



Neuromarketing: sus implicaciones, retos y promesas en la educación superior

Neuromarketing: its implications, challenges and promises in higher education

Neuromarketing: suas implicações, desafios e promessas no ensino superior

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Resumen

El neuromarketing es un campo de la investigación de mercados que estudia la capacidad de resolver problemas mediante la percepción, las actitudes y las respuestas cognitivas y afectivas de los consumidores a los estímulos de marketing. La venta consultiva sugiere que la experiencia de compra del cliente se gestiona mediante el comportamiento del vendedor y las estrategias de marketing en tienda, y que el cliente participa paso a paso. El neuromarketing ofrece excelentes maneras de interpretar la mente, los intereses y las preferencias de los consumidores, lo que permite a los profesionales del marketing realizar estrategias de marketing dirigidas y efectivas. La tecnología ofrece acceso directo a los centros de decisión del cerebro, lo que puede tener un impacto positivo en el proceso de compra de un producto. Para su análisis a fondo, se recopilaron 25 publicaciones científicas de los últimos 15 años. Para una mejor comprensión, se abordan temas relevantes para el estudio del neuromarketing y su implicación en el sector productivo y académico.

Palabras clave: neuromarketing; educación superior; consumidor; mercado; desafíos.

Abstract

Neuromarketing is a field of market research that studies the ability to solve problems through consumers' perceptions, attitudes, and cognitive and affective responses to marketing stimuli. Consultative selling suggests that the customer's shopping experience is managed through salesperson behavior and in-store marketing strategies, with the customer participating step by step. Neuromarketing offers excellent ways to interpret consumers' minds, interests, and preferences, allowing marketers to develop targeted and effective marketing strategies. Technology offers direct access to the brain's decision-making centers, which can have a positive impact on the product purchasing process. For an in-depth analysis, 25 scientific publications from the last 15 years were compiled. For a better understanding, topics relevant to the study of neuromarketing and its implications for the productive and academic sectors are addressed.

Keywords: neuromarketing; higher education; consumer; market; challenges.

Resumo

Neuromarketing é uma área da pesquisa de mercado que estuda a capacidade de resolver problemas por meio das percepções, atitudes e respostas cognitivas e afetivas dos consumidores a estímulos

de marketing. A venda consultiva sugere que a experiência de compra do cliente é gerenciada por meio do comportamento do vendedor e de estratégias de marketing na loja, com a participação gradual do cliente. O neuromarketing oferece excelentes maneiras de interpretar a mente, os interesses e as preferências dos consumidores, permitindo que os profissionais de marketing desenvolvam estratégias de marketing direcionadas e eficazes. A tecnologia oferece acesso direto aos centros de decisão do cérebro, o que pode ter um impacto positivo no processo de compra de produtos. Para uma análise aprofundada, foram compiladas 25 publicações científicas dos últimos 15 anos. Para melhor compreensão, são abordados tópicos relevantes para o estudo do neuromarketing e suas implicações para os setores produtivo e acadêmico.

Palavras-chave: neuromarketing; ensino superior; consumidor; mercado; desafios.

Introduction

Neuromarketing has emerged as an innovative discipline that fuses marketing principles with advances in neuroscience, offering a deeper understanding of consumer behavior. In a context where purchasing decisions are increasingly complex and influenced by emotional and cognitive factors, neuromarketing is presented as a crucial tool for higher education institutions. This article proposes to carry out an exhaustive bibliographic review on the implications, challenges and promises of neuromarketing in this field.

Higher education faces significant challenges in a competitive environment, where student recruitment and retention have become strategic priorities. In this sense, neuromarketing offers a unique approach that allows institutions to better understand the motivations and emotions of potential students when choosing a career or university. Through techniques such as functional magnetic resonance imaging and electroencephalography (EEG), it is possible to analyze how academic and communication stimuli affect the perception and decision of young people.

However, the implementation of neuromarketing in higher education is not without challenges. There are ethical concerns about the use of techniques that may manipulate consumer decisions, as well as the need to train academic staff in these new methodologies. Despite these challenges, the promises of neuromarketing are significant; not only can it improve the effectiveness of advertising campaigns, but it can also contribute to creating more engaging and personalized educational experiences.

Metodology

This study is based on a review of the available literature and an exploratory analysis of the main neuromarketing tools currently used. Technologies such as EEG, MEG, fMRI, and eye tracking were analyzed, along with studies on their impact on predicting consumer behavior. In addition, reports on the adoption of neuromarketing in emerging economies such as India were reviewed, evaluating the effect of these technologies on purchasing decision-making.

Various sources were used to locate the bibliographic documents. A bibliographic search was also conducted in May 2024.

In the process of collecting information, between 85 and 16 entries were recorded by combining various keywords. Additionally, a search was conducted in "Google Scholar" with the same terms. Those documents that discussed the formal elements that a bibliographic review should include were chosen, as well as the critical reading of documents, the phases involved in preparing a bibliographic review, and the construction of mental or conceptual maps. This systematic approach is crucial to establish a solid framework in the context of neuromarketing, where a deep understanding of the existing literature is essential to advance this emerging discipline.

- Identify the relevant aspects that are known, as well as those that are unknown and those that generate controversy on the analyzed topic.
- Identify the variables related to the research of the topic.
- Recognize the theories developed in relation to the topic.

Table No. 1 Articles with Qualitative aspect

| No. | Year | Article Title | Article Quote (APA) | Aspect | Study Features |
|-----|------|---|--|-------------|---|
| | 2007 | What is "neuromarketing"? A discussion and agenda for future research | Lee, N., Broderick, A., y Chamberlain, L. (2007). ¿Qué es el "neuromarketing"? Una discusión y una agenda para futuras investigaciones. Revista internacional de psicofisiología: revista oficial de la Organización Internacional de Psicofisiología, 63(2), 199- | Qualitative | Exploratory approach to define the concept of neuromarketing, based on a literature review and conceptualization from neuroscience and neuroeconomics. Mainly qualitative analysis with theoretical discussion. |

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|---|------|---|--|---------------------|--|
| | | | 204. https://doi.org/10.1016/J.IJP SYCHO.2006.03.007 | | |
| 2 | 2010 | Professionals' perceptions of advertising strategies for digital media | Truong, Y., McColl, R., y Kitchen, P. (2010). Percepciones de los profesionales sobre las estrategias publicitarias para los medios digitales. Revista Internacional de Publicidad, 29, 709 - 725. https://doi.org/10.2501/S0265048710201439 | Qualitativ e | Qualitative study based on 21 in-depth interviews with digital advertising professionals, identifying key trends such as permissionbased advertising, personalization and greater interactivity. |
| 3 | 2019 | Digital advertising: present and future perspectives | Lee, H., y Cho, C. (2019). Publicidad digital: perspectivas presentes y futuras. Revista Internacional de Publicidad, 39, 332 - 341. https://doi.org/10.1080/02650487.2019.1642015 | Qualitativ e | Qualitative study exploring key trends in digital advertising such as the use of artificial intelligence and big data, and proposing topics for future research. |
| 4 | 2020 | Turismo Comunitario en Ecuador: Emprendimientos Comunitarios de las Redes Provinciales y Cantonales | Maldonado-Erazo, C., Río-Rama, M., NoboaViñan, P., y Álvarez-García, J. (2020). Turismo Comunitario en el Ecuador: Emprendimientos Comunitarios de las Redes Provinciales y Cantonales. Sostenibilidad. https://doi.org/10.3390/su12156256 | Qualitativ e | Community Tourism in Ecuador: Community Enterprises of Provincial and Cantonal Networks |

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|---|------|---|---|--------------------|--|
| 5 | 2022 | Strengthening community tourism enterprises as a means of sustainable development in rural areas: a case study of community tourism development in Chimborazo | <u>Maldonado-Erao, C., Río-Rama, M., MirandaSalazar, S., & Tierra-Tierra, N. (2022). Fortalecimiento de las empresas de turismo comunitario como medio de desarrollo sostenible en zonas rurales: un estudio de caso de desarrollo del turismo comunitario en Chimborazo. Sostenibilidad. https://doi.org/10.3390/su14074314</u> | Cualitativo | Participatory action research (PAR) that studies the development of community tourism in Chimborazo, using interviews with key actors and ancestral knowledge to analyze the impact of tourism on communities. |
| 6 | 2019 | Turismo Comunitario En Ecuador: Un Caso Especial En La Comunidad Río Indillama, Parque Nacional Yasuní | <u>Ramón, C., & Chimborazo, E. (2019). Turismo Comunitario En Ecuador: Un Caso Especial En La Comunidad Río Indillama, Parque Nacional Yasuní. Revista Internacional de Investigación en Ingeniería y. https://doi.org/10.17577/ije-rtv8is060413</u> | Cualitativo | Community Tourism in Ecuador: A Special Case in the Río Indillama Community, Yasuní National Park |
| 7 | 2016 | Tourism and community: an Ecuadorian town builds on its past | <u>Hudson, C., Silva, M., y McEwan, C. (2016). Turismo y comunidad: un pueblo ecuatoriano construye sobre su pasado. Arqueología Pública, 15, 65 - 86.</u> | Cualitativo | Case study on the impact of tourism on the Agua Blanca community in Ecuador, analyzing the process of cultural and economic strengthening through interviews and site observation. |

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|---|------|--|--|--------------------|---|
| | | | https://doi.org/10.1080/14655187.2017.1384982 | | |
| 8 | 2023 | The impact of neuromarketing application in influencing tourists' decisions when determining a place to take a tour: a literature review | Siamora, G., Rizan, M., y Handaru, A. (2023). El impacto de la aplicación del neuromarketing al influir en las decisiones de los turistas al determinar un lugar para realizar una gira: revisión de la literatura. Revista internacional de investigación y revisión. https://doi.org/10.52403/ijr.20231010 | Cualitativo | Literature review analyzing how neuromarketing influences tourists' decisions, based on previous studies on the influence of emotional and visual stimuli on decisions to visit tourist destinations. |

Table No. 2 Articles with Quantitative aspect

| No. | Year | Article Title | Article Quote (APA) | Aspect | Study Features |
|-----|------|---|--|---------------------|--|
| | 2018 | Neuromarketing: Applications, Challenges and Promises | Salomón, P. (2018). Neuromarketing: aplicaciones, desafíos y promesas. Revista de biomédica de investigaciones científicas y técnicas. https://doi.org/10.26717/BJSTR.2018.12.002230 | Quantitativo | The article describes the use of advanced neuromarketing techniques such as EEG, fMRI and EMG to measure consumer responses to marketing stimuli. It uses brain scanning methods and quantitative analysis of responses. |

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|---|------|---|--|--------------|--|
| 2 | 2011 | Perceptions of marketing academics, neuroscientists and marketing professionals on neuromarketing | <u>Eser, Z., Isin, B., y Tolon, M. (2011). Percepciones de académicos de marketing, neurólogos y profesionales del marketing sobre el neuromarketing. Revista de Gestión de Marketing, 27, 854 - 868.</u> https://doi.org/10.1080/02672571003719070 | Quantitative | Quantitative analysis of surveys conducted with 111 marketing academics, 52 neuroscientists and 56 marketing professionals on the perception of neuromarketing. Uses statistical analysis and comparison of perceptions. |
| 3 | 2019 | Inefficiencies in digital advertising markets | <u>Gordon, B., Jerath, K., Katona, Z., Narayanan, S., Shin, J., y Wilbur, K. (2019). Ineficiencias en los mercados de publicidad digital. Revista de Marketing, 85, 7 - 25.</u> https://doi.org/10.1177/0022242920913236 | Quantitative | Quantitative study that analyzes four inefficiencies of the digital advertising market through data analysis and review of academic literature. |
| 4 | 2009 | Consumer attitudes and interactive digital advertising | <u>Cheng, J., Blankson, C., Wang, E., y Chen, L. (2009). Actitudes del consumidor y publicidad digital interactiva. Revista Internacional de Publicidad, 28, 501 - 525.</u> https://doi.org/10.2501/S0265048709200710 | Quantitative | Quantitative study based on surveys of university students, which analyzes attitudes towards different types of interactive digital advertising using statistical analysis. |

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|---|------|--|---|--------------|--|
| 5 | 2018 | Digital advertising and business value | Ma, J., y Du, B. (2018). Publicidad digital y valor empresarial. Revista de Investigación Publicitaria, 58, 326 - 337. https://doi.org/10.2501/JAR-2018-002 | Quantitative | Quantitative study using a data set of 1,538 companies between 2001 and 2012, analyzing the relationship between participation in digital advertising and business value using statistical techniques. |
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|---|------|---|--|--------------|--|
| 6 | 2020 | Diagnosis of Administrative and Financial Processes in Community Tourism Enterprises in Ecuador | Jaramillo-Moreno, B., Sánchez-Cueva, I., Tinizaray-Tituana, D., Narváez, J., Cabanilla Vásconez, E., Torrecillas, M., & Rambaud, S. (2020). Diagnóstico de Procesos Administrativos y Financieros en Empresas Turísticas Comunitarias en el Ecuador. Sostenibilidad. https://doi.org/10.3390/su12177123 | Quantitative | Quantitative study on the administrative and financial management of community tourism enterprises in Ecuador, based on interviews with community leaders and the collection of data on key processes. |
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|---|------|---|---|--------------|--|
| 7 | 2022 | SCIENTOMETRIC ANALYSIS OF THE SCIENTIFIC LITERATURE ON NEUROMARKETING | Pilelienè, L., Alsharif, A., y Alharbi, I. (2022). ANÁLISIS CIENTOMÉTRICO DE LA LITERATURA CIENTÍFICA SOBRE HERRAMIENTAS DE NEUROMARKETING EN | Quantitative | Scientometric analysis of articles on neuromarketing in advertising, using bibliometric analysis and review of trends in |
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|----|------|---|---|--------------|---|
| | | TOOLS IN ADVERTISING | PUBLICIDAD. Revista Báltica de Estudios Económicos. https://doi.org/10.30525/2256-0742/2022-8-51-12 | | scientific literature published between 2009 and 2020. |
| 8 | 2022 | The concept of neuromarketing in artificial neural networks: a case of forecasting and simulation from the advertising industry | Ahmed, R., Štreimikienė, D., Channar, Z., Soomro, H., Streimikis, J., y Kyriakopoulos, G. (2022). El concepto de neuromarketing en redes neuronales artificiales: un caso de previsión y simulación desde la industria publicitaria. Sostenibilidad. https://doi.org/10.3390/su14148546 | Quantitative | Quantitative study that uses artificial neural networks to predict consumer purchasing behavior, evaluating the effectiveness of advertisements through simulations. |
| 9 | 2023 | Analyzing neuromarketing applications in the effectiveness of programmatic advertising | Bajaj, R., Syed, A., y Singh, S. (2023). Análisis de aplicaciones del neuromarketing en la eficacia de la publicidad programática. Revista de comportamiento del consumidor. https://doi.org/10.1002/cb.2249 | Quantitative | Quantitative study that uses neuromarketing techniques, such as EEG, eye tracking and galvanic skin response, to analyze how consumers respond to ads in programmatic advertising and improve the effectiveness of advertising campaigns. |
| 10 | 2015 | Neuromarketing: the new science of advertising | Kumar, S. (2015). Neuromarketing: la nueva ciencia de la publicidad. Revista universal de gestión, 3, 524-531. https://doi.org/10.13189/UJM.2015.031208 | Quantitative | Conceptual study that uses eye-tracking to measure consumer attention and explore how attention levels affect advertising effectiveness. |

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|----|------|---|--|------------------|---|
| 11 | 2016 | My destination in your brain: a novel neuromarketing approach to assess the effectiveness of destination marketing | Bastiaansen, M., Straatman, S., Driessen, E., Mitás, O., Stekelenburg, J., y Wang, L. (2016). Mi destino en tu cerebro: un novedoso enfoque de neuromarketing para evaluar la eficacia del marketing de destinos. Revista de gestión y marketing de destinos, 7, 76-88. https://doi.org/10.1016/J.JDMM.2016.09.003 | Quantitativ e | Study that uses EEG to measure tourists' emotional responses to images of tourist destinations and evaluate the effectiveness of destination marketing. |
| 12 | 2020 | Neuromarketing approach to evaluate tourism products | Smykova, M., Kazybaeva, A., y Tkhorikov, B. (2020). Enfoque de neuromarketing para la evaluación de productos turísticos. https://doi.org/10.2991/aebmr.k.201215.051 | Quantitativ e | It uses neuromarketing techniques, such as electroencephalography, to study how consumers respond to tourism products and evaluate their preferences by measuring their physical reactions. |
| 13 | 2018 | INFLUENCIA EN LA TOMA DE DECISIONES DEL CONSUMIDOR EN EL MERCADO DE SERVICIOS TURÍSTICOS MEDIANTE EL USO DE TECNOLOGÍAS DE NEUROMARKETING | Kulyniak, I., Zhygalo, I., y Koval, S. (2018). INFLUENCIA EN LA TOMA DE DECISIONES DEL CONSUMIDOR EN EL MERCADO DE SERVICIOS TURÍSTICOS MEDIANTE EL USO DE TECNOLOGÍAS DE NEUROMARKETING. Revista científica internacional "Internauka". Serie: "Ciencias Económicas". https://doi.org/10.25313/2520-2294-2022-27892 | Quantitativ e | Quantitative study exploring the impact of neuromarketing technologies (sensory marketing) on consumer decision-making in the tourism services market. |

Table No.3 Articles with Mixed Appearance

| No | Año | Título del Artículo | Cita del Artículo (APA) | Aspecto (Cualitativo/Cuantitativo/Mixto) | Características del Estudio |
|----|------|---|---|--|--|
| 1 | 2010 | Definition of Neuromarketing: Professional Practices and Challenges | <u>Fisher, C., Chin, L., y Klitzman, R. (2010). Definición de Neuromarketing: prácticas y desafíos profesionales. Revista de Psiquiatría de Harvard, 18, 230–237. https://doi.org/10.3109/10673229.2010.496623</u> | Mixed | Exploratory study on the ethical practices and challenges of neuromarketing, using website content analysis. It focuses on the analysis of both qualitative and quantitative data (comments, companies involved, etc.). |
| 2 | 2016 | Neuromarketing en la investigación de mercados | <u>Ćosić, D. (2016). Neuromarketing en la Investigación de Mercados. Descripción interdisciplinaria de sistemas complejos, 14, 139-147. https://doi.org/10.7906/INDECS.14.2.3</u> | Mixed | Study that uses neuromarketing techniques (such as eye tracking and functional magnetic resonance imaging) to measure unconscious responses to stimuli. Combination of qualitative and quantitative methods to explore choice factors. |

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|---|------|---|---|--------------|---|
| 3 | 2021 | Un estudio de contenidos publicitarios en comunicaciones digitales: la experiencia de aplicar neuromarketing y técnicas tradicionales | <p>Cheredniakova, A., Lobodenko, L., y Lychagina, I. (2021). Un estudio de contenidos publicitarios en comunicaciones digitales: la experiencia de aplicar el neuromarketing y técnicas tradicionales. 2021 Seminario de Estrategias de Comunicación en la Sociedad Digital (ComSDS), 9-13. https://doi.org/10.1109/ComSDS52473.2021.9422887</p> | Mixed | A study of advertising content in digital communications: the experience of applying neuromarketing and traditional techniques |
| 4 | 2015 | The potential of neuromarketing for positioning tourist destination brands | <p>Šerić, N., Jurišić, M., y Petričević, D. (2015). Potencial del neuromarketing para el posicionamiento de marcas de destinos turísticos. <i>Turismo en el Sudeste de Europa 2011 (Archivo)</i>.</p> | Mixed | Primary and secondary research combining interviews and surveys with the analysis of the application of neuromarketing in the management of tourist brands, evaluating its potential and applicability. |

Table No.3 Analysis of approaches

| Approach | Num. | porcentaje |
|--------------|-----------|------------|
| Quantitative | 13 | 52 |
| Qualitative | 9 | 36 |
| Mixed | 2 | 8 |
| Total | 24 | 96 |

Traditionally, review articles tended to take a “narrative or qualitative” approach. In this type of review, a set of articles were selected and organized according to the meaning of their results and analyzed based on the methodological characteristics of each study. This allowed a general

conclusion to be reached after reviewing the content. In many cases, this narrative review also included simple quantification.

A systematic review is a structured, organized, and transparent process to identify, select, and critically appraise relevant research studies to answer a specific research question. Systematic reviews apply predefined criteria to select studies, assess their quality, and synthesize their results. This rigorous methodology ensures that a literature review is comprehensive and reproducible. (E, 2020)

Neuromarketing, as an emerging discipline, has begun to significantly influence higher education, offering new perspectives on how principles of consumer behavior and neuroscience can be applied to improve the educational experience. This literature review article explores the implications, challenges, and promises of neuromarketing in this context, analyzing previous studies classified into three approaches: qualitative, quantitative, and mixed.

Qualitative Approach

The qualitative studies reviewed provide an in-depth understanding of perceptions and attitudes toward neuromarketing. For example, the work of Lee et al. (2007) establishes a conceptual framework for neuromarketing through a literature review that highlights its basis in neuroscience and neuroeconomics. This exploratory approach allows for the identification of emerging trends and areas of interest for future research, as seen in the study by Lee and Cho (2019), which discusses the influence of artificial intelligence on digital advertising. Furthermore, qualitative studies reveal how practitioners perceive advertising strategies. Truong et al. (2010) conducted in-depth interviews with industry experts, identifying key trends such as personalization and interactivity in digital advertising. This type of research is crucial to understanding how higher education institutions can adapt their marketing strategies to attract potential students.

Quantitative Approach

On the other hand, quantitative studies offer empirical data that support claims about the effectiveness of neuromarketing. Salomon (2018) uses advanced techniques such as EEG and fMRI to measure consumer responses to marketing stimuli, providing clear evidence on how these techniques can be applied to optimize advertising campaigns in the educational field. Survey analysis by Eser et al. (2011) shows that both academics and marketing professionals have varied perceptions about neuromarketing, suggesting the need for further training and awareness about its

practical applications in the educational sector. These quantitative findings are essential to developing data-driven strategies that can improve student recruitment and retention.

Mixed Approach

Finally, studies that employ a mixed approach combine the best of both worlds, using both qualitative and quantitative methods to offer a more comprehensive view. For example, the study by Fisher et al. (2010) addresses ethical neuromarketing practices through a content analysis that includes both qualitative and quantitative data. This approach is particularly relevant in higher education, where ethical considerations are critical when implementing marketing strategies. Research by Čosić (2016) highlights how neuromarketing techniques can measure unconscious responses to educational stimuli, opening up new opportunities to design more effective and engaging educational programs.

Implicaciones para la Higher The impact of Higher Education

The integration of neuromarketing into higher education holds several promises:

Improving Student Recruitment: By better understanding how students make decisions, institutions can design more effective campaigns.

Curriculum Development: Applying neuromarketing principles can help tailor educational programs to student expectations and preferences.

Ethics and Responsibility: Addressing the ethical challenges associated with the use of neuromarketing is critical to ensuring responsible practices that prioritize student well-being.

Conclusion

Neuromarketing offers a valuable framework for better understanding consumer behavior within the educational context. As this discipline continues to evolve, it is essential for higher education institutions to stay informed about its implications and develop evidence-based strategies that not only attract potential students, but also enhance their overall educational experience. Combining qualitative and quantitative approaches will be key to advancing this area and effectively meeting future challenges.

Neuromarketing, as a field of study, has begun to gain ground in academic research, especially in its application within higher education. However, one of the main challenges facing researchers is the scarcity of specific literature that addresses this topic in a comprehensive manner. Although several relevant studies have been identified, many of them focus on commercial applications and

do not delve into how these principles can be used to improve the educational experience. This lack of literature can hinder the development of effective neuromarketing-based strategies that adapt to the needs of educational institutions.

Among the benefits of neuromarketing is its ability to personalize the student experience, which can result in greater satisfaction and retention. Furthermore, by applying advanced techniques such as electroencephalography (EEG) and functional magnetic resonance imaging (fMRI), researchers can obtain empirical data on how students respond to different educational stimuli. This allows universities to design more effective advertising campaigns and adapt their programs to student expectations.

However, there are also critical issues that must be considered. One of the most relevant is the ethical aspect associated with the use of neuromarketing, as it may raise concerns about manipulation and student privacy. Furthermore, the interdisciplinary nature of neuromarketing may complicate collaboration between researchers from different fields, limiting the comprehensive development of effective strategies. Therefore, it is essential to encourage further research in this area, promoting interdisciplinary collaborations and establishing a clear ethical framework to guide the use of neuromarketing in higher education.

In conclusion, although neuromarketing offers significant opportunities to transform higher education, it is crucial to address its challenges through rigorous and ethical research. Building a robust body of literature will maximize the potential of neuromarketing to improve both recruitment and the comprehensive educational experience.

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