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Effect of Neuromarketing strategies on consumer behavior: Case study of Algerian sports audiences

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Abstract:

This research aims to examine the impact of neuromarketing strategies on the behavior of sports consumers by analyzing their effectiveness in enhancing sponsor recall and building emotional connections between the Algerian sports audience and sponsoring brands. The study adopted a descriptive-analytical approach, utilizing a questionnaire as the primary data collection tool. The instrument was administered to a randomly selected sample of 135 Algerian sports audiences that follow local teams. The questionnaire covered three main dimensions: sponsorship awareness, emotional connection, and neuromarketing stimuli. The results indicated that neuromarketing strategies effectively enhance sponsor recall, positively influence audience perceptions of team professionalism, and increase neural attention and emotional engagement with the brand. The study recommends the adoption of neuromarketing techniques in sports advertising campaigns to maximize their impact and deepen audience engagement.

Keywords: Neuromarketing, Consumer behavior, Sports audiences, Sponsorship, Sports marketing.

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I) Introduction:

In light of the profound transformations occurring in the field of sports marketing, neuromarketing has emerged as one of the modern trends capable of enhancing the effectiveness of advertising messages by understanding the mechanisms of the human brain and its unconscious responses to marketing stimuli. This approach has garnered increasing attention from sponsoring companies, which seek to move beyond traditional methods and focus on activating the sensory and emotional perceptions of consumers, with the aim of enhancing audience engagement with the brand and achieving stronger recall and longer-lasting impact. This is particularly evident in the context of sports sponsorship, where sponsors aim to exploit the powerful emotional moments associated with athletic performance to create a psychological connection with consumers.

In this context, neuromarketing strategies play a pivotal role in enhancing the impact of advertising messages by addressing emotions, activating memory, and increasing attention rates among the audience. The use of elements such as exciting music, rapid images, attractive colors, and cultural symbols not only stimulates the sensory centers in the brain but also contributes to creating a lasting impression of the brand in the recipient's mind. The sports environment is a fertile ground for activating these strategies, given its characteristics of collective emotions, strong belonging, and high emotional engagement, making neuromarketing an effective means of strengthening the relationship between sponsors and the sports audience.

• Research Questions:

In consideration of the aforementioned points, we have formulated the following study question: **"How effective are neuromarketing strategies in enhancing sponsor recall and emotional resonance among Algerian sports audience?"**

We divide the general question into the following sub-questions:

- To what extent are Algerian sports audiences aware of and able to recall the sponsors of their favorite teams?
- To what extent does the presence of a sponsor affect audience's perception of their team's professionalism and image?
- How do fast-paced, high-energy sponsor ads (with music and action clips) influence Algerian audience's arousal levels and attention to the brand?



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- **Hypotheses:**

In light of the problem, we propose the following hypotheses:

Neuromarketing strategies used in sports sponsorship campaigns positively influence both sponsor brand recall and emotional engagement among Algerian sports audience.

The sub-hypotheses were:

- Algerian sports audiences enjoy a medium to high level of awareness and spontaneous recall of their favorite teams' sponsors, especially when effective neuromarketing strategies are employed.
- The identity of the sports sponsor positively influences the Algerian audience's perception of their team's professionalism and organizational quality, thereby enhancing the emotional bond between the audience and the team.
- Fast-paced and enthusiastic advertisements supported by music and visual effects elevate the levels of neural attention and emotional excitement among Algerian sports audiences, which enhances their response to the brand.

- **Significance of the study:**

The importance of this study stems from:

- Its focus on a new area in the Algerian environment, which is neuromarketing in the sports field, thus opening the door for future research in this specialization.
- Providing a scientific understanding of how audiences interact with sponsors and sports advertisements, which may assist clubs and sponsoring entities in improving their marketing strategies.
- Its aim to bridge a knowledge gap regarding how neurological influences can be used to attract the attention and emotions of the Algerian audience.
- Supporting sports decision-makers and advertisers with information based on the analysis of sports consumer behavior, thereby enhancing the efficiency of investment in sports sponsorship.

- **Objectives of the study:**

This study aims to:

- Analyze and measure the awareness of Algerian sports audiences regarding the sponsors associated with their favorite teams.

- Examine the impact of neuro-marketing strategies (music, motion imagery, emotional advertisements) on audience attention and engagement with the brand.
- Explore the relationship between sports affiliation and emotional interaction with advertisements and sponsors.
- Provide scientific indicators to guide sports advertising campaigns according to the neuro-behavioral characteristics of the audience.
- Contribute to the academic understanding of neuromarketing applications in Algerian sports.
- **Methodology of the study:**

The descriptive-analytic approach was considered an appropriate methodology for this study, as it allows for the introduction and clarification of concepts related to neuromarketing in general, as well as neuromarketing in sports.

In addition, the results and data obtained from the study were analyzed based on the responses of the sample taken.

II) Neuromarketing Basic Concepts:

1) Definition of Neuromarketing:

The concept of neuromarketing was proposed by psychologists at Harvard University in 1990, and companies like Google, CBS, and Frito-Lay have used neuromarketing services to assess consumer ideas about their advertisements or products, along with other companies. (Selda, Amir, & Vahid, 2013, p. 20)

It is defined as: "the science specialized in studying the brain's response to advertisements and brands, using magnetic resonance imaging techniques. It is also a method of modern marketing that seeks to control the consumer's mind and to understand not only what they think or feel, but also to reach an understanding of what this consumer intends." (Kharouf & Fariha, 2016, p. 50)

Neuromarketing is also described as a research tool that provides direct feedback on the brain's reactions during marketing stimuli. According to some researchers, the brain is a black box that hides the emotions and preferences of consumers, and neuromarketing acts as a window that reveals and gives access to these emotions. By gaining insights from individuals' brain processes, researchers will be able to understand, evaluate, and predict consumer behavior. (Vitor, Janaina, & Jorge, 2014, p. 205)



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Neuromarketing today lies at the intersection of behavioral psychology, economics, and consumer neuroscience. Consumer neuroscience studies the cognitive and emotional aspects of human behavior, and many researchers define neuromarketing as relying on neuroscience techniques to understand the thinking and unconscious behavior of customers. It measures brain and body signals instead of traditional self-reporting tools such as questionnaires or interviews, or alongside these tools. (Bourezak & Nouri, 2017, p. 87)

2) Neuromarketing techniques:

2.1) Electroencephalography (EEG):

EEG is an abbreviation for electroencephalography. Although this method is considered one of the oldest techniques, it provides suitable results in measuring changes in the electrical field in specific areas of the brain. Electrodes are placed on the scalp, capturing slight changes in electrical activity. The data is recorded on a screen or on paper in the form of waves and is analyzed. (Laoufi, 2023, p. 24)

2.2) Magnetic Resonance Imaging (MRI):

It uses a magnetic field and radio waves to produce detailed images of organs and tissues inside the body. It is an effective diagnostic tool used to detect a wide range of conditions, such as tumors, injuries, and neurological disorders.

2.3) Functional Magnetic Resonance Imaging (fMRI):

It is an advanced type of MRI that measures changes in blood flow associated with neural activity in the brain. It is used to study brain functions and understand how different parts of the brain work together. (Djaraoui & Ziani, 2022, p. 100)

2.4) Magnetoencephalography (MEG):

The electrical recording of the brain is one of the tools used to measure the electrical activity in the brain, where the electromagnetic signals produced by neurons during their activity are recorded. Electrical recording of the brain (MEG) is used to study brain functions, diagnose neurological disorders such as epilepsy, and identify the areas of the brain responsible for various functions. (Salwa, 2021, p. 110)

2.5) Eye Tracking Technology:

Eye tracking technology measures eye movement and pupil dilation, and it is very useful in analyzing consumer behavior in marketing. There are different techniques for measuring eye movement: saccadic movement between points, fixation when the eye stops at certain positions, and transition from one position

to another. This technique relies on recording video of eye movement during viewing, where the movement of the eyes is tracked accurately to measure: fixation points (when the eye stops), rapid movement between points, the positions the eye looks at, and the transitions between them. The visual path resulting from eye movement is called "scan path," which helps in understanding consumer behavior accurately. (Ben sliman & Ben amara, 2022, p. 12)

Nowadays, the three most common methods that have been used in neuromarketing are fMRI, MEG, and EEG, due to their important role in measuring and identifying consumers' brains to marketing stimuli. (Hebatallah & Bassam, 2022, p. 54)

3) The importance of neuromarketing:

- It supports the transition from traditional marketing to neuromarketing, achieving benefits and predicting sales of a specific product, especially for large institutions that produce consumer goods, after understanding consumer tendencies and orientations.
- Determine the buying habits and behavior of consumers towards a specific product, and know their reactions to the product itself.
- It improves the strengths of products or services and addresses weaknesses, after identifying them through analyzing the brain cells of consumers during experiments.
- Identify the products that consumers like, as positive brain signals appear towards them, which helps organizations improve their products. (Yara, 2019, p. 476)

4) Neuromarketing goals:

The goals of neuromarketing are summarized as follows:

- Obtaining accurate information about consumers needs by analyzing signals from the brain during brain imaging, which helps in understanding the true desires of consumers.
- Meeting the needs of groups that have difficulty expressing their opinions, such as children or people with disabilities, as neuromarketing provides an effective way to understand their preferences without relying on verbal expression.
- Improving future marketing planning through the use of modern technologies such as magnetic resonance imaging, enabling the



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development of more accurate and effective marketing strategies. (Fahmy, 2020, p. 802)

5) Advantages and disadvantages of neuromarketing:

5.1) Advantages of neuromarketing:

Despite all that is said about neuromarketing, it has many benefits, which we can mention below:

- Neuromarketing helps meet the real needs of consumers, and is considered more effective compared to traditional marketing methods, as much of the output of our behavior is below the level of perception.
- Neuromarketing gives producers the insight to know the development of their products' relationships with consumers.
- Neuromarketing is a type of consumer testing, where instead of simply interrogating people, the brain is directly interrogated. (Khery, 2014, p. 29)
- Understanding the real needs of consumers more accurately than traditional methods, as many behavioral triggers occur without full cognitive awareness.
- Analyze consumer reactions directly through brain activity, rather than relying solely on questionnaires or interviews, which can be inaccurate. (Fahmy, 2020, p. 803)

5.2) Disadvantages of neuromarketing:

Despite the previously mentioned benefits of neuromarketing, we can never lose sight of the negative side of this new type of marketing, so we will mention the disadvantages of neuromarketing below:

- The use of magnetic resonance technology in marketing and not for treatment leads to a slight increase in the effectiveness of advertising on humans, and on the other hand, it can cause many diseases, and may even lead to death and increase human suffering, as it will be an easy way to push people to buy unhealthy products.
- Even after using neuromarketing, customer behavior will remain unpredictable. (Nawari, 2020, p. 218)
- Neuromarketing distorts the relationship between the seller and the customer, as there are supposed to be levels and areas of deliberation between the seller and the customer, but with neuromarketing, the

customer has no chance to create an information barrier between him and the seller.

- If neuromarketing is used against people's will, it can be considered unethical. (Khery, 2014, p. 30)
- The potential health risks of using technologies such as MRI, which may cause harmful side effects or even serious illnesses in some cases.
- Exploiting technology to influence purchasing behavior, which may lead to the promotion of unhealthy products (such as harmful foods or alcohol), or targeting vulnerable groups like children in an unethical manner.
- Lack of specific laws, regulations, and standards to limit unethical excesses such as exploiting and manipulating consumers' latent minds.
- The absence of the necessary competencies to achieve the desired results, meaning those who have expertise in fields, neuroscience and marketing. (Zouambia, 2024, p. 424)

Despite the multiple drawbacks of neuromarketing, it should not be banned; rather, studies should continue on other options aimed at making its use more transparent.

III) Sports and Neuromarketing:

1) Sports Marketing and Neuromarketing:

Sports marketing promote products or services through sports, leveraging major events like the Olympics and World Cup. While research in this field has grown, the strategies for success are still evolving, with experts emphasizing marketing intelligence and planning. As global sports brands break cultural barriers, neuromarketing—using neuroscience to analyze consumer emotions—are becoming essential. Studies, such as Darabi use EEG to measure how ads affect brainwaves, while sports sponsorship boosts brand awareness and sales.

Sports sponsorship connects brands with audiences, enhancing image and driving purchases. Neuromarketing helps measure sponsorship effectiveness by analyzing emotional responses, proving that emotions heavily influence buying decisions. Companies that build emotional ties through sports can embed their brand in consumers' subconscious, making marketing more impactful.

The future of sports marketing lies in combining traditional strategies with neuromarketing, allowing brands to deeply understand and influence consumer behavior for greater success. (ERCAN & KABAKÇI, 2019, p. 47)

2) Decision (Brain vs Emotion):



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In the book *Biology*, author Martin Lindstrom, who specializes in marketing and advertising science, describes how your brain unconsciously reacts to product advertising and marketing. Our rationality is only 10%. Our preference for a particular brand of drinks, electronics, or other products based on their technical characteristics and features is often wrong.

Lindstrom mentions some of the ways brands use neuromarketing in advertising to get you to buy the product:

- **Imitation:** People tend to imitate the people around them, this is human nature, which is why companies resort to using celebrities and influencers in their advertisements.
- **Hidden messages:** By applying neuromarketing, brands focus on the customer's five senses. Some brands use music and scents in the space to influence the customer's reaction.
- **Fear:** “Buy these slimming pills now so you don't gain weight and become fat”, ‘You will suffer from the symptoms of the disease if you don't buy this medicine’, marketers direct these messages to customers, motivating them to buy out of fear of feeling unhappy, unhealthy, or unfree.
- **Loyalty and belonging:** Being human and belonging to groups is an important aspect of life and ensures our survival as a species, including brand groups. Marketers address you on behalf of your group and direct their messages to you as a representative of the group and not as an individual, such as your religious affiliation and beliefs. (Mabrouk, 2023, pp. 812-813)

3) The Identification of the Sports Audience:

The relationship between audience and sports clubs is unique and is based on the club's identity. Audience vary in their level of loyalty, from casual to highly loyal, making it important to classify them based on similarities to assist stakeholders in the sports industry. Loyal audience feels an emotional connection to the club, sharing in its victories and strengthening their ties through social groups such as friends and family.

This audience watches more matches, participate in club activities, and purchase official merchandise to support the team. They also respond positively to sponsors and often buy sponsor products out of loyalty, indicating that emotional ties and performance shape audience behavior. (MARIANA, 2019, p. 56)

Researchers have found that repeated exposure to a brand and personal interest in certain brands—especially high-risk sports like mixed martial arts or motorsports—enhance audience engagement and recall of sponsors, as incidents that occur during events increase interest through the fear appeal theory.

IV) Methods:

1) Data collection/analysis:

The field data was collected by relying on the questionnaire, which included 3 dimensions.

- The first is the Sponsorship Awareness dimension, which includes 7 questions
- Second, the Emotional Connection dimension included 7 questions.
- Third, the Neuromarketing Stimuli dimension included 8 questions.

On a unidirectional 3-point Likert-type scale, the 22 items were scored (1= disagree to 3= agree).

As for the methods of analyzing the primary data, the statistical processing was done using (SPSS V.22), where it was audited and checked for quality, then classified and categorized, and statistical measures were calculated according to the need of the research.

2) Cronbach's alpha coefficient:

The Cronbach's alpha coefficient was used to assess the reliability of the results of the field study. The value of this coefficient for the first dimension was (0.728), which indicates a good level of stability, for the second dimension it was (0.724) and for the third dimension it was (0.754), which indicates a good level of stability for both. The overall Cronbach's alpha coefficient for the model was (0.837), indicating strong internal consistency and reliability of its items. The following table illustrates this:

Table 01. Cronbach's alpha coefficient value

	α
First dimension	0.728
Second dimension	0.724
Third dimension	0.754
All	0.837

Source: SPSS Outputs

3) Study Sample:



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The research sample consisted of Algerian sports audience in different sports from different regions, following local teams or national teams.

The questionnaire was prepared and submitted to the sample electronically between May 20 and May 27, 2025. The results of the sample are summarized in the following table:

Table 02. Sample Characteristics

	(N = 135)	
	n	(%)
Gender:		
Male	111	82.2
Female	24	17.8
Age (Years):		
18-25	72	53.3
26-35	55	40.7
36-45	8	5.9
Educational level:		
High school	16	11.9
Undergraduate	27	20
University degree	92	68.1
Range of sports viewership:		
I follow sports on a daily basis	79	58.5
I follow sports on a weekly basis	14	10.4
I follow sports Sometimes	40	29.6
I don't follow sports considerably	2	1.5

Source: Respondents of the study

According to table (2) we notice:

- **Gender:** The results indicate that males constitute the vast majority of the sample at (82.2%), compared to (17.8%) females. This disparity is attributed to the relatively male-dominated nature of popular sports in Algeria.
- **Age:** The age group (18–25 years) represents the largest percentage of participants at (53.3%), followed by the (26–35 years) group at (40.7%), and then the (36–45 years) group at (5.9%). This distribution shows that most respondents belong to the young and active segment of the audience, which is considered the most engaged with sports content and modern advertisements, especially those utilizing neuromarketing techniques.

- **Educational Level:** The results showed that (68.1%) of the sample hold a university degree, while (20.0%) are at the university level, and only (11.9%) are at the secondary level. This indicates that the majority of participants have a good educational background, which may positively influence their ability to evaluate marketing messages and understand their neurological and emotional impacts.
- **Range of Sports Viewership:** It was found that (58.5%) of participants watch sports daily, (10.4%) weekly, while (29.6%) watch occasionally. And only (1.5%) who don't follow sports considerably. This distribution shows that the sample is primarily composed of active audiences, which aligns with the nature of the study focusing on audience interaction with advertising content and sponsorship in the sports field.

Based on this, the sample can be considered suitable in terms of size and diversity for analyzing the responses of Algerian audiences to neuromarketing stimuli in the sports context.

V) Discussion Hypothesis:

In this section, we will analyze and discuss each dimension separately, focusing on the most important sentences in each dimension. We will also answer each sub-question and verify their respective hypotheses.

1) Sponsorship Awareness Dimension:

Table 03. Sponsorship Awareness Dimension Analysis:

Sentences	Agree	Neutral	Disagree	Total	Mean	Chi ²	Df	Rank
1- I often notice sponsors' logos during sports matches.	110	25	/	135	2.81	53.51*	01	01
	81.5%	18.5%	/	100%				
2- I can easily recall the names of brands that sponsor my favorite team.	93	37	5	135	2.65	88.17*	02	04
	68.9%	27.4%	3.7%	100%				
3- I recognize sponsor names when they appear on jerseys or banners.	111	12	12	135	2.73	145*	02	03
	82.2%	8.9%	8.9%	100%				
4- I remember seeing sponsor logos on social media posts by my team.	96	22	17	135	2.58	86.97*	02	05
	71.1%	16.3%	12.6%	100%				
5- Sponsor brands are visible enough during televised matches.	80	33	22	135	2.42	42.17*	02	06
	59.3%	24.4%	16.3%	100%				
6- I can name at least one sponsor of my favorite team without searching.	117	9	9	135	2.8	172.8*	02	02
	86.7%	6.7%	6.7%	100%				
7- I talk about sponsors when	47	48	40	135	2.05	0.84*	02	07



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discussing sports with friends.	34.8%	35.6%	29.6%	100%				
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* Chi² value at significance level of 0.05

Source: SPSS Outputs

Table (3) illustrates the levels of awareness and perception among Algerian audiences regarding the brands sponsoring their favorite teams.

Sentence (1): "I often notice the sponsors' logos during sports matches," get the highest level of agreement with a percentage of (81.5%) and a high mean (2.81), indicating a high level of visual attention to the sponsors' logos, thus confirming the effectiveness of integrated advertising in live scenes.

Sentence (6): "I can name at least one sponsor of my favorite team without searching" showed a high level of agreement (86.7%) and a mean (2.80), indicating the audiences' ability to recall sponsors directly, which is a strong indicator of brand retention in long-term memory, aligning with the objectives of neuromarketing.

Sentence (3): "I recognize sponsor names when they appear on jerseys or banners" also yielded strong results (82.2%) agreement and a mean (2.73), confirming the importance of visually integrating brands into the team's visual elements, such as jerseys and banners.

Sentence (7): "I talk about sponsors when discussing sports with friends" recorded the lowest mean (2.05) and the lowest level of agreement (34.8%), indicating that verbal discussion about sponsors remains limited and may not yet represent a strong dimension in building collective awareness of brands.

The Chi-Square test showed significant statistical significance in most Sentences, particularly (1), (2), (3), and (6), indicating that there are significant differences among participants in their opinions regarding these elements, thereby enhancing the reliability of the results of this dimension.

Overall, the results indicate that the majority of participants possess a high degree of attention to advertising content and sports sponsorships, particularly those presented visually during matches or through media outlets.

First sub-question: "To what extent are Algerian sports audiences aware of and able to recall the sponsors of their favorite teams?" the results of the analysis of the dimension of "sponsorship awareness" indicate that the evident from the high approval rates for several key statements, most notably the statement "I can name at least one sponsor of my favorite team without searching," where the

approval rate reached one of the highest recorded results in this dimension, reflecting a strong spontaneous memory for brands among the sample individuals.

Statements related to visual recognition, such as "I recognize sponsor names when they appear on jerseys or banners" and "I often notice sponsors' logos during sports matches," showed high approval rates, indicating the effectiveness of visual elements in advertising campaigns within the sports context, which aligns with the principles of neuromarketing that focus on capturing attention and stimulating memory through images, colors, and sensory stimuli.

Other statements showed acceptable approval rates, further enhancing the credibility of these results, especially since all statistical values for the Chi-square test were significant at the 0.05 level, indicating statistical significance for the differences in distribution.

Based on the above, it can be said that the hypothesis stating that "Algerian sports audiences enjoy a medium to high level of awareness and spontaneous recall of their favorite teams' sponsors, especially when effective neuromarketing strategies are employed" is a validated hypothesis strongly supported by the available quantitative data.

2) Emotional Connection Dimension:

Table 04. Emotional Connection Dimension Analysis:

Sentences	Agree	Neutral	Disagree	Total	Mean	Chi ²	Df	Rank
1- A sponsor's image affects how I view my favorite team.	73	37	25	135	2.35	27.73*	02	06
	54.1%	27.4%	18.5%	100%				
2- I feel proud when a well-known company sponsors my team.	119	10	6	135	2.83	182.71*	02	01
	88.1%	7.4%	4.4%	100%				
3- Sponsors increase my trust in the professionalism of my team.	83	40	12	135	2.52	56.84*	02	03
	61.5%	29.6%	8.6%	100%				
4- I feel emotionally connected to some of the team's sponsors.	30	81	24	135	2.04	43.6*	02	07
	22.2%	60%	17.8%	100%				
5- I like when sponsors promote team-related values (e.g., unity, pride).	100	29	6	135	2.69	106.71*	02	02
	74.1%	21.5%	4.4%	100%				
6- A sponsor's reputation influences my perception of the team.	71	47	17	135	2.4	32.53*	02	05
	52.6%	34.8%	12.6%	100%				
7- I'm more likely to engage with sponsors that reflect Algerian identity.	87	25	23	135	2.47	58.84*	02	04
	64.4%	18.5%	17%	100%				

* Chi² value at significance level of 0.05



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Source: SPSS Outputs

Table (4) reflecting the dimension of emotional communication indicates a significant level of emotional influence of sponsors on Algerian sports audiences.

Sentence (2): "I feel proud when a well-known company sponsors my team," get the highest approval rate with 119 participants (88.1%) agreeing, which clearly indicates a strong audience connection to the brand when it holds a significant position in the market. This Sentence received the highest mean (2.83) and rank number 01, suggesting a substantial impact of brand reputation on audience emotions.

Sentence (5): "I like when sponsors promote team-related values (e.g., unity, pride)," participants demonstrated a clear preference for sponsors that reflect values associated with the team which was agreed upon by (74.1%) of participants, with a high mean (2.69), indicating the importance of the symbolic and cultural aspect in enhancing emotional engagement.

Sentence (3): "Sponsors increase my trust in the professionalism of my team" showed that (61.5%) of participants agreed with this proposition, reflecting that the presence of a sponsor significantly contributes to enhancing the team's image in the eyes of the public. This, in turn, reinforces trust and the overall positive impression of the club.

However, **Sentence (4)** "I feel emotionally connected to some of the team's sponsors" received the lowest approval rate (22.2%) and mean (2.04), indicating that the direct emotional connection with the sponsor remains relatively weak compared to elements related to the overall image and trust.

The Chi-Square test showed significant statistical significance in all Sentences, particularly (2), (5), (3), and (7), indicating that there are significant differences among participants in their opinions regarding these elements, thereby enhancing the reliability of the results of this dimension. As the approval rates for various Sentences revealed that a large segment of participants emotionally connects with sponsors through their image, reputation, and the values they represent.

Second sub-question: "To what extent does the presence of a sponsor affect audience's perception of their team's professionalism and image?" can be discussed in light of the data presented in the analysis of the "emotional connection" dimension clearly through the statistical indicators associated with several statements reflecting this dimension. The statement: "Sponsors increase

my trust in the professionalism of my team" showed a significant agreement rate, indicating that the presence of a sponsor is a factor that supports the audience's perception of the quality of organization and the level of professionalism within the team. This trend is also supported by the results of the statement: "A sponsor's image affects how I view my favorite team," which recorded a good agreement rate confirming that the identity of the sponsor plays a role in shaping the overall impression of the audience about the team's image.

Furthermore, the audience agreed with the statement: "I'm more likely to engage with sponsors that reflect Algerian identity," highlighting the importance of cultural harmony between the sponsor and the team in enhancing the audience's acceptance of the sponsor and its positive impact on their view of the team. Additionally, the statement "I like when sponsors promote team-related values (e.g., unity, pride)" got a significant agreement, reflecting the extent to which the symbolic messages of the sponsor deepen this positive perception.

From a statistical perspective, all values of the Chi-square test were significant at a significance level of 0.05, which enhances the accuracy of the conclusions and confirms the existence of real and impactful variations in the audience's opinions.

Therefore, it can be said that the results of the study support the validation of the sub-hypothesis "The identity of the sports sponsor positively influences the Algerian audience's perception of their team's professionalism and organizational quality, thereby enhancing the emotional bond between the audience and the team" It is evident that sponsorship is not merely a commercial means but is an effective element in building the mental image and enhancing credibility and professionalism, especially when supported by cultural values and an identity that resonates with the target audience.

3) Neuromarketing Stimuli Dimension:

Table 05. Neuromarketing Stimuli Dimension Analysis:

Sentences	Agree	Neutral	Disagree	Total	Mean	Chi ²	Df	Rank
1- I pay more attention to ads with energetic music and fast visuals.	85	43	7	135	2.577	67.73*	02	02
	63%	31.9%	5.2%	100%				
2- Sponsor ads with emotional stories leave a lasting impression on me.	48	73	14	135	2.251	38.97*	02	06
	35.6%	54.1%	10.4%	100%				
3- I remember sponsors better when their ads show team highlights.	78	55	2	135	2.56	67.51*	02	04
	57.8%	40.7%	1.5%	100%				



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4- I'm drawn to sponsor ads that feature national colors or symbols.	83	46	6	135	2.57	65.91*	02	03
	61.5%	34.1%	4.4%	100%				
5- Sponsor messages with famous athletes get my attention.	95	28	12	135	2.61	86.17*	02	01
	70.4%	20.7%	8.9%	100%				
6- Visual effects and motion in ads keep me engaged with the brand.	67	62	6	135	2.45	50.97*	02	05
	49.6%	45.9%	4.4%	100%				
7- I enjoy emotionally intense sports ads more than factual ones.	44	70	21	135	2.17	26.71*	02	08
	32.6%	51.9%	15.6%	100%				
8- Sponsor ads using storytelling (e.g., victory, unity) feel more meaningful to me.	50	66	19	135	2.22	25.37*	02	07
	37%	48.9%	14.1%	100%				

* Chi² value at significance level of 0.05

Source: SPSS Outputs

Sentence (5): "Sponsor messages with famous athletes get my attention" received the highest approval rate, with 95 participants (70.4%) agreeing, and it has the highest mean (2.61), with a high level of statistical significance, and this indicates the exceptional influence of famous sports models/figures in attracting attention on sponsorship. This aligns with the principles of neuromarketing, which state that the human brain reacts strongly to familiar or emotionally impactful faces.

Sentence (1): "I pay more attention to ads with energetic music and fast visuals" showed a strong acceptance (63%) of these advertisements and a mean (2.577); the result indicates the effectiveness of sensory activation through sound and visual movement in enhancing attention, which is one of the fundamental principles in neuromarketing.

Sentence (4): "I'm drawn to sponsor ads that feature national colors or symbols" showed that (61.5%) of participants agreed to it, This result confirms the emotional impact and collective identity associated with national symbols, thereby enhancing the psychological connection to advertisements.

Sentence (7): "I enjoy emotionally intense sports ads more than factual ones" recorded the lowest mean (2.17) and the lowest level of agreement (32.6%), indicating that the weakness of the abstract emotional impact may indicate the audience's preference for content associated with more specific characters, symbols, or sensory elements.

The Chi-Square test showed significant statistical significance in most Sentences, particularly (5), (1), (3), and (4), indicating that there are significant differences among participants in their opinions regarding these elements, thereby enhancing the reliability of the results of this dimension.

Overall, the results showed that the most impactful stimuli in neuromarketing were advertisements featuring famous athletes, sensory influences such as music and fast images, and national symbols, while the effect of storytelling and abstract emotional content was less significant, indicating the audience's preference for advertisements with familiar symbols and direct sensory effects.

Third sub-question: "How do fast-paced, high-energy sponsor ads (with music and action clips) influence Algerian audience' arousal levels and attention to the brand?", considering the results of the analysis of the dimension of "neuromarketing stimuli" it is evident that "Fast-paced and enthusiastic advertisements supported by music and visual effects elevate the levels of neural attention and emotional excitement among Algerian sports audiences, which enhances their response to the brand". The sample demonstrated a strong interaction with advertisements that included upbeat music and rapid visual scenes, with good agreeing with the statement: "I pay more attention to ads with energetic music and fast visuals," which confirms the effectiveness of these elements in capturing the audience's attention.

Additionally, statements as "Sponsor messages with famous athletes get my attention", "I'm drawn to sponsor ads that feature national colors or symbols", and "I remember sponsors better when their ads show team highlights" showed a clear positive response, indicating the audience's attraction to sensory and visual stimuli associated with their sports and national identity. In contrast, emotional or narrative advertisements did not have the same level of impact, as they recorded lower agreement rates, highlighting the audience's preference for direct and effective sensory influences.

From a statistical perspective, all values of the Chi-square test were significant at a significance level of 0.05, which enhances the accuracy of the conclusions and confirms the existence of real and impactful variations in the audience's opinions.

Therefore, the hypothesis that "Fast-paced and enthusiastic advertisements supported by music and visual effects elevate the levels of neural attention and emotional excitement among Algerian sports audiences, which enhances their



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response to the brand." is considered a validated hypothesis, clearly supported by the statistical and analytical data of this dimension.

VI) Conclusions:

In light of the findings of this study, it is confirmed that neuromarketing represents an effective and influential tool in sports sponsorship campaigns, as it simultaneously addresses the cognitive and emotional aspects of the audience. The Algerian sports audience has shown a notable interaction with advertisements rich in sensory and visual stimuli, indicating the importance of integrating these elements into the design of marketing campaigns for sponsors. The study also demonstrated that the emotional connection of the audience with the sponsor enhances their perception of the team's professionalism and encourages them to build a positive relationship with the brand.

VII) Recommendations:

In consideration of the findings, the researcher proposes the following recommendations:

- The use of direct neuroanalytic tools (such as eye tracking or EEG) to support findings with concrete experimental data.
- Analyzing the effectiveness of local sponsors versus international sponsors in creating an emotional connection with the audience.
- Developing sport-oriented neuro-marketing models that take into account the psychological and social factors of the local audience.
- Studying the persistence of the neural impact of advertisements after the conclusion of the sporting event.
- Expanding the sample in the future to include sports audiences from different states and various sports types, in order to understand the cultural and psychological variations among audiences.

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