, G., & Russo, V. (2018). Neuromarketing empirical approaches and food choice: A systematic review. *Food Research International*, 108, 650-664.
- Veloso, C., Lara, J.E., Vale, E. & Pereira, J.R. (2016). Estado del arte de la publicación nacional e internacional sobre neuromarketing y euroeconomy. *Revista Brasileira de Marketing*, 15 (1), 28-41.