

ORIGINAL ARTICLE

Neuromarketing and behavior in the consumer's buying decision in online store Asiri Munay, Lima - Peru

ABSTRACT

This study investigates the influence of neuromarketing on consumer buying decision behavior in online stores, focusing on the emotional, instinctive and rational dimensions. The methodology used was characterized by a quantitative approach, adopting a basic non-experimental design with an explanatory level. The data was collected through a form in Google Forms, obtaining a sample of 124 potential customers of Asiri Munay store. The results revealed a strong correlation between the aforementioned dimensions and buying decision behavior in online stores, highlighting the influence of strategies that include positive emotional experiences, attractive visual stimuli and presentation of logical and persuasive information. Specifically, it was found that consumers respond favorably to strategies that generate positive emotions, visual appeal, and compelling rational arguments when making purchasing decisions in digital environments. These findings suggest the importance of integrating neuromarketing into digital marketing strategies to improve customer experience and increase online conversions. In conclusion, this study highlights the need to adapt online marketing strategies to take advantage of the emotional, instinctive and rational dimensions of buying decision behavior, which can lead to greater commercial success in the digital environment. Additionally, it provides a solid foundation for implementing neuromarketing practices in e-commerce, which can be more effective and satisfying for online businesses.

Keywords: neuromarketing; buying decision; electronic commerce; customer experience; digital marketing.

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INTRODUCTION

Neuromarketing is an interdisciplinary field between cognitive science and marketing, which has sparked growing interest in the study of consumer decisions (Albán-Trujillo *et al.*, 2023). However, its application in digital environments, such as online stores, poses significant challenges. When adapting neuromarketing tools to these virtual environments, it is essential to understand how they influence consumer behavior and optimize digital marketing strategies. In their study, Alsmadi and Hailat (2021) highlight the relevance of understanding the emotional and cognitive processes that guide decision-making, and highlight how neuroscience can offer valuable information that could be used in marketing strategies.

Neuromarketing is crucial to understanding the behavioral motivations in the buying decision. However, adapting these tools to the virtual environment poses additional challenges, given the abstract and virtual nature of the online consumer experience. Alsharif *et al.* (2023) and Bočková *et al.* (2021) contextualize the importance of neuromarketing in the current marketing landscape, where online purchases have acquired unprecedented relevance.

Therefore, the importance of further investigating the interaction between neuromarketing and purchasing decision behavior in e-commerce environments is highlighted. This field of study still faces significant controversies and disagreements, especially regarding the applicability and effectiveness of neuromarketing techniques in specific digital environments (Chatterjee and Giri, 2021). These divergences underline the complexity of the topic and the need for more in-depth research. In the field of neuromarketing and consumer behavior, debates and disagreements arise that provide significant nuances to the understanding of these complex interactions. Juárez-Varón *et al.* (2023) carried out a study on the behavior of footwear consumers, pointing out the influence of stimuli on emotions and decision making. This research provides a perspective that highlights the interconnection of psychological factors in the purchasing process, offering a detailed view of how these aspects influence consumer decisions.

In a contrary approach, Tomris (2023) addresses the dichotomy between neuromarketing and brands, raising questions about how these two forces shape consumer perceptions. Melovic *et al.* (2021) analyze the determinants of online purchasing behavior, highlighting its impact on consumer satisfaction and the development of electronic businesses. Their study highlights the need to adapt neuromarketing strategies to this constantly evolving context. Suryakumar *et al.* (2023) address how Virtual Reality (VR) has become increasingly popular in today's digital world, where businesses are shifting to online platforms for their operations. E-commerce has been considered a great option for companies and individuals looking to expand their customer base. Helmi *et al.* (2023) address emotions in the online sales environment by characterizing the purchasing style of young Indonesian consumers. Researchers found that emotional factors, such as trust, commitment, and personalization, significantly impact the buying behavior of this demographic. Gier (2022) emphasizes the relevance of consumer neuroscience, and analyzes how the brain affects buying decisions, thus offering better marketing strategies. This knowledge can be critical for companies to design marketing strategies that captivate and resonate more meaningfully with consumers.

The research question that guides this study is: How does neuromarketing and consumer behavior influence the buying decision in Asiri Munay, Lima – Peru online store? To answer this question, a detailed analysis will be carried out on the variables and dimensions. The objective of this study is to investigate the impact of neuromarketing on consumer behavior in the buying decision in online stores. It focuses on understanding how these techniques influence consumer buying decisions in the digital environment. The purpose is to provide valuable insights that help marketing professionals improve their digital strategies and customer experience in an ever-changing market.

The importance of researching neuromarketing in the context of online stores lies in the unique challenges and opportunities presented by the digital environment. Online shopping has become increasingly popular and understanding how neuromarketing techniques can

influence consumer behavior in this context is crucial for companies to optimize their digital marketing strategies and improve customer experience. By investigating the interaction between neuromarketing and consumer behavior in e-commerce decision making, this study aims to fill important gaps in the literature, particularly regarding the applicability and effectiveness of neuromarketing techniques in specific digital environments. This research will provide valuable insights for marketing professionals to improve their digital strategies and customer experience in a rapidly changing market.

METHODS

The study was developed following the methodological guidelines proposed by Hernández-Sampieri and Mendoza (2018), applying basic research, at an explanatory level, with a focus on the collection and analysis of quantitative data, with the purpose of addressing the theoretical problem. For this purpose, a non-experimental design was chosen, characterized by the observation of phenomena in their natural context, in line with a correlational level.

The population of interest was made up of all the customers served by online store Asiri Munay during the months of May to July 2023. According to the database of said online store, 124 clients were served during the period. All clients were considered for the sample; that is, it was a census sample.

The data collection technique was an online survey, using the free Google Forms platform. Two self-developed questionnaires were used as instruments, which were validated by the judgment of experts, in which three doctors and two masters from the areas of marketing, finance and research methodology participated.

Descriptive and inferential statistical techniques were used to analyze the data. In the descriptive part, the mean, median, kurtosis, asymmetry and standard deviation of both variables and their dimensions were calculated. For the inferential part, the normality test was first performed, using the Kolmogorov-Smirnov test, considering a significance level of 0.05. According to the test result, the

appropriate correlation test was chosen; In the event that either variables or dimensions presented a normal distribution, the Pearson correlation test would be chosen. If one of the dimension variables did not have a normal distribution, the Spearman correlation test would be chosen. In any case, the significance level will be 0.5. This methodological process allowed us to examine how the emotional, instinctive and rational dimensions of neuromarketing are related to buying behavior in online stores, establishing the bases for the replication of the findings and the confirmation of the veracity of the results.

In the process of instrument validation by the experts, several criteria were used to evaluate the suitability and relevance of the questionnaires prepared by the researchers. These criteria could include:

- **Relevance of the content.** The experts evaluated whether the questions included in the questionnaires were relevant to measure the emotional, instinctive and rational dimensions of neuromarketing, as well as buying behavior in online stores.
- **Clarity and understanding.** It was evaluated whether the questions were easily understood by the participants and whether the instructions were clear and concise.
- **Content validity.** The experts analyzed whether the questions adequately addressed the theoretical and conceptual aspects that were intended to be measured, thus ensuring the content validity of the instruments.
- **Writing and formulation.** It was verified that the questions were worded neutrally and that the response options were mutually exclusive and exhaustive.

Once the experts evaluated the questionnaires according to these criteria, the agreement between them was calculated using an agreement or consensus analysis method. This could involve calculating the inter-judge agreement coefficient, such as the intraclass

correlation coefficient (ICC), which measures the degree of agreement between judges about the appropriateness of the instrument's items. An ICC close to 1 would indicate a high degree of agreement between experts, while a low value would suggest discrepancies in the evaluations.

To organize the inferential analysis, the following hypotheses were proposed:

- **Ho1.** There is a positive correlation between the emotional aspect and consumer behavior in the buying decision.
- **Ho2.** There is a positive correlation between the instinctive aspect and consumer behavior in the buying decision.
- **Ho3.** There is a positive correlation between the rational aspect and consumer behavior in the buying decision.

RESULTS

According to Table 1, a high level of correlation is observed between the items that make up the neuromarketing measurement instrument and the global score, with values greater than 0.7 except for item 14, which presented 0.641 that did not affect the reliability of the dimension. Regarding the reliability of the instrument, the Cronbach's Alpha technique was used, obtaining values greater than 0.9 for each dimension and for the questionnaire in total, which indicates a very high reliability of the instrument.

According to Table 2, a high level of correlation is observed between the items that make up the instrument for measuring behavior in the purchasing decision and the global score, with values greater than 0.8. Furthermore, the reliability of the instrument has been evaluated

Table 1
Reliability of the neuromarketing instrument

	Total element correlation corrected	Cronbach's alpha
Emotional aspect		0.942
1. Do you consider that advertising influences your buying decision?	.862	
2. Do you prefer discounts and promotions when buying a product?	.858	
3. Do you think that the thank you cards from an online store are designed creatively and generate recognition of the store?	.819	
4. Do you consider that promotional packs influence your buying decision?	.892	
5. How would you rate your shopping experience through an online store?	.868	
Instinctive aspect		0.930
6. Do symbols and images influence you when making the decision to buy a product?	.870	
7. Do you think that the colors used on the social network influence your buying decision in an online store?	.798	
8. Is the presentation of the products on the online page organized and easy to buy?	.872	
9. Would a giveaway that is being promoted in the online store influence your decision to buy a product?	.767	
10. Will the attention received and the presentation of the product influence your next buying decision through an online store?	.879	
Rational aspect		0.917
11. How would you rate the service provided by an online store?	.905	
12. Do you think that the media would have a greater impact in publicizing advertising messages?	.879	
13. Do you think it is relevant to tell product stories with customers of an online store?	.873	
14. Have you sometimes bought things you didn't really need in an online store?	.641	
15. Do you usually take into account the advice of your friends and/or acquaintances when making your purchases?	.808	
Global instrument		0.975

Note. Prepared by the authors, 2024.

Table 2
Reliability of the behavioral instrument in the buying decision

	Total element correlation corrected	Cronbach's alpha
Trust, adaptation, security		0.952
16. Is price an important factor when buying a product in an online store?	.902	
17. Do you read the product description before buying it?	.858	
18. Does the fact that a product is expensive influence your buying decision?	.846	
19. Do you consider that the brand of a product is important when buying it?	.821	
20. Do you consider that the discounts promoted in an advertisement are a factor that influences your buying decision?	.903	
Learning, community, memory		0.963
21. Is the way of publicizing our products through social networks suitable for the entire public?	.876	
22. Does Internet advertising become more frequent and attractive to you?	.904	
23. Does the advertisement have any added value that would make you buy in the online store?	.880	
24. How satisfied are you with buying products in an online store?	.913	
25. On a scale of 0 to 5, how likely are you to recommend buying from an online store to your friends?	.913	
Motivation, satisfaction		0.944
26. Do you consider that the brand of a product is very important when choosing it?	.899	
27. Do you consider that the advertisement revives moments of happiness in your life?	.836	
28. Do you personally believe that an emotional social media post is a factor that influences your buying decision?	.825	
29. On a scale of 0 to 5, what do you think of the relationship between the quality offered and the price of the product?	.919	
30. Do you consider that the commercial advisor influences your buying decision in an online store?	.840	
Visual auditory		0.949
31. Is the name of the product a determining factor in your online buying decision?	.896	
32. Do you consider that communication with the seller influences your decision to buy a product in the online store?	.881	
33. What is the probability that you will buy products through an online store again?	.898	
34. How safe do you feel when making a purchase online?	.890	
Global instrument		0.986

Note. Prepared by the authors, 2024.

using Cronbach's Alpha, obtaining values greater than 0.9 for each dimension and for the questionnaire in total, which indicates a very high reliability of the instrument.

In conclusion, the use of this instrument in research and studies on purchasing behavior decisions can be considered reliable and effective, given its strong correlations and high level of reliability.

Table 3 presents descriptive statistics of the dimensions of the Neuromarketing variable: Emotional (D1), Instinctive (D2) and Rational (D3). The participants obtained an average

score of 44.64 on the Neuromarketing variable scale. The Emotional dimension recorded higher scores (mean = 15.35) than the Instinctive dimension (mean = 14.61) and the Rational dimension (mean = 14.68). A negative asymmetry is observed in the distribution of scores in all dimensions, indicating greater concentration at the lower ends of the scale. Furthermore, the kurtosis is negative, suggesting a less dense distribution of scores. These results highlight the variations in the Neuromarketing variable and its components, suggesting the possible preponderant influence of the Emotional dimension.

Table 4 presents descriptive statistics of the dimensions of the Buying Behavior variable: Buying Habits (D1), Experience (D2), Emotions (D3) and Perception (D4). Participants assigned an average score of 57.36 to the Buying Behavior variable. It was observed that Buying Habits obtained the highest score (mean = 15.40), followed by Experience (mean = 15.18) and Emotions (mean = 14.71). On the other hand, Perception showed the lowest score (mean = 12.08). In all the dimensions analyzed,

a negative asymmetry is observed in the distribution of scores, indicating a greater concentration at the lower ends of the scale. Likewise, kurtosis is negative in all dimensions, suggesting a flatter than normal distribution.

Table 5 presents the results of the correlations between the Neuromarketing dimensions and the Buying Decision variable in the context of this study. Spearman's Rho correlation coefficient was used to evaluate these

Table 3
Descriptive statistics of the Neuromarketing variable and its dimensions

		Neuromarketing	D1 Emotional	D2 Instinctive	D3 Rational
N	Valid	124	124	124	124
	Lost	0	0	0	0
Mean		44.64	15.35	14.61	14.68
Median		50.00	17.00	16.00	16.00
Standard deviation		18.710	6.610	6.336	6.293
Asymmetry		-.382	-.379	-.223	-.262
Skewness standard error		.217	.217	.217	.217
Kurtosis		-1.097	-1.137	-1.128	-1.074
Kurtosis standard error		.431	.431	.431	.431

Note. These descriptive statistics summarize the characteristics of the Neuromarketing variable and its dimensions (D1 Emotional, D2 Instinctive, D3 Rational) in the sample of 124 participants. Prepared by the authors, 2024.

Table 4
Descriptive statistics of the behavior variable in the buying decision and its dimensions

		Behavior in the buying decision	D1 Buying habits	D2 Experience	D3 Emotions	D4 Perception
N	Valid	124	124	124	124	124
	Lost	0	0	0	0	0
Mean		57.36	15.40	15.18	14.71	12.08
Median		66.00	17.00	16.50	15.50	14.00
Standard deviation		24.621	6.845	6.729	6.457	5.503
Asymmetry		-.409	-.353	-.309	-.164	-.340
Skewness standard error		.217	.217	.217	.217	.217
Kurtosis		-1.178	-1.97	-1.225	-1.092	-1.316
Kurtosis standard error		.431	.431	.431	.431	.431

Note: These descriptive statistics summarize the characteristics of the Buying Behavior variable and its dimensions (D1 Buying Habits, D2 Experience, D3 Emotions, D4 Perception) in the sample of 124 participants. Prepared by the authors, 2024.

Table 5
Correlation between the dimensions of neuromarketing and the Behavior variable in the buying decision

		Buying decision
Spearman's Rho	Emotional	Correlation coefficient .852*
	Instinctive	Correlation coefficient .882*
	Rational	Correlation coefficient .873**

Note. * The correlation is significant at the 0.01 level (two-sided). Non-normal distribution was obtained for all cases according to the Kolmogorov-Smirnov test (p<0.05). Prepared by the authors, 2024.

relationships. The results reveal a significant and positive correlation between the three dimensions of neuromarketing and the Behavior variable in the buying decision. The highest correlation coefficient was found in the Instinctive aspect dimension with 0.882, while the lowest was found in the emotional aspect with 0.852, in all cases with a bilateral significance of 0.000, indicating a strong direct relationship between these dimensions with behavior in the buying decision. Furthermore, the correlation proved to be statistically significant at a level less than 0.01. This implies that the aspects that make up neuromarketing play a crucial role in consumer buying decisions in this specific environment.

DISCUSSION

The results of the study contribute to the understanding of neuromarketing and its relationship with consumer decision-making in the context of their buying behavior. Specifically, the study found that the emotional dimension of neuromarketing has a significant impact on consumer buying behavior. These findings have important implications for marketing professionals, as they suggest that emotional appeals in marketing campaigns may be more effective in influencing consumers' purchasing decisions than rational appeals (Pieters *et al.*, 2021).

Compared to the background reviewed in the introduction, the results obtained in this study offer a complementary perspective on the impact of neuromarketing on purchasing decision behavior in online stores. Coherence is observed with the theories and approaches previously discussed, thus supporting the relevance of multiple dimensions in consumer decision making. Portela López and Rodríguez Monroy (2023) highlight the intrinsic connection between emotions and the buying process, corroborating the conclusions of this study. The research highlights the importance of designers considering the entire user journey, from discovery to the post-purchase experience, as an opportunity to create positive emotions and strengthen the emotional connection with the user. The results of the emotional dimension converge with previous research, solidifying the decisive importance of emotions in neuromarketing. Similar

findings have been identified by Halkiopoulou *et al.* (2022).

Pérez and Tapia (2020) support the observation of this study about the positive relationship between emotions and buying decisions, especially in young consumers. The results obtained support the theory of sensory marketing (Rodas-Areiza and Montoya-Restrepo, 2018), indicating that sensory stimuli play a crucial role in consumer preferences in digital environments. The need to address both cognitive and emotional aspects when analyzing online consumer behavior is reaffirmed, as suggested by widely accepted neuromarketing theories (Carneiro Rodrigues *et al.*, 2022; Gupta *et al.*, 2023).

The study by Carneiro Rodrigues *et al.* (2022) enriches the understanding of how neurological factors influence buying decisions. Their approach of considering both cognitive and emotional aspects in the analysis of consumer preferences aligns with the perspective of this study. By contrasting these findings with those presented in this research, the need for a comprehensive approach that considers both dimensions in neuromarketing for online stores is evident. Chicoma-Ruiz *et al.* (2021) highlights the importance of online neuromarketing, indicating that if neurological knowledge is used in marketing strategies, companies can better understand and direct consumer behavior, thus achieving their strategic goals.

Petcharat *et al.* (2023) present a conceptual model that analyzes how innovation can negatively affect consumer behavior on e-commerce platforms. Vieira *et al.* (2023) generate debate about the ethical and social ramifications of innovation in this area. The connection between sensory stimuli and emotional responses, highlighted by these authors, translates pertinently to the digital sphere, where visual and auditory presentation play a crucial role. Gupta *et al.* (2023) highlight the importance of digital media, especially social networks, in the formation of consumer preferences. This approach urges consideration of the interplay between neuroscience and online presence. Taukeni (2021) contributes by relating emotional intelligence to consumer behavior, highlighting its critical role in modulating the relationship between neuromarketing and buying decisions. Arteaga

Ampuero and Flores Urbáez (2023) enrich the current discussion by highlighting that the consumer profile is characterized by a younger demographic, which actively promotes the use of virtual platforms; therefore, younger consumers are more likely to use virtual platforms and social networks for online shopping, a trend that has been exacerbated by the pandemic. This is due to the growing popularity of social media and the technological affinity of younger consumers.

When comparing these findings with previous research, significant patterns and divergences emerge. While Rodas-Areiza and Montoya-Restrepo (2018) highlight the importance of sensory presentation, social media amplifies these experiences (Gupta *et al.*, 2023). However, Morin's (2011) warnings about neuromarketing urge approaching these with caution, noting potential ethical and practical limitations.

Regarding the practical implications of the findings, specific neuromarketing strategies can be used in online stores. An effective approach would be to emphasize emotional, instinctive and rational elements in interface design and communication with customers. For emotional impact, it is important to transmit messages that generate positive emotions through the use of attractive images, evocative colors and persuasive language, in addition to using striking visual stimuli to capture the customer's attention. In terms of instinctive elements, visual elements that evoke a sense of urgency or scarcity can be used to drive rapid customer decision-making. Furthermore, it is important to provide clear and relevant information about the products or services offered to address the rational aspects of the purchasing process.

In summary, concrete strategies could include the appropriate use of evocative images and persuasive language to generate positive emotions; striking visual stimuli to capture attention; in addition to providing clear information about the products or services offered. The results of the present study coincide with previous research by solidifying the crucial importance of emotions in neuromarketing, supporting the positive relationship between emotions and buying decisions.

Regarding the instinctive dimension, agreement is identified with previous research that highlights the influence of visual and emotional stimuli on online purchasing behavior. In the rational dimension, the significant influence of the logical aspect on online buying behavior is corroborated, supporting the need to understand how rational stimuli affect buying decisions.

Despite the significant contributions, limitations in measuring neurological responses in online environments are recognized, pointing to the need for future research that addresses these deficiencies and promotes a more comprehensive approach in neuromarketing for online stores.

CONCLUSIONS

In this research, significant findings were identified that contribute to the understanding of neuromarketing and consumer behavior in the buying decision in online stores. The crucial importance of emotional dimensions in online buying decisions is highlighted. It is confirmed that positive emotions influence the propensity to buy, which highlights the importance of strategies that promote positive experiences for consumers in the digital sphere. By understanding consumer emotions and leveraging neuromarketing tools, companies can develop marketing strategies that are more effective and relevant to the modern consumer. However, it is important to consider the limitations and ethical aspects of this discipline to ensure its responsible and effective use.

Wahyudin *et al.* (2020) explore the potential of neuromarketing techniques to improve understanding of consumer behavior in online shopping environments. This study reinforces the relevance of positive emotions and instinctive aspects in online consumer behavior, which provides new perspectives on how companies can design effective strategies to influence the purchasing process.

Emotional persuasion theory provides a valuable framework for understanding how emotions influence individuals' decisions and behaviors. By understanding and applying this theory, communicators and marketing professionals can develop more effective strategies to

persuade their target audience. A recent study confirms the influence of the design and presentation of beer brands. The idea that the design and presentation of beer brands influence consumers is supported by the results of recent research. This shows that aspects such as the shape and color of the bottle, the label and the graphic elements used play an important role in customers' perception of the beer and their purchase intention. Opris *et al.* (2020) investigate the integration of neural technologies in management and marketing, pointing out challenges, opportunities and ethical considerations. Understanding the variety of preferences of online shoppers emphasizes the importance of audience segmentation as a crucial strategy for customizing messaging and product presentation to specific groups.

RECOMMENDATIONS

For future research, it is recommended to further investigate the interactions between the emotional and instinctive aspects of online consumer behavior. How do negative emotions affect online buying decisions? How do protective and connected instincts influence online shopping experiences? These questions can be explored to deepen the understanding of the underlying mechanisms of neuromarketing in the virtual realm.

Regarding the interactions between emotional and instinctive aspects of online consumer behavior, it is important to keep in mind that emotions and instincts can significantly influence online buying decisions, and explore how these variables intertwine and affect the consumer's decision making process in digital environments.

It is also important to compare the effectiveness of different neuromarketing strategies in different market segments. Studying how different neuromarketing strategies work in various market segments is key. This will help determine which techniques are most successful in influencing buying decisions within specific demographic groups or market niches.

It is suggested to carry out comparative studies where different neuromarketing strategies are applied to representative samples of different market segments. These studies could

use techniques such as eye tracking, functional magnetic resonance imaging (fMRI), or measurement of physiological responses to evaluate the effectiveness of strategies in generating emotional responses and buying behaviors. It is important to design controlled and replicable experiments that allow the impact of each strategy on consumer decision-making to be directly compared in different contexts and demographic segments.

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Conflict of interest

The author has no conflicts of interest to declare.

Author contribution

Adela Francisca Valdivia Linares (lead author): research, writing (original draft, review and editing).