




ANALYSIS OF VISUAL STRATEGY AND ADVERTISING EFFECTIVENESS ON STREAMING ESPORTS VIEWERS

ANÁLISIS DE LA ESTRATEGIA VISUAL Y EFICACIA PUBLICITARIA EN ESPECTADORES DE ESPORTS POR STREAMING

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Abstract

Evaluating the effectiveness of esports sponsorship for a brand is a significant challenge. A first approach would be to quantify the visibility of ads during broadcasts, usually expressed in terms of exposure time. This study supports the existing literature on the importance of size in advertising, highlighting the positive influence of larger brands on viewers' visual attention. In addition, it was found that placement within the players' clothing resulted in longer viewing times. In contrast, no significant results were obtained in relation to the colour perception of the brands. The structural complexity of the brands also influenced visual behaviour, with less complex brands attracting more attention. In addition, the phenomenon of exposure was evident, where brands that occupied more time on stage attracted more visual fixations. In summary, these findings provide important information for marketing and advertising professionals seeking to maximise the visual impact of their brands in this thriving entertainment sector.

Keywords: Esports, eye tracking, advertising, brand.

Resumen

La evaluación de la eficacia publicitaria es una importante herramienta, tanto para acciones de marketing como institucionales, que busca obtener percepciones favorables de los públicos para una empresa y sus marcas dentro de una determinada audiencia. La evaluación de la eficacia del patrocinio en deportes electrónicos (esports) para una marca constituye un desafío significativo. Un enfoque inicial sería cuantificar la visibilidad de los anuncios durante las transmisiones, usualmente expresada en términos de tiempo de exposición. Para ello, se utilizaron herramientas y técnicas del neuromarketing. Como resultado se observó que la ubicación dentro de la indumentaria de los jugadores generó una prolongada duración de visualización. En contraste, no se obtuvieron resultados significativos en relación con la percepción cromática de las marcas. La complejidad estructural de las marcas también influyó en el comportamiento visual, con las menos complejas atrayendo una mayor atención. Además, se evidenció el fenómeno de exposición, donde las marcas que ocuparon más tiempo en escena captaron mayores fijaciones visuales. En conclusión, estos resultados proporcionan información crucial para profesionales del marketing y la publicidad que buscan maximizar el impacto visual de sus marcas en este próspero sector de entretenimiento.

Palabras clave: Esports, estrategia visual, publicidad, marca.



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Introduction

Advertising brands, essential in the world of marketing and advertising, are key elements for the identification and differentiation of products and services in the market. According to Zia et al. (2021), these brands not only represent a name or a logo but can also generate emotional and cognitive connections in the minds of consumers. Their power lies in their ability to influence perceptions and purchasing decisions. In both traditional and emerging sporting events such as esports, advertising brands have played a key role. From stadium billboards to team and athlete sponsorships, brands have consistently sought to partner with the world of sport to increase their visibility and connect with passionate audiences. This context allows us to better understand how advertising brands are integrated into various platforms and events, impacting both the spectator experience and companies' commercial strategies (Lanza, 2020).

Currently, due to the emergence of new channels or audiovisual media that broadcast advertising content, there has been a transformation in the way advertising is broadcast and displayed. Specifically, this change may be related to the evolution of new channels or audiovisual media used to broadcast advertising content, which is requiring more effective research to help improve the positioning of the brand/service in the target market that organisations have. This is where the interest in neuromarketing techniques and tools is born (Alsharif et al., 2021).

For Moreno and Zarate (2019) neuromarketing is a tool that can facilitate the process of understanding how consumers behave by observing certain neurophysiological processes. Considering that, in most situations, the consumption decision is mainly influenced by emotions rather than logical reasoning, it is essential to deepen the study and understanding of variables that go beyond those expressed directly by the consumer (Lindstrom, 2008).

The sports industry is characterised by its great advertising impact, and new sporting events such as esports, in addition to their online status, generate greater relevance in terms of advertising and the impact it has on spectators. Although its boom is incipient, there are authors who have already reflected on e-sports (Spanish Association of Video Games, 2018; Carrillo, 2015; Funk et al., 2018; Hamari & Sjoblom, 2017; Sánchez & Davids, 2017) but no research has been found that delves into the advertising or marketing contained in this discipline.

In esports, as a sport financed almost entirely by private entities (companies), the participation of countless brands and companies that sponsor teams and players stands out in their events and competitions, both in person and on their online broadcasting platforms (Giakoni et al., 2022). This enables communication between companies and current and/or future consumers, and is a great strategy and tool for advertising and marketing (Galmés & Victoria, 2013). This facilitates and justifies even more if possible, the application of neuromarketing tools and techniques, with the aim of continuous improvement and a final increase in the return on investment.

Advertising effectiveness in sports events

Advertising effectiveness is expected to increase around major sporting events simply because advertising messages reach more people more often (Bornstein & Craver-Lemley, 2022). Not only are the audiences larger, but people are also likely to see the messages more frequently because they spend a large amount of time at these events. For Bornstein and Craver-Lemley (2022), mere brand exposure effects could lead to greater advertising effectiveness; such effects become stronger before the event, peak during the event itself, and then level off, thus showing an inverse U-shape.

Deep psychophysiological processes may also come into play in the advertising of major sporting events, for example, the attention these events receive indicates their importance to consumers (Jee, 2021). Therefore, consumers are likely to perceive the commercial messages surrounding these events as more important and interesting (Sharot & Sunstein, 2020) and in turn, are likely to pay more attention to these messages.

Previous research findings on advertising around major sporting events confirm an overall positive impact, showing increased brand recall and purchase intentions (Russell, 2002).

The effectiveness of advertising is intrinsically linked to the attention consumers pay to it (Jee, 2021). However, it is important to note that a number of factors can influence the quantity and quality of this attention. One element that negatively impacts attention is the emotion associated with the context in which the consumer is located (Newell, Henderson & Wu, 2001). This emotion tends to distract and reduce the ability to concentrate on advertising messages, which, in turn, leads to less deep and reflective processing of information (Cohen et al., 2018).

When consumers pay superficial attention to advertising, they tend to form quick impressions and retain information only in the short term (Kim, 2022). In this sense, the duration and quality of attention consumers give to advertising can have a significant impact on the effectiveness of the campaign and the ability of advertisers to deliver their message effectively.

The proliferation of advertising during sporting events is not only due to the increased presence of brands, but also to the frequency with which brands advertise repeatedly. However, it is important to recognise that there is an optimal

level of advertising exposure that is relatively low, as noted by Dall'Olio, and Vakratsas (2023). Beyond this point, audience responses tend to plateau quickly. In fact, overly frequent exposure can lead to irritation and negative feelings towards the ad and the brand, as suggested by Whang et al. (2021) and Alalwan (2018), ultimately resulting in a decrease in advertising effectiveness.

One device that has become a crucial tool for the evaluation of advertising effectiveness is Eye Tracking, as highlighted by Carter and Luke (2020) this technology allows the tracking and analysis of consumers' eye movements during exposure to advertisements, providing a unique window into the consumer's mind by revealing which visual elements of an advertisement attract the most attention. This, in turn, empowers advertisers to better understand how to design effective messages that capture attention more efficiently.

In addition, Eye Tracking is not only able to identify the areas of greatest attention, but is also related to brand recall, as demonstrated in a study by Paterson et al. This study noted that a higher number of fixations on a logo or advertising message correlates positively with individuals' ability to remember the brand at a later stage. These findings underline the significant influence that the amount of time consumers spend looking at an advertising element can have on their ability to retain brand information. Consequently, eye tracking emerges as an essential tool for marketers in their quest to design more effective ads and improve brand recognition.

Advertising effectiveness in the digital environment

Not only can advertising effectiveness be addressed from the perspective of face-to-face sporting events, but it must also be addressed under the new trends of streaming online events.

A key attribute of Internet advertising is its interactivity (Kim, 2021). This is considered one of the main reasons that make the Internet an important advertising channel (Yáñez et al., 2023). Although different definitions of interactivity have been provided in the literature (Dincelli, & Yayla, 2022), there is a common view that in an interactive context, marketing communication changes from a one-way process to a two-way process (Park, & Yoo, 2020) where, on the one hand, advertisers have the advantage of identifying customers, differentiating them and personalising their service (Dincelli, & Yayla, 2022), and, on the other hand, consumers have a greater involvement with advertising, being able to choose when and how to interact with it (Park, & Yoo, 2020).

The aforementioned attributes have prompted several authors, such as Abbasi et al. (2023), Munsch (2021) or Sharma (2022) to intensify their efforts in digital advertising, emphasising the contribution of the Internet to the efficiency and effectiveness of brand stimuli, in view of the shift in advertising strategy, with the intention of obtaining maximum response from selected target groups, rather than maximum exposure to many unknown audience groups.

In the online context, it is important to understand that actions aimed at building and supporting a brand often do not generate immediate results. According to Kannan's (2017) research, both online and traditional advertising do not lead to an instant increase in brand equity. Therefore, for websites, building brand equity is a process that develops gradually over time.

Drèze & Hussherr (2003) found that banner ads have a positive effect even beyond the traditional measure of clicks, influencing recall, brand recognition and brand awareness. Mohan, and Jayakar (2022) also supported the positive effect of online advertising on brand recall and consumers' view of the brand; and Kushwaha (2020) provided evidence on the considerable effect of display ads on brand loyalty and attitudes. Therefore, the desired results, such as brand awareness, positive attitude and purchase intention, are likely to be observed after consistently investing in Internet advertising over time and using valid and reliable neuromarketing research tools.

In relation to advertising effectiveness in the sports industry broadcast through different channels, it is appropriate to analyse some studies that examine the effects of sponsorship and advertising on viewership of televised sporting events. Some authors (Bennett et al., 2002; Dees et al., 2008; Maricic et al., 2019; Toh, et al., 2023; Yim et al., 2021) have investigated sponsorship and advertising effectiveness using one or more of three consumption domains: (1) cognitive through awareness (recall and recognition). (2) affective through consumer attitudes towards sponsoring brands. And (3) conative through intentions to purchase a sponsoring company's product. Sports sponsorship awareness studies generally employ methods that involve surveying event attendees (Maricic et al., 2019). However, recent years have seen an increase in the use of experimental designs (Dees et al., 2008; Maricic et al., 2019; Toh, et al., 2023; Yim et al., 2021)) to address this issue. Experimental designs provide a controlled environment that allows isolation of foreign variables that may influence sponsorship or advertising effects. This methodology is beneficial in exploring the cause-effect relationship, comparing it to media sponsorship, and discerning differential effects between various promotional strategies (Sadish et al., 2002).

On the other hand, and thanks to the broadcasting of content via the internet, esports players and viewers have different experiences compared to TV viewers (Farzalipour et al., 2012). Because players' interaction with the video game is necessary, it is unclear whether they notice the brands advertised in the games. Players' attention could be much more focused and

intense because they play a game and control the players, rather than watching a game on TV. Because of this high degree of interaction, on-screen brand logos may be less noticeable than when passively watching a televised game. Conversely, because the viewer may be so involved in the game, they are more likely to recognise the brands and develop a positive affection for them. In addition, some subjects spend numerous hours a week watching esports streaming, which leads to high repetition and exposure to the advertised brands. Each time a viewer watches esports they are exposed to multiple in-game advertisements (Hwang et al., 2017).

It is due to the above that the aim of this research was to analyse the visual strategy of viewers and describe the effectiveness of advertising in streaming esports events, based on brand characteristics, with the help of neuromarketing tools.

Materials and Methods

This is a non-experimental, descriptive, cross-sectional study with a quantitative research approach.

Participants

A non-probabilistic convenience sampling technique was used to select the study participants. The sample consisted of a total of 48 subjects, all male, with a mean age of 23.4 ± 1.8 years, who watched streaming an average of 9.42 ± 4.5 hours per week and played esports 16.4 ± 3.77 hours per week.

Inclusion criteria were determined as: 1) being between 18 and 35 years old and 2) being a regular esports consumer, either playing or watching streams at least once a week. This age range was chosen, as this corresponds to the highest consumption of esports streaming platforms, as well as being a consumer segment that is difficult to reach and at the same time very interesting for large brands (Spanish Video Games Association, 2018).

As this is a study that involves the use of eye and brain monitoring technologies, an exclusion criterion was established for not wearing contact lenses or optical glasses, as these can potentially cause problems for correct calibration (Goldberg & Wichansky, 2003).

Subjects were not informed of the aim of the research, so as not to condition their results during data collection. The information conveyed to the subjects was the conduct of physiological response assessment studies on esports consumers. However, their agreement to participate in the study was recorded and signed in the informed consent form, which stated the confidentiality of the data provided, voluntary participation in the study and the ability to interrupt and/or abandon the measurement process whenever deemed appropriate. According to the Declaration of Helsinki and authorised by the ethics committee of the Universidad Autónoma de Chile, under code CEC 42-22.

Instruments

As in previous research (Benito et al., 2019; Giakoni et al., 2022), a Tobii Pro stationary eye tracker was used for data collection in this study, as well as a laptop computer with Windows 10 operating system, a 24-inch computer screen for test playback, and a wireless speaker.

Video test

The scenario used for data collection was a video with a duration of 10 minutes and 32 seconds and 30 frames per second, corresponding to the transmission via Twitch (streaming platform with the largest number of viewers) during the phase of picks and bans (choice of character to be used during the match, which lasts approximately 9 to 12 minutes before the start of the confrontation between the teams, where the largest amount of advertising stimuli is exposed) before starting the second map of the final of the Super League of League of Legends in Bilbao - Spain.

Study variables

Dependent variables

Visual behaviour

This variable refers to the duration of visual fixations, understood as the time that elapses from the end of a saccadic movement (rapid movements of both eyes in the same direction to fixate sources of information separated from each other) (Rosenbaum, 1991), when the eyeball stops to place the area of the image being viewed in the fovea, until the moment when a new saccadic movement begins (Marcen-Cinca et al., 2022). In this variable, the duration of fixation in milliseconds will be distinguished.

Independent variables

In the course of the video test 14 marks appear on stage, which will be analysed according to the independent variables of: Size, location, colour, complexity and exposure time (Figure 1).

Figure 1
Advertising stimuli in the video test



Brand size

This variable corresponds to the size of the advertising stimuli participating in the esports event. In the field of event advertising, size is a factor that will condition the viewer's vision (García-Sevilla, 1997).

Therefore, the brands were classified into two groups (smaller size and larger size), based on the size, amplitude and arrangement of the logos (García-Sevilla, 1997; Montero et al., 2010).

In order to carry out this classification, an Excel template was first designed with the size of each advertising brand according to its arrangement in the scene, considering as a starting point the X and Y pixel in the upper left corner of the logo.

Once the X and Y pixel was located, a box was generated to cover the logo (amplitude). In the Excel template, the height and width of each box was recorded, thus determining the exact size of each advertising brand.

Advertising brands with an average size of less than 100 pixels wide by 80 pixels high were considered to be smaller brands, while logos that exceeded this size were determined to be larger (García-Sevilla, 1997; Hassan-Montero et al., 2010).

Location of advertising stimuli

Having found no scientific evidence on the location of advertising stimuli in an esports stream, location was based on the importance of the advertising stimulus or brand in relation to what happens during the video. Similar to what was done in television by Putri et al. (2023), who coded locations according to whether products were shown in the foreground and close-up, whether the brand was clearly visible, whether the brand was shown in the centre of the screen, whether it was shown alone or with others in the same camera shot, and the number of products with the same brand that were visible. The location of brands was also measured by whether they were relevant to the scene in any way, whether they were in the centre of the on-screen action or not, and the amount of character interaction with the product and the type of character involved in such interaction. As done by La Ferle and Edwards (2006), who also coded locations as prominent or subtle in television programmes, along with capturing other aspects of brand location, they concluded that advertising stimuli placed on clothing attract more visual attention, thus may generate more viewing time (fixations) and higher likelihood of recall, compared to advertising brands that are present in the background of the scene (subtle).

Also La Ferle and Edwards (2006), after obtaining research results state that character interaction is determinant for brand representation, as a large percentage of branded visual appearances involved characters holding, using or consuming branded products.

Therefore, based on the above, the locations were classified into two zones: 1) inside the clothing; 2) outside the clothing (considering players, coaches and referees).

Colour

Advertising brands were divided into 3 types: a) monochromatic, b) bichromatic, c) polychromatic. Based on the classification made by Lelis (2019) who explains the consistency of colour theory, considering monochrome and polychrome, as well as highlighting the set of colours that generate bichrome.

Brand complexity

The brand complexity variable is established as the information that the stimulus provides to the observer. In other words, complexity can be established whether or not the logo is composed of figures and/or text. More complex stimuli will attract attention earlier than less complex stimuli (Townsend & Kahn, 2014).

This classification was made based on the physical composition of the brand, which can be an isotype (symbolic part of the brand, the brand is recognised without the text), logotype (text only), imagotype (combination of image and text, can work separately), isologotype (text and icon are grouped together, one does not work without the other) (Olivares, 2014).

Therefore, the 14 brands participating in the study were classified into two categories: a) lower complexity (isotype) and b) higher complexity (isologotype).

Exposure time of the advertising stimuli

This variable corresponds to the total time the advertising brand was exposed on stage. The methodology for recording time was based on work by Brennan et al. (1999), where they examined the extent to which exposure time explains the speed at which viewers recognise brands, recording the time of appearance of brands in seconds. Also Dal Cin et al. (2008), analysed brand exposure in popular films, counting brand appearance in minutes. And by Lee et al. (2019) in the sports domain they examined the effects of advertising, duration of exposure and frequency of exposure, running a classification of advertising in seconds.

Once the information is obtained, a summation of the times is run, which determines the total time for each of the stimuli in the video test. For the purposes of this research, this time was divided into four quartiles: 1) Q1 = 0 - 12.44 seconds; 2) Q2 = 12.45 - 66.5 seconds; 3) Q3 = 66.6 - 156.85 seconds; 4) Q4 = 156.86 - 341.0 seconds.

Statistical Analysis

In the first instance, a minuting was designed, which consists of recording all the brands present in the video, so a list was generated in Microsoft Excel software frame by frame with the following information: 1) name of the mark; 2) area of the scene where the mark appears; 3) minute, second and thousandth of start; 4) minute, second and thousandth of end of appearance of the mark; 5) X and Y pixel of the upper left corner of the area of interest (AOI); 6) width and height of the AOI measured in pixels. Then the correct minuting and the correct appearance of the areas of interest were checked with the Iy software.

After the biometric data collection, a template was created in Microsoft Excel software, with the intention of ordering the data and then transferring them to the statistical software, after which a linear normalisation of the data obtained was applied, which helps to better understand and manage the data and results. Subsequently, the data was dumped into the IBM SPSS v.24.0 statistical analysis programme. Preliminary assumption tests were performed to verify homogeneity of variance and normality. Levene and Shapiro-Wilk tests were performed to confirm the assumptions of homogeneity of variances and normality of distribution, respectively ($p > 0.05$). In this order, for the variables with only two classifications (size, complexity and location), a Student's t-test for independent samples was performed for the variables that obtained a normal distribution result. As the viewing time variable does not have a normal distribution, the non-parametric Mann-Whitney U test was applied in order to demonstrate that there are differences. With respect to the variables that have three or more classifications (colour and exposure time), a 1-factor ANOVA was carried out, which allows us to compare means of more than two dimensions. Subsequently, when the values were found to be non-normal according to the Levene hypothesis test, the Brown-Forsythe robust test was performed, which is used when the dimensions being compared have an unbalanced design. Finally, a Pearson correlational analysis was performed. In order to consider a correlation of interest, the r value ≥ 0.600 and the p value ≤ 0.05 were established as requirements.

Results

In this study of people's visual behaviour when exposed to advertising content via video, a fundamental metric known as fixation time, which is measured in seconds, was employed. This fixation time, provided by Iy software (Bitbrain), indicated how much time a person spends watching or paying attention to specific elements within the video advertisement. However, to make this metric more understandable and comparative between different advertising stimuli, it was subjected to a min-max normalisation process. In essence, this means that the result is adjusted so that the values are on a scale from 0% to 100%. Thus, the final result is presented as a percentage that reflects the relative attention that subjects give to the advertising stimuli in the video, taking into account factors such as size, location, colour, complexity and duration of exposure of these stimuli. The higher this percentage, the greater the attention paid by the subject to that particular stimulus compared to other elements present in the video (Table 1).

In relation to visual behaviour, and depending on the size of the advertising stimulus, we can highlight that the subjects experienced a longer viewing time on the larger stimuli with a mean of $1.45\% \pm 2.13\%$ compared to the smaller ones, which obtained a mean of $0.58\% \pm 1.25\%$. This shows statistically significant differences between the two dimensions ($p = 0.000$).

Table 1
Results visual behaviour

	Variable		%	SD	p valor
Visual Behaviour	Size	Higher	1,45	2,13	0,000**
		Lower	0,58	1,25	
	Location	Inside	1,53	2,26	0,000**
		Outside	0,89	1,53	
	Colour	Monochrome	1,19	1,96	0,85
		Bichromatic	1,28	1,94	0,64
		Polychromatic	1,18	2,12	0,99
	Complexity	Less	1,55	2,18	0,000**
		More	0,50	1,14	
	Exposure Time	Q1	0,28	0,49	0,000**
		Q2	0,22	0,45	
		Q3	1,64	2,19	
Q4		2,90	2,46		

Note. %: percentage, SD: Standard Deviation, * $p < 0,05$; ** $p < 0,01$

On the other hand, the results obtained from the visual behaviour based on the location of the advertising stimulus within the video test, in which statistically significant differences were obtained for the viewing time of the subjects, with a difference of $p = 0.000$ between the area inside the clothing with a mean of $1.53\% \pm 2.26\%$ and the area outside the clothing with $0.89\% \pm 1.53\%$.

In terms of visual behaviour depending on the colour of the advertising stimuli, no statistically significant differences were obtained on visual behaviour, obtaining a mean of $1.19\% \pm 1.96\%$ ($p = 0.85$) of visualisation for monochromatic brands. $1.28\% \pm 1.94\%$ ($p = 0.64$) for bichromatic marks and $1.18\% \pm 2.12\%$ ($p = 0.99$) for polychromatic marks. Although no statistically significant differences were found, it should be noted that the difference between monochromatic and polychromatic marks was 0.01% .

The relationship between the structural composition (complexity) of the advertising brand and the viewing time recorded by the subjects, a statistically significant difference of $p = 0.000$ was obtained between the least complex brands with a mean of $1.55\% \pm 2.18\%$ and the most complex brands with a mean of $0.50\% \pm 1.14\%$.

Finally, the subjects experienced statistically significant differences between exposure time and viewing time of the advertising brands, based on the total time of the video test, obtaining, according to each quartile, the following means Q1: $0.28\% \pm 0.49\%$. Q2: $0.22\% \pm 0.45\%$. Q3: $1.64\% \pm 2.19\%$ and Q4: $2.90\% \pm 2.46\%$. The differences between Q1 - Q3; Q1 - Q4; Q2 - Q3; Q2 - Q4 and Q3 - Q4 were significant at $p = 0.000$.

Among the correlations found, the visual behaviour variable (viewing time), obtained statistically significant positive correlations with the variables: Size ($r = 0.185$; $p < 0.01$), Exposure time ($r = 0.511$; $p < 0.01$).

On the other hand, this variable also obtained statistically significant negative correlations with the variables: Complexity ($r = -0.239$; $p < 0.01$) and Location ($r = -0.159$; $p < 0.01$). It should be noted that the variable Colour did not have significant correlations with Visual Behaviour ($r = 0.012$; $p < 0.62$).

Table 2
Visual behaviour correlations

Variable	Variable	r value
Visual Behaviour	Size	0,185**
	Location	-0,159**
	Colour	0,012
	Complexity	-0,239**
	Exposure Time	0,511**

(* $p < 0,05$; ** $p < 0,01$)

Discussion

Based on the results obtained in this research, it was found that the size of the advertising brands is statistically significantly correlated with the viewing time or visual behaviour of the viewers. In addition, it was found that advertising stimuli with a larger size achieved a greater amount of viewing time, compared to the smaller advertising brands present in the video test. This difference was statistically significant. These results are consistent with research by Homer (1995) who states that, in advertising research, consumers are more likely to pay attention to larger advertisements or logos.

In advertising, the size of the stimuli is a decisive factor. Normally in sporting events, as well as currently in esports events, advertising brands belonging to sponsors are present at all times, so it becomes essential to fix the viewer's gaze. For this it is important to consider that, as mentioned by Montero, et al. (2010), brands that are composed of a greater breadth or size will condition the view of the spectators, helping to better position the company, giving it the possibility of increasing its return on investment. These results are consistent with Montero, et al. (2010) who state that the larger the size of the labelling of objects, the greater the number of fixations by consumers, as is the case in this research, where the brands that received the greatest number of fixations by the subjects who viewed the video test were for having a larger amplitude than the others. Therefore, a number of authors have recommended maximising the size of the brand element in advertising, arguing that the brand should appear prominently in both print and television advertising, generating a step up the brand value chain (Hayes, & Krugman, 2019; Keller, 2003). Similarly, Wells et al. (2000) assert that the larger the illustration, the greater the visual attention power of advertising; this assertion is confirmed by the data obtained in the present research, as advertising brands of greater amplitude (size) generated greater fixation time. The reasoning of this research and in relation to the results and the literature consulted, is based on the fact that the larger the size of the advertising stimulus within an event broadcast by streaming esports, captures more visual attention from viewers than those of smaller size. This creates a necessary condition for the desired communication, advertising and marketing effects of the sponsoring brand.

On the other hand, and in relation to the independent variable of location, the result was that the longest viewing time by viewers was for advertising stimuli located in the area inside the clothing, over the area outside the clothing. This difference was statistically significant, as was their correlation. These results can be attributed to the interaction that players, coaches and referees have with the brands on their clothing, which according to Motoki, Saito and Onuma (2021) causes the viewer to execute fixations when they notice the presence of a brand and then when they look at it again. Furthermore, this is supported by the players' location on the screen, which mostly occupies the centre of the screen, becoming the visual fixation point of the scene in a large percentage of the total time of the video, which is conducive to what Giakoni et al. (2022) and Analuiza, Villavicencio and García (2023) stated, indicating that users first look at the centre of the screen and then at the logos in their first fixations within a web page. These characteristics make the players take a certain prominence during the course of the transmission, as has already occurred with several investigations conducted in the field of television and cinema, there are authors such as Vilaplana-Aparicio et al. (2021), who through a traditional marketing research, evaluated attitudes towards advertising and Brand Placement in films, obtaining as a result that the surveyed subjects did not agree that prior knowledge about prominent placements in a film would reduce their likelihood of watching it. They also indicated that advertising stimuli that are in the foreground and in the centre of the screen are more likely to generate visual fixations. This is also the case in the present research, where fixation time was higher in the most prominent areas of the scene (the area inside the clothing), such as the clothing of players, coaches and referees.

With regard to the esports players, referees or coaches present in the video test and their link to the advertising brands, La Ferle and Edwards (2006) affirm that the interaction of the character is determinant for the representation of the brand, since a large percentage of the visual appearances of the brand involved characters holding, using or consuming branded products. These results support those obtained in the present research, with the brands located on the players' clothing receiving the most time of fixation by consumers, affirming that the location of advertising brands does influence the visual

behaviour of viewers. Although the results were not significant, the bichromatic advertising brands generated more viewing time for the subjects, compared to the monochromatic and polychromatic stimuli respectively. Furthermore, it should be noted that no statistically significant correlations were obtained between the variables of colour and visual behaviour. According to Spence (2020), when a subject concentrates on a particular scene, the human visual system does not process all the information available to the observer equally. Rather, the observer selectively attends to different aspects of the scene at different times. Sometimes, the observer sees the whole scene globally. At other times, he or she focuses on a selected object or set of objects. The observer may even concentrate on a specific part of an object or on its various properties, such as its colour or complexity. This can be the case during the interaction between the sponsoring brands or logos involved in an esports event and the spectators watching in person or via streaming.

Several studies (Rokunuzzaman et al., 2010; Zhang, et al., 2019), claim that factors such as brightness, colour, contrast and shape of objects, as well as their orientation, rapidly influence the task-independent visual scanning of an image by a human observer. Colour can also be used to identify bottom-up and top-down factors in visual attention (Zhang et al., 2022). In this line, Osberger and Rohaly (2001) assert that stimuli that have colours (polychrome) generate more visual fixations than bichromatic or monochromatic stimuli, which generates a discrepancy between the results obtained in the present research and what the author claims. On the other hand, several authors such as Rokunuzzaman, et al. (2010) or Zhang, et al. (2019), have emphasised the importance of colour as a visual attraction. They also claim that some particular colours, for example, red attracts attention more than others, or induce a higher amount of visual fixations. This statement could be corroborated with the results of the present research, where bichromatic advertising stimuli with red tones, obtained results over monochromatic and polychromatic ones, but the differences obtained are not significant and can affirm that colour does not affect visual behaviour (fixation time) in esports events transmitted by streaming.

In relation to how the surface characteristics (complexity) of advertising stimuli affect the visual behaviour (viewing time) experienced by viewers, less complex advertising brands had a statistically significant difference compared to more complex stimuli. These results differ from Shapiro and Nielsen (2013) who state that exposure to complex stimuli is more likely to affect non-conscious attitudes, such as visual behaviour, compared to non-complex stimuli. This is crucial, as spectators at a sporting or esports event, both in-person and streamed, generally lack the motivation to deliberately process the advertising that appears and therefore do not engage in the processing of visual fixations of participating and sponsoring brands. However, research by Maziriri, et al. (2023) and Xiang, (2021) has shown that visual processing always elicits a response from the visual system, even if it is not sufficient to achieve stimulus recognition.

The debate about the pictorial element in an advertising brand (image or symbol) and text, focuses on which of the two draws more visual attention and what is the influence of its size in the process. Commonly the symbol or image is the main element to generate visual fixations in consumers, as stated by the authors Chaney, et al. (2018) coinciding with the results obtained in the present research, where advertising brands composed of a pictorial element and text as the main feature, have obtained results over brands that are only composed of text. Similar research such as that carried out by Carr et al. (2001) has come to the conclusion that a brand composed of an image is the most important tool for gaining and capturing the viewer's attention. On the other hand, Wells, et al. (2000) indicate that in the case of traditional advertising it is also established that the text element can be key to capturing the attention of consumers. According to Townsend and Kahn (2014) the brain processes a photograph more quickly than text or words, and this should be taken into account when choosing visual advertising brands. This is reinforced by Carr, et al. (2001) who point out that when you look at a word or phrase, the first thing you do is look for a definition of it and then think about what you want to convey. The opposite happens with images, where recognition is produced and then the definition is thought of. Considering the results obtained, Townsend and Kahn (2014) and later Casado-Aranda et al. (2023), reinforce and affirm that images involve a greater amount of eye fixations, more than text, due to the fact that to process text one must look for a longer time to process the information. It also indicates that images carry more information than writing. Parodi and Julio (2016), state that when an image is mixed with text, the attention is drawn to the image, leaving aside the vision of the text. This could ensure the results achieved, where the brands that were only composed of text (more complex) obtained fewer visual fixations. According to the background information collected on complexity and the results obtained, it is evident that the advertising stimuli present in an esports event that are made up of a symbol or image, and therefore less complex, will generate a longer visualisation time for the subjects.

As explained in the results section, the exposure time of the advertising brand generated a directly proportional increase in the time spent viewing it. It should be noted that the differences between quartiles were statistically significant. As was the correlation between these two variables, so the brands that were on stage longer received more viewing time from the subjects. This can be argued under the phenomenon of the mere exposure effect, which refers to an increase in visual fixations and thus familiarity for a stimulus (a logo, an image, etc.) due to repeated or sustained exposure over time (Mrkva & Van Boven, 2020). This is proven by the results obtained where there was an exponential increase in the visual fixations made by the research subjects in relation to the amount of time the brands were on stage. This is how theoretical

explanations have been formulated where it is exposed how increased exposure to stimuli or brands could lead to positive attitudes (Bhatnagar, & Orquin, 2022). Studies, such as Bornstein and Craver-Lemley (2022), have shown that an exposure effect is stronger when the stimulus is not consciously recognised, suggesting that this effect may not be attributable to brand recognition. Most research on mere brand exposure to this point has been based on laboratory tests, as was the case in the present study, where a simulation of a real-life situation was run, in which esports consumers viewed a match.

In advertising and marketing, one of the most common approaches to this is to limit the duration of exposure so that only fleeting viewing is possible. Some studies even have limited exposure to small fractions of a second that encourage only subliminal exposure (Cutting, 2020). However, most researchers now emphasise that this phenomenon is not limited to subliminal exposure alone and instead focus on slightly longer exposures to study its effects (Rettie & Brewer, 2000). This phenomenon can be observed in the world of esports, especially in its events such as the one analysed in the present research, where sponsoring brands seek to be present on the scene for longer, which will make current and future viewers see them and want to consume their product. Mrkva, and Van Boven, (2020) supported this idea, concluding that simple repeated or sustained exposure of a stimulus to an individual over time improves their attitude towards it at the level of cognitive and visual fixation time. Therefore, the results extracted from the various research studies mentioned above give support to the present research, which affirms that the stimuli that are exposed the longest in the video test receive the most fixations (viewing time) for each of the viewers.

Conclusions

Finally, the results indicate that repeated and sustained exposure of a brand on screen during esports events leads to increased visual attention from viewers. This suggests that advertising strategies that maximise the presence and size of brands, as well as their strategic placement on players' clothing, may be effective in capturing the attention of audiences during these events.

These findings contribute to the understanding of how visual elements in advertising influence viewers' visual behaviour during streamed esports events, providing valuable insights for esports marketers and advertisers.

Limitations

The study has several limitations that affect the interpretation of the results. The lack of consideration of exclusion criteria related to impairments in colour perception, together with the use of non-probability convenience sampling and the exclusion of only males as participants, may introduce biases in the findings. Furthermore, the adaptation of the esports final viewing environment to a laboratory setting, the limitation in the variety of esports studied and the analysis of a single esports event, as well as the exclusive reliance on data provided by YouTube, represent additional limitations that restrict the generalisability of the results obtained.

Practical applications

The results suggest that maximising the presence and size of brands, as well as their strategic placement on players' clothing, can increase the visual attention of the audience during esports events. Therefore, marketers and advertisers can use these findings to design more effective strategies to enhance the visibility and impact of their brands during esports broadcasts.

On the other hand, brands can leverage these insights to make more informed decisions about where and how to partner with teams and players in esports. By better understanding how visual elements influence viewers' visual behaviour, brands can choose sponsorships and partnerships that allow them to maximise their exposure and generate greater audience impact.

Research findings can also inform the development of advertising content specifically designed for esports events. By understanding which visuals best capture the audience's attention, marketers can create ads and brand activations that align more closely with the preferences and behaviours of esports viewers.

Ethics Committee Statement

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Authors' Contribution

Conceptualization Giakoni, F. & Segado, F.; Methodology Giakoni, F.; Software Manzanares, A.; Validation Segado, F.; Formal Analysis Manzanares, A.; Investigation Giakoni, F.; Resources Giakoni, F.; Data Curation Manzanares, A.; Writing – Original Draft Giakoni, F.; Writing – Review & Editing Manzanares, A.; Visualization Segado, F.; Supervision Segado, F.; Project Administration Segado, F.; All authors have read and agreed to the published version of the manuscript.

Data Availability Statement

Data available on request from the author of correspondence (fsegado@ucam.edu).

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