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**PAPER**

**A Systematic Literature Review of brand and neuroscience: Setting a research  
agenda**

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**ABSTRACT**

*The objective of this study is to investigate existing research on the intersection of brand decisions and neuroscience. To this end, a systematic literature review will be conducted following the PRISMA protocol, using Scopus and Web of Science as electronic databases.*

*After an initial search that yielded 544 documents, only 162 were selected for inclusion in the review. Preliminary results show a significant increase in publications over a span of just 10 years, indicating a genuine interest among researchers in these topics. Furthermore, to gain a more comprehensive and detailed understanding of these areas, mapping tools such as VOSviewer will be employed.*

*These initial findings encourage continued exploration in these areas, as they are highly promising and innovative.*

**Keyword:** Neuroscience, brand decision, systematic literature review, PRISMA, VOSviewer.

# 1 INTRODUCTION

The concept of branding has undergone significant evolution, and the way different brands engage with consumers has changed. According to (Oh et al., 2020) the evolution of brand focus has varied over time, leading to the identification of four distinct eras. The last and current one of these is known as the branding, from the 2000s to 2020. It aims to generate emotions and feelings in the consumer and foster a sense of belonging or community leading to a purchase.

Researchers have employed a variety of methods to understand consumer purchasing patterns. Among the qualitative methods, focus groups and in-depth interviews stand out, while surveys are prominent in the realm of quantitative methods. Researchers often combine both qualitative and quantitative approaches to achieve a more comprehensive and nuanced understanding of consumer behavior. However, these methods are often insufficient on their own (Morin, 2011). The integration of neuroscience provides a broader understanding of consumer emotions and allows for the quantitative and objective measurement of these emotions. While traditional methods focus more on metrics based on consumer responses, neuroscience emphasizes the involuntary physiological responses that consumers exhibit when faced with a stimulus (Walvis, 2008). This innovative method allows for a better understanding of those involuntary sensations (Yoon et al., 2012).

Currently, no studies compile all the research addressing the intersection of branding and neuroscience. Therefore, this work aims to understand the state of academic research, including the most cited authors, journals, and topics. For such purpose, we conduct a Systematic Literature Review. This approach organizes the existing knowledge in a structured way, synthesizing the methodologies used and it provides a comprehensive overview of the key current topics, while also highlighting potential future research directions (Paul & Criado, 2020).

Given this scenario, this our systematic literature review aims to achieve the following goals:

RQ 1: What is the current state of academic research on brand choice using neuromarketing techniques?

RQ 2: What journals, researchers, most relevant works, and neuromarketing tools are most commonly employed in the field of brand decision?

In order to achieve these objectives, the PRISMA protocol will be followed, along with the use of software tools to ensure a more comprehensive study.

Several significant contributions are anticipated from this work. The first is to provide an analysis of the evolution of current topics; understanding which subjects are most frequently addressed and their development over time will help identify the future direction of this research. The second contribution lies in the rigor maintained in the selection of databases for the Systematic Literature Review (Web of Science and Scopus) as well as in the protocol followed, PRISMA, which is expected to lend considerable relevance to the findings. The third contribution is that this work adds value not only to the field of business and management but also to other disciplines, such as psychology, computer science, and engineering, among others. Last but not least, future directions are proposed that will help identify gaps in the literature and emerging methodologies and research approaches, thus serving as a valuable guide for developing research in this area.

## 2 THEORETICAL FRAMEWORK

The field of neuromarketing has gained significant attention in recent years as researchers and practitioners seek to understand the underlying neural mechanisms that drive consumer behavior and brand choice (Alsharif et al., 2023). The current state of research in this domain is rapidly evolving, with the emergence of various neuroscientific tools and techniques being applied to the study of neuromarketing in social media (Vences et al., 2020) or communications (Casado-Aranda et al., 2023).

Brand choice is a complex process through which consumers determine their preference among various alternatives, basing their decision not only on tangible factors, such as the brand packaging or price (Krishnamurthi & Raj, 1988) but also on more intangible aspects, such as brand equity which elicit emotions experienced during the purchasing process. Brands that successfully evoke emotions in their consumers—whether through advertising campaigns, memorable user experiences, or fostering a sense of community—can significantly influence purchasing decisions (Whan Park & Macinnis, 2018).

Neuromarketing techniques can provide added value in order to understanding the insights of consumer behavior in product choice situations because it allows scientific to know consumers' desires, needs, and what they want to buy (Brenninkmeijer et al., 2020).

These techniques can be electroencephalogram (EEG), magnetoencephalography (MEG), functional magnetic resonance imaging (fMRI), near-infrared spectroscopy (NIRS) (Plassmann et al., 2007), eye-tracking, galvanic skin response (GSR), facial reader and heart rate variability (HRV) among others (Karmarkar & Plassmann, 2019; Verhulst et al., 2019). In addition, the field of consumer neuroscience has emerged as a complementary approach, which aims to integrate neuroscientific methods with classical marketing research tools in order to develop a more comprehensive understanding of consumer decision-making processes (Plassmann et al., 2015).

## 3 METHODS

With the aim of understanding the existing work in the areas of brand choice and neuroscience, we adopt the PRISMA protocol (Moher et al., 2009; Page et al., 2021). This protocol has been selected for its scientific rigor, reproducibility, and standardization. The PRISMA protocol is widely used to collect, evaluate, and synthesize research evidence while minimizing bias.

Two electronic databases were utilized for the literature review: Scopus and Web of Science (WoS). The choice of both Scopus and WoS stems from their status as multidisciplinary databases, which ensures that the review captures a broad and diverse range of relevant studies. Additionally, the journals indexed in these databases maintain high-quality standards, ensuring that the studies included in the review meet rigorous academic criteria (Paul & Menzies, 2023). Both Scopus and WoS provide citation data, allowing researchers to track the influence and impact of publications, which is crucial for identifying key works and understanding the development of knowledge within the field. Furthermore, WoS and Scopus are leading databases in this domain and are commonly employed in meta-analyses (Zhu & Liu, 2020).

The queries used to conduct a more specific search focused on brand decision-making and neuroscience tools (such as eye-tracking, electroencephalograms, or galvanic skin response). For the literature review, all works published before June 30, 2022, that met these queries and were included in the aforementioned databases were considered.

A final set of 544 papers containing these keywords was retrieved, with 266 belonging to WoS and 278 to Scopus. Of these documents, 107 were duplicates. After a preliminary screening, 278 documents were excluded due to either being in a language other than English or being of a type other than a paper, book chapter, or conference proceeding. After applying the relevance criteria — that documents should focus on brand or brand elements and should have a neuroscientific perspective — 162 documents were included for the review.

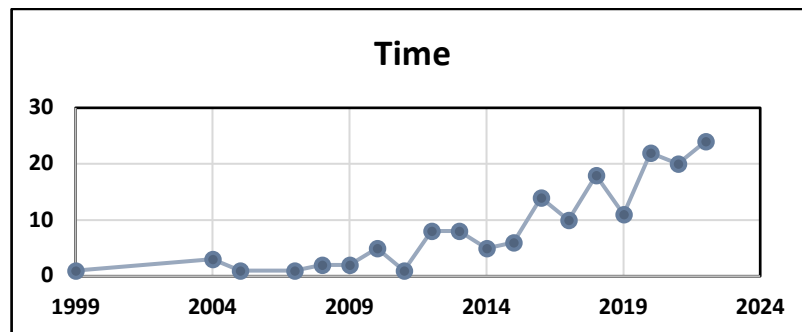
To address RQ1, a comprehensive analysis will be conducted to examine the rising interest in brand choice and neuroscience over the years, as well as the types of research designs commonly employed in this field.

Concerning RQ2, software tools such as VOSviewer will be utilized to identify and analyze the key elements that researchers associate with the topics of brand choice and neuroscience. VOSviewer is a mapping tool that can create co-citation and co-occurrence maps (van Eck & Waltman, 2010). This tool will facilitate visualization of the relationships and trends within the existing literature, contributing to a deeper understanding of the prevailing themes and gaps in the research.

#### 4 INITIAL RESULTS

The initial results of our study indicate a growing trend in research addressing the intersection of neuroscience and brand choice. Figure 1 depicts a significant increase in the number of publications since the emergence of the first article in 1999, by 2022. Since 2010, there has been a noticeable growth, reaching its maximum in 2022.

**Figure 1.** Evolution over the years



**Source:** Own elaboration

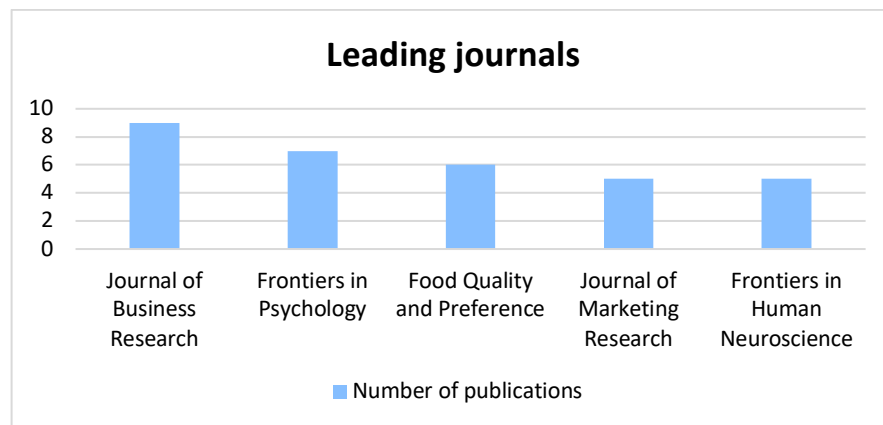
Based on the number of papers per year, data could be divided in two main periods: (i) from 1999 to 2010, where 15 papers are included and (ii) from 2011 to 2022, where 147 papers are included.

1. **1999 – 2010:** The growth is modest, with some peaks in 2004 (3 papers) and 2010 (5 papers), indicating early interest in the topic.
2. **2011 – 2022:** This period shows a remarkable increase in publications, reflecting a surge in research activity. Starting with 1 paper in 2011, the number of publications steadily climbs, reaching 8 in 2012 and maintaining this growth trajectory. Notably, from 2016 onwards, there is a significant spike in interest, with 14 papers published in 2016, escalating to 24 papers in 2022. The total for this period surpasses that of the previous one, highlighting a peak in scholarly engagement with the intersection of neuroscience and brand choice.

This evident growth in the number of papers published in one decade, suggests that this topic holds substantial relevance in the academic context, prompting numerous researchers to consider the need for in-depth exploration in future studies.

When we analyse the leading journals, we have to highlight 5: The Journal of Business Research, Frontiers in Psychology, Food Quality and Preference Journal of Marketing Research and Frontiers in Human Neuroscience. The Journal of Business Research is the leading journal in terms of the number of publications and the development of interdisciplinary research between branding and neuroscience, with a total of 9 papers. Frontiers in Psychology and Food Quality and Preference are also highly relevant in these areas, each offering a more psychological and sensory-focused approach, respectively. The former has a total of 7 published papers, while the latter has 6. Lastly, the Journal of Marketing Research and Frontiers in Human Neuroscience both have 5 publications each. These results highlight the multidisciplinary nature of this field of study.

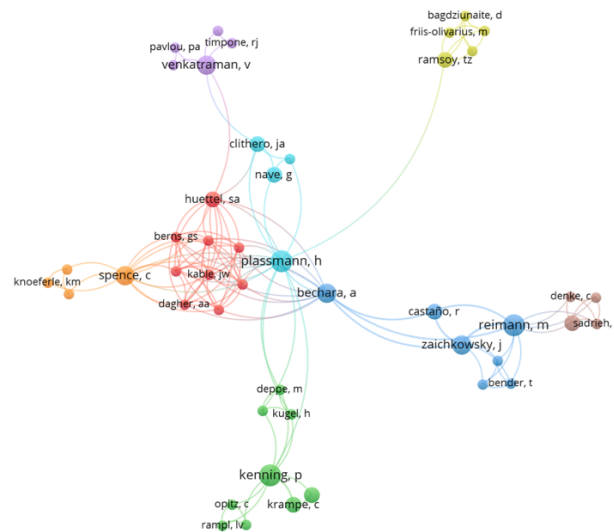
**Figure 2.** Leading journals



**Source:** Own elaboration

With the aim of identifying the most influential co-authors in publications related to neuroscience and brand decision-making, the software VOSviewer was used for analysis. The results reveal the presence of eight distinct clusters. Among them, Plassmann emerges as the most prominent author, establishing connections with four of these clusters. In second place, Bechara stands out due to his significant influence, linking to three of the eight main clusters. Finally, Spence ranks third in importance, being connected to two of the eight identified clusters. These findings underscore the importance of interdisciplinary collaboration within this field of study.

**Figure 3. Relevant authors**



**Source:** Own elaboration

## 5 RESEARCH AGENDA

To establish a research agenda that allows for the exploration of future directions arising from this study, three key lines of analysis are proposed:

- Analysis of the most researched industries in the relationship between brand decisions and neuroscience: This proposal aims to identify the industries that dominate the literature on brand decision-making from a neuroscientific perspective. In other words, it seeks to determine whether the most studied sectors correspond to food, fashion, cosmetics, or any other consumer areas. This analysis would not only help detect prevailing trends but also identify research gaps in less explored industries.
- Exploration of the most commonly employed research methods: Another research direction involves analyzing which methodological approaches are most recurrent in these studies. For instance, it could evaluate whether most research uses experimental designs or not. Additionally, it would be relevant to distinguish between studies conducted in controlled laboratory environments versus those collecting data in the field. Another key aspect would be to determine whether the designs are between-subjects, within-subjects, or mixed-designs, as well as the frequency with which quantitative and qualitative methodologies are combined, or if they focus solely on one. This would provide a comprehensive view of the dominant methods and the possibilities for methodological innovation in this field.
- Study of thematic evolution and future research projection: Finally, a future research direction is the analysis of thematic evolution concerning neuroscience and brand decisions. This would help predict emerging trends and future directions, offering insights into where research is likely to head in the coming years.

These research lines will provide a roadmap for future studies and new avenues for exploration in under-researched industries, methods, and thematic trends.

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