Methodological Approaches to Brand Experience and Web Design Elements through Eye-Tracking Technology in Tourism

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Abstract

This project is based on an understanding of the relevance that digital environments have gained in tourism, especially after the global pandemic. This study focuses on the methodological evolution of the use of eye-tracking in the field of branding and the tourism sector, especially in relation to the visual, verbal, and structural elements of digital platforms. The methodology use a systematic literature review that analyzes 67 articles published between 2015 and 2024, representing 1,302 citations that meet the inclusion and exclusion criteria. Vosviewer supported content analysis, exploring trends and research gaps. The results of the study reveal the different thematic clusters that have been gaining relevance, especially since 2023, with marked growth, demonstrating greater interest in the topic. The studies cover neuromarketing, visual attention, and digital user experiences, highlighting a research gap in the need to integrate more robust models that connect mixed and interdisciplinary methodologies that combine eye-tracking with other neuroscientific techniques.

Keywords

Eye-tracking, Online brand experience, Digital stimulus, Web design, Neuromarketing

Currently, the Internet has become an essential tool for travel planning and the acquisition of tourism services. This digital environment not only allows potential tourists to access information about destinations, but also offers entrepreneurs, governments, and academics in the tourism sector the opportunity to design memorable experiences in both physical and digital settings (Bleier et al., 2019). These experiences, in turn, foster brand loyalty by generating emotions and cognitions influenced by stimuli and attributes encountered during browsing processes, which are later validated through physical and tangible experiences with the destination (Yu et al., 2022a). In this case, technology plays an important role in the development of innovation, which is articulated with a greater level of complexity in consumer demand (Hwang et al., 2021). In the tourism sector, technology is shaping the way people interact, through greater personalization and control of the brand experience (Calderón-Fajardo et al., 2024).

Consumers currently spend considerable time in digital environments searching for information for decision-making (Yunpeng & Khan, 2023). This implies that marketing strategies should focus on interactions in an environment that expands possibilities beyond tangibility, as an important aspect that transcends

the concepts of usability and technical performance toward immersion. This includes subjective impressions such as emotions evoked by the brand, the level of user engagement, and the overall perception of the system. This perspective highlights a research gap that requires holistic exploration. Traditional evaluation methods have been complemented by advanced techniques such as psychophysiological feedback analysis and eye-tracking. These tools allow for the study of digital experiences from a more objective perspective, based on automatically collected data during user interaction with interfaces, overcoming the limitations of self-report-based methods (Kuhar & Merčun, 2022; Mateja, 2023). However, such methods remain underexplored in the study of digital experiences within tourism (Kochling, 2020), which presents a significant opportunity, given their emphasis on objective, real-time user interaction data.

Within the tourism context, Destination Marketing Organizations (DMOs) play a critical role in shaping positive Online Destination Experiences (ODEs) prior to travel, with the aim of attracting tourists. According to Kochling (2020), official destination websites (ODWs) created by public entities are considered key sources during the tourist decision-making process, although their application within tourism research remains limited. This underscores the need to explore how these platforms can be optimized to generate greater perceived value and user engagement. While neuroscience offers significant opportunities for tourism research—such as theory development and testing, the collection of more precise measurements, and the formulation of new hypotheses (Li et al., 2023)—its advancement in the field has been slow. This is largely due to a lack of theoretically grounded studies and limited interdisciplinary approaches (Iloka & Anukwe, 2020).

Despite progress in brand experience research, most studies have focused on developed destinations, such as those in Europe and the United States (Jiménez-Barreto et al., 2020). This opens an opportunity to explore the phenomenon in emerging destinations—particularly in Latin America – a region known for its rich cultural and natural heritage, yet one that faces specific challenges in building strong, competitive destination brands (Cardona et al., 2017). In this context, the present study seeks to contribute to the understanding of brand experience from a methodological perspective, exploring both the opportunities and challenges of the applied techniques. Based on the above, this analysis aims to answer the following research question: How have methodological approaches and techniques evolved in the study of brand experience and the structural elements of web platforms in the tourism sector through eye-tracking?

This study is structured in several sections to answer the research question regarding the methodological approaches and techniques used in the study of brand experience and web platform elements in tourism through eye-tracking. First, a theoretical review is conducted on the evolution of eye-tracking and its application in neuromarketing. Then, the methodology used for the bibliometric and content analysis is described. Subsequently, the results of the scientific production mapping are presented, including trends, thematic clusters, and key research lines. Finally, the identified gaps are discussed, and future methodological directions are proposed to strengthen the field.

Theoretical Review of the Study

From Neuroscience in Clinical and Socio-Behavioral Contexts to Consumer Neuroscience

The evolution of neuroscience has progressed from applications focused on clinical and socio-behavioral contexts toward integration into emerging fields such as consumer neuroscience. In the clinical domain, seminal authors such as Posner and Petersen (1990) laid the groundwork for understanding the brain's attentional systems, providing a framework for research on cognitive dysregulation in

neurological and psychiatric disorders. Similarly, pioneering studies by Broadbent (1958) and Treisman (1964) on perception and information processing in socio-behavioral contexts opened the door to applications in human-computer interaction and behavioral evaluation under controlled stimuli. These advances reached a turning point with the rise of consumer neuroscience, which broadened the focus to examine the neural processes underlying perception, decision-making, and preferences in market environments, following concepts from behavioral economics as proposed by Kahneman and Tversky (1979). This field, integrating techniques such as eye-tracking and neuroimaging, enables the exploration of consumers' implicit responses to visual and emotional stimuli, merging clinical precision with the analysis of everyday behaviors.

Eye-tracking reflects the visuomotor outcomes of complex brain interactions and has found applications across diverse fields. In psychiatry, it is used to assess attention and perception dysregulation in disorders such as schizophrenia and depression, by analyzing visual attention, fixation, and saccadic movements (Smyrnis et al., 2019). In neurology, it supports the diagnosis and monitoring of conditions such as Parkinson's disease and traumatic brain injuries (Muri et al., 2019), while in pharmacology, it measures the effects of medications on saccade speed, tracking accuracy, and ocular latency (Karpouzian et al., 2019). These applications reinforce its role as a non-invasive and precise tool in clinical contexts.

In consumer neuroscience, eye tracking contributes to the analysis of implicit and explicit decision-making behaviors (Johnson et al., 2022) through different fixation and timing metrics, which allows for the optimization of spaces and environments (Rothensee & Reiter, 2019). From a neuroeconomic perspective, decision-making and the influence of visual stimuli are analyzed (Zhao & Siau, 2016; Fliedler et al., 2019). In usability and design studies, patterns and visual efficiency are identified (Thoma & Dodd, 2019).

Eye movement research is considered one of the most important complementary methods in the neuromarketing toolkit (Ladeira et al., 2022). This is because eye movements, and consequently visual attention, are temporal precursors to most subsequent neural processes. For this reason, visual attention is regarded as a universal prerequisite for the effectiveness of all marketing efforts. According to Neves Pereira et al. (2024), neuromarketing is applied in four main research areas: 1) Purchase decision-making, 2) Behavioral prediction and pattern recognition in offline and online contexts, 3) Advertising effectiveness, including creative optimization, point-of-sale strategy, packaging and shelf design, and Customer retention (consumer experience and perception). Zhao and Siau (2016) additionally highlight the role of reward mechanisms, with notable studies in sectors such as e-commerce and retail, education, healthy food (Folwarczny et al., 2019), alcoholic beverages, tourism (S. Li et al., 2023), sports, fashion and accessories, beauty and personal care, and banking (Monita et al., 2019), with a predominance of quantitative research approaches.

Methodological Approach

The review was conducted following the three-stage model proposed by Khosravi et al. (2019) and Pitt et al. (2021), which comprises the phases of planning, execution, and presentation of results. In the planning phase, a study plan and protocol were developed based on the research objectives. During the execution phase, keywords were defined, information sources were selected, and inclusion and exclusion criteria were established. Finally, in the presentation phase, the findings were organized and reported. Prior to conducting the main search, preliminary queries were performed in Scopus to refine the keywords and improve the overall search strategy (Khosravi et al., 2019; Pitt et al., 2021). A combination of terms was

used, such as "online brand experience," "brand experience AND online," "tourism," "online," and "eye-tracking," complemented by a manual search of references cited in relevant studies.

For article selection, only peer-reviewed journal publications found in the Scopus database were included. The prioritization process was carried out in two stages: 1) General Context: This stage included only articles published in Spanish or English between 2015 and 2024, directly related to tourism and the use of eye-tracking as a research methodology. Excluded materials included books, book chapters, conference papers, repeated articles, and studies not focused on tourism. This initial analysis aimed to identify general trends in business and branding research associated with tourism. 2) Focused Filtering: In a second-level analysis, additional filtering was applied to select studies that specifically employed eye-tracking techniques on tourism destination web platforms—this included official websites or social media platforms, with a focus on visual or verbal content. Furthermore, the studies had to address the analysis of design and structural elements of the platform (see Figure 1).

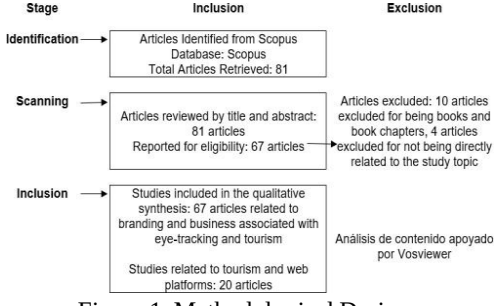

Figure 1. Methodological Design

Bibliometric Analysis of Methodologies Applied to OBE Studies Using Eye-Tracking

The software used for the systematic literature review is VOSviewer, which allows the mapping and visualization of data networks, which has been used for this type of studies (Yu et al., 2020).

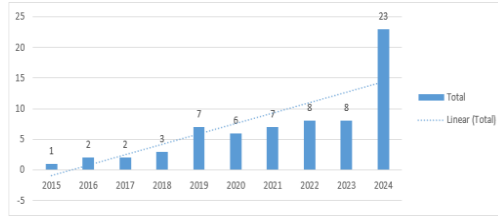

Figure 1. Number of Documents per Year
Source: Own elaboration based on Scopus (2024)

Figure 1 shows the evolution in the number of documents published from 2015 to 2024, with moderate growth, which peaks in 2024. This can be associated with increased interest in the topic and the progress in the use of tools such as eye tracking in research.

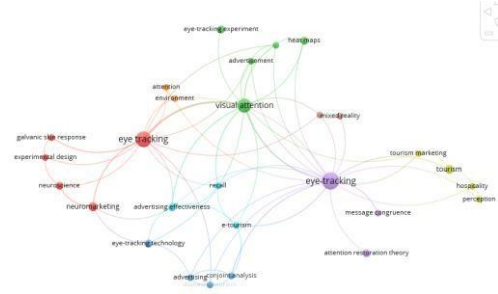

Figure 2. Word co-citation

Figure 2 identifies the main thematic clusters, highlighting in red the connections in neuromarketing, neuroscience and experimental design, which suggests behavioral studies. In green are the associations with terms like advertising, heatmaps, and eye-tracking experiment, indicating its relevance in the field of advertising and attention measurement. In purple it connects with terms such as tourism, message congruence, Attention Restoration Theory (ART), and perception, suggesting its application in the domains of tourism and marketing. These findings underscore the interdisciplinary nature of eye-tracking, linking neuroscience with user experience analysis across different contexts.

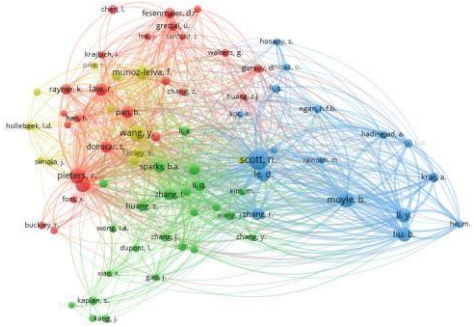

Figure 3. Author Co-Citation

Figure 3 illustrates four major co-citation clusters among authors. The red cluster highlights influential authors such as Wedel and Pieters, particularly their seminal work "Visual Marketing: From Attention to Action" (2008), which conceptually and practically addresses the visual science of marketing. This cluster represents a group of researchers focused on visual attention analysis in marketing and advertising. The yellow cluster is closely connected to this, emphasizing authors who have applied eye-tracking in the tourism sector, a growing area of academic interest. Notable in this group is Muñoz-Leiva et al. (2019) with their article "Measuring advertising effectiveness in Travel 2.0 websites through eye-tracking technology", which applies the technique in digital tourism environments.

The blue cluster focus on digital environment studies using eye-tracking, highlighting authors such as Moyle, whose work "Towards a typology of virtual tourists: Efficacy of visual patterns and attentional cues" contributes to understanding how users engage with virtual tourism content. Finally, the green cluster focus on attention, memory, and advertising effectiveness, featuring authors such as Li, Huang, and Christianson (2016) and Wang and Sparks (2016) with their respective studies "Visual attention toward tourism photographs with text: An eye-tracking study" and "An Eye-Tracking Study of Tourism Photo Stimuli: Image Characteristics and Ethnicity." These works contribute to understanding how visual content and contextual factors influence user engagement in tourism-related media.

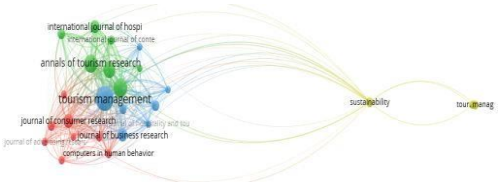

Figure 4. Journal Co-Citation

Figure 4 reveals a strong relationship among journals publishing research on eye-tracking and its application in the fields of branding and business. Notable themes include tourism, consumer behavior, and analyses focused on the integration of technology, particularly in journals such as Tourism Management, Annals of Tourism Research, Journal of Consumer Behaviour, and Computers in Human Behavior. On the other hand, a more distant relationship is observed with the journal Sustainability, which has increasingly explored the use of this tool in studies on sustainable consumption, usability in sustainable web design, education, among other related topics.

Main Thematic Areas Identified in the Review

Based on the content analysis and VOSviewer results, several key areas of academic interest were identified. These are described below:

Eye-Tracking in Branding and Business

The use of eye-tracking in the analyzed studies demonstrates its versatility in a wide range of contexts. In the field of marketing, employed to improve campaign design, advertising strategies, and digital communication (Bashirzadeh et al., 2022), efficiency and advertising effectiveness (Pozharliev et al., 2022; Casado-Aranda et al., 2023; Casado-Aranda & Sanchez-Fernandez, 2022). This is particularly relevant in terms of credibility (Brand & Reith, 2022), persuasion knowledge (Boerman & Muller, 2022), and the

familiarity and personalization of visual and textual content (Wies et al., 2023), based on the identification of visual attention, visual behavior patterns (Ngan et al., 2022), and emotional arousal (Liu et al., 2023, 2024). These responses can lead to cognitive-affective reactions (Bigné et al., 2023; X. Fu et al., 2024a), as well as influencing perceptions and behavioral intentions (Badenes-Rocha, Bigné, & Ruiz, 2022; Simonetti & Bigné, 2022). The studies also allow for attitudinal evaluations and the identification of behavioral intentions (X. Fu et al., 2024b) through the analysis of attention patterns, visual processing, and decision-making sequences (Nordfält & Ahlbom, 2024).

Within this body of work, a notable interest is observed in exploring visual, verbal, and structural elements across tangible products, services (Calderón-Fajardo et al., 2024), and digital environments. Regarding visual components, studies have examined how visual elements influence brand positioning, considering typographic characteristics and how they shape brand perception (Yu et al., 2022). For verbal components, research has focused on the lexical, semantic, and emotional properties of words and texts (Hodges et al., 2024). Some studies have also incorporated auditory stimuli (e.g., brand melodies vs. silence) as a means to enhance attention when combined with visual and verbal elements (Mandolfo et al., 2024).

Studies have analyzed attention during complex decision-making tasks, applied to product placement (Kongmanon & Petison, 2022), shelf layout and positioning (Fuller et al., 2024), and web usability. In branding, eye-tracking studies emphasized the integration of neuroscience and perception. For example, Calderón-Fajardo et al. (2024) explored how consumer attention and emotional response develop based on brand personality perception, using traditional brand positioning models. These insights have been linked to behavioral intentions, such as the willingness to share content (Rita et al., 2023). Most branding-related studies focus on analyzing visual attention, emotional outcomes (Pinci, 2022, 2023), and cognitive responses (Mondt et al., 2024).

Eye-Tracking and Experience Construction Through Platform Elements

The growing interest in designing positive experiences within digital environments has focused on how these experiences influence user decision-making. In this field, studies employing eye-tracking have concentrated on analyzing attention and information processing related to product displays on websites, considering page elements (Maslowska et al., 2020), emotional and cognitive experiences, and visual attention processes triggered by stimuli such as visual displays and typographic patterns (Mo et al., 2020). Additionally, browsing experiences have been examined through analyses of user behavior and website usability, both in free exploration and task-specific search scenarios (Bodrunova & Yakunin, 2017; Guitart et al., 2019).

Visual Elements and Eye-Tracking

Visual elements play a critical role in shaping the online brand experience by influencing consumer reactions, cognitive processing, and brand engagement. Research highlights the importance of visual design in enhancing consumers' intention to use and recommend e-commerce websites (Jeannot et al., 2022). Moreover, the intrusiveness level of visual content—including animations and call-to-action messages—affects cognitive processing and user attitudes toward online environments (Lewandowska & Jankowski, 2017). The strategic use of visual elements in brand posts on social media platforms also helps convey brand values and attract consumers, emphasizing the importance of crafting practical posts that align with brand attributes.

The visual elements of platforms can impact brand perception, information attention, and decision-making in digital environments (Maslowska et al., 2020) through their graphic elements, colors, and fonts that facilitate or hinder comprehension processes, interaction, and even loyalty (Bigné et al., 2023). Although they play an important role, some studies

indicate that they can increase visual saturation and increase cognitive load (Lewandowska & Jankowski, 2017).

Verbal Elements and Eye-Tracking

Verbal elements within online brand experiences, such as their communication style, can contribute to the development of brand personality and influence feelings (Baumann et al., 2015). Therefore, they develop positive feelings toward a brand through strong, memorable, and unique experiences (X. W. Wang et al., 2019). In the context of experience design, there is growing interest in engaging the senses. For instance, Zhang, Chen et al. (2024) and Zhang, Liao et al. (2024) argue that gaze-based interaction represents an opportunity to create intuitive and efficient experiences, particularly in digital contexts where user attention is limited and performance tends to decrease (Bortko et al., 2019). These studies highlight links between user experience design and brand image formation. According to Köchling (2020), although experiential marketing theory postulates that customers are reached through sensory, affective, intellectual-cognitive, behavioral, or social experiences, defined as a set of sensations, emotions, cognitions, and behavioral responses evoked by brand-related stimuli (Brakus et al., 2009), this theory has rarely been applied to the analysis of experiences on official tourism websites.

Structural or Design Elements and Eye-Tracking

Structural and design elements are technical components of digital platforms that support the development of user experiences. Brand experience is shaped by the way users interact with or perceive information elements in terms of layout and content, often linked to navigation flow and usability. Van Noort et al. (2012) suggest that the fluency experienced on a specific website—derived from user control over the platform—is a key underlying mechanism that can explain cognitive, attitudinal, and behavioral responses to branded websites.

Köchling (2020) highlights that Destination Marketing Organizations (DMOs) aim to offer positive online destination experiences (ODEs) prior to travel to attract tourists, despite that, research remains limited. According to S. Li et al. (2023), neuroscience can be a valuable tool in tourism research. Given the intangible nature of tourism, marketers rely heavily on advertising stimuli and visual, verbal, and auditory content—such as photographs, videos, and music. Therefore, selecting visual stimuli that capture the audience's attention is critical (Y. Wang & Sparks, 2016). This need has generated growing interest among DMOs in understanding how tourists process and assimilate information delivered via social media and official destination channels (García-Carrión et al., 2024). Experience analysis in digital contexts has often focused on User Experience (UX) and usability, involving studies on aesthetics and content management (Kumar et al., 2016; S. Kumar et al., 2024) and ergonomic evaluations of website architecture and navigation (Bodrunova & Yakunin, 2017). Usability involves designing interfaces for products or systems that are easy to use and aligned with the needs and requirements of the end-users. Eye-tracking measurements such as initial fixation points, fixation duration, and frequency of gaze are often used.

A well-designed website using current web design practices can increase consumer trust, engagement, and purchase intention, highlighting the importance of information architecture in creating a positive online brand experience (Wu, 2021). By focusing on structural and design elements, brands can develop engaging digital experiences that foster strong customer relationships and enhance brand perception. Eye-tracking also provides insights into why users look at certain areas, analyzing their visual behavior and correlating it with other data, such as spontaneous verbal feedback. In usability and UX research, eye-tracking is mainly used in two ways: To provide qualitative insights that enhance behavioral observations

during exploratory research and help detect formative usability and UX issues, and to produce quantitative data for measuring and comparing the performance of alternative designs (summative testing). These data are essential for supporting the optimization of layout and element positioning within screens or webpages.

Main Topics and/or Theories Applied with Eye-Tracking

Eye-tracking has been employed to identify key criteria in marketing campaign planning, maximizing reach, engagement, and effectiveness (Simonov et al., 2024), as well as enhancing personalization and familiarity with sponsored brands (Wies et al., 2023). Validated strategies using this methodology include research on advertising in social media and mobile UX environments (Rohrbach et al., 2024), influencer marketing (Boerman & Müller, 2022; Chan & Chau, 2023), visual attention capture (Badenes-Rocha, Bigné, & Ruiz-Mafé, 2022; Bigné et al., 2024), consumer behavior, brand image reinforcement, attitudinal effects (Badenes-Rocha et al., 2022), electronic word-of-mouth (eWOM), and perceptions of brand reputation and credibility (Sung et al., 2023; Yu et al., 2022), as well as brand positioning (Yu Y et al., 2022).

This tool has also been used to understand information processing (Luan et al., 2023) through the lens of visual attention, and has been complemented by perception analyses based on theoretical models such as the Stimulus-Organism-Response (S-O-R) model (Zhu et al., 2023), the Technology Acceptance Model (TAM) (H. Fu et al., 2023), and Cognitive Fit Theory. It has also been applied in the design of human-computer interfaces to reduce user errors (Li et al., 2022), in studies on mental attention capacity, information processing (Jin et al., 2023), and associated task difficulty as reflected in reaction times and eye movements (Bachurina et al., 2022), spatial learning (Kapaj et al., 2023), and the adaptation of information search tasks (W. Ladeira et al., 2023; W. J. Ladeira & de Oliveira Santini, 2023; Y. Li et al., 2022). In this field, there is growing academic interest in linking eye-tracking with emerging technologies such as augmented reality (Bird et al., 2023) and voice-assisted digital maps (Xu et al., 2022).

Eye-tracking has established itself as a robust methodological tool for exploring the interaction between visual stimuli and human processes, both cognitive and emotional (Slevitch et al., 2022). The diversity of applications reviewed underscores its ability to provide objective data on visual attention and its impact on comprehension, perception, and decision-making. Literature reviews on eye-tracking methodologies show a clear academic interest in studying user and consumer attention within behavioral research. According to Muñoz-Leiva et al. (2022), this interest is concentrated in five thematic areas: (a) brand attention modeling, (b) eye movement and communication, (c) web and online behavior, (d) perception and gaze in human-computer interaction (HCI), and (e) choice labeling. The table below presents a summary of eye-tracking studies in tourism, highlighting variables such as the effectiveness of communication strategies, cognitive effort, and web usability.

Table 1. Main Research Topics in Tourism Using Eye-Tracking

Measured Variable	Authors	Visual Stimuli
Effectiveness of communication strategies (menus, eating habits, advertising banners)	Babakhani et al. (2020); Muñoz-Leiva (2022)	Photos, guidebooks, flyers, posters, exhibitions, websites, dynamic elements (videos)
Message congruence and memorability	García-Carrión et al. (2023)	
Cognitive effort in processing content	García-Carrión et al. (2024)	
Affective evaluation of content	Wahler et al. (2020)	
Interaction with destination ODWs	Köchling (2020)	

Categorical structures that attract attention (images, search function, text, price)	Analuiza et al. (2023)
Web usability and quality	Bluhm & Berchtenbreiter (2020); Lazo et al. (2023)
Visual and verbal elements of the website	Vidyapu et al. (2021)
AOI studies: Visual attention on images and text	Hadinejad et al. (2020)
Online purchase decision	Bluhm & Berchtenbreiter (2020)
Methodological Definitions	
Research Approaches	The field of eye-tracking in marketing has primarily developed from a qualitative and descriptive approach (Kochling, 2019). However, there is growing interest in deepening data analysis through the integration of additional techniques such as ANOVAs, linear regression, and structural equation modeling (García-Carrión et al., 2024).
Complementary Techniques	Eye-tracking studies are characterized by the use of mixed methods, mainly combined with questionnaires (García-Carrión et al., 2023), think-aloud protocols (Bluhm & Berchtenbreiter, 2020), interviews, and video observation (Kochling, 2019).
Number of Participants	The number of participants varies depending on the scope of the study, the expected analysis, and the techniques used. On average, studies range from 6 participants (Barbosa et al., 2016) to 168 participants (Sola et al., 2023).
Main Participant Profiles	Participants are generally Millennials or Centennials, between 20 and 40 years old, predominantly university students, often required to attend a marketing lab to participate in the experiment.
Evaluated Platforms	Official websites (hotels, blogs, recommendation sites, bookstores), and social media platforms such as Facebook and Instagram.
Indicators Used	Measurement of Areas of Interest (AOIs) based on fixation duration, saccade amplitude, and pupil dilation (García-Carrión et al., 2023); perception, thoughts, and expectations (Kochling, 2019); and visual attention indicators such as number of fixations in AOIs, fixation time, dwell time, heatmaps, gaze plots, time to first fixation, fixation count, fixation duration, visit duration, time to first click, and time before reaching the AOI.

Complex tourism website interfaces negatively influence the level of attention among potential customers (Bluhm et al., 2020), as do certain design features. Hao et al. (2015) suggests that Generation Y prefers websites that display large images and minimal text, and they are particularly drawn to logos. Advertising that includes only an image and price has a negative impact on attention and memory, indicating that the most effective ads also include textual content (Kong et al., 2019). While the importance of displaying attractive images is well recognized, textual areas demand a higher level of cognitive processing during website navigation, whereas images tend to be more easily remembered.

Future Research Trends using Eye-Tracking

The research field identifies the use of different methodological designs that include visual stimuli such as images, videos, and graphic materials, which are used to analyze the influence of variables such as complexity, colors, and sizes (Kanuri et al., 2024). Methodologically, the study participant samples include users of the applications or platforms. Eye-tracking is used to capture metrics such as fixations, saccades, and attention duration across various areas of interest (AOIs), which has been complemented with other physiological measurement techniques, statistical models, and regression analysis (Boronczyk et al., 2022).

In this sense, future research is moving toward interdisciplinary approaches that allow for the development of more robust models of user behavior. Combining techniques is

recommended to capture more precise measurements of concepts such as attention, emotional development, and decision-making. Additionally, there is increasing interest in studying how new technologies such as virtual reality (VR), augmented reality (AR), artificial intelligence, and the metaverse are impacting processes, where visual interaction plays a central role in consumer immersion. Finally, in contextual terms, there is a need to study emerging markets due to the emerging research on brand experience and consumer behavior.

Research Gaps

Based on the literature review, different research gaps have been identified around the need for studies with a strong theoretical and interdisciplinary foundation (Iloka & Anukwe, 2020). These investigations, generally applied to developed contexts such as the United States and Europe, reflect an opportunity for emerging regions such as Latin America, a region with extensive tourism potential that presents great challenges in competitive and globalized environments (Cardona et al., 2017). Likewise, the need for studies that adopt longitudinal methods and designs that allow understanding the evolution of behavior is recognized (Koronaki et al., 2023), especially considering the level of technological development in augmented reality (AR), virtual reality (VR), and the metaverse, which are increasingly relevant for tourism planning and promotion (Calderón-Fajardo et al., 2024). Most eye-tracking studies in tourism have focused primarily on visual perception, highlighting the need for studies on other stimuli such as sound, touch, or even smell in immersive digital environments (Agapito et al., 2017).

Conclusions

Eye-tracking enables the study of visual behavior, visual attention mechanisms, and consumer engagement, primarily in response to stimuli such as advertising, branding, online experience, pricing, and product experiences (Alvino et al., 2020). This suggests that consumer neuroscience studies not only enrich decision-making theory but also promote its practical application (Lei et al., 2020), opening new avenues in the study of visual attention, cognitive analysis, and the integration with technological tools such as big data, artificial intelligence, and machine learning (Lei et al., 2020).

According to Neves et al. (2024), there is a growing need to adopt multi-method approaches that combine eye-tracking with both quantitative and qualitative methods (e.g., retrospective interviews) and integrate other techniques such as electroencephalography (EEG), magnetic resonance imaging (MRI), galvanic skin response (GSR), and facial biometrics, in order to conduct more comprehensive and in-depth studies. This need is also reinforced by Iloka & Anukwe (2020), who emphasize the importance of combining tools for improved decision-making.

Within digital contexts, eye-tracking has contributed to advancements in usability research, particularly in studies analyzing attention, memory, emotional response, and cognitive comprehension—ultimately enhancing web experience design and ensuring positive user perception (Monica et al., 2019). In the field of consumer experience, there is increasing exploration of sensory and auditory stimulation (Rodas-Areiza & Montoya-Restrepo, 2018). Eye-tracking has become a very active area within neuromarketing, with numerous leading research institutions and commissioned projects each year. Major global brands regularly apply eye-tracking in advertising and shopper marketing, as it contributes significantly to understanding consumer behavior and preferences.

As marketing continues to evolve, the consumer remains a crucial factor in corporate profitability, especially in online shopping. Research has consistently demonstrated that neuromarketing is essential in consumer decision-making (Rothensee & Reiter, 2019).

The study by Li et al. (2024) applied various eye-tracking dependent variables to examine visual, cognitive, and emotional attention related to four common interface design factors—brand, endorser, product, and text—finding that effective visual attributes can enhance consumer preference during online interaction.

Although the use of eye-tracking technology in tourism remains limited, and its application in hospitality and tourism is relatively recent, scientific studies in this area began to appear around 2015. These studies have included varied sample sizes, from 6 participants (Barbosa et al., 2016) to 168 (Martina et al., 2023), with university students and women comprising the majority. According to Savin et al. (2022), major topics of interest include menu optimization, price sensitivity, website and social media usability for hotels and travel agencies, promotional materials, point-of-interest positioning in museums and galleries, sustainability, and learning experiences. Research using eye-tracking allows for a deeper understanding of how elements of online platforms (verbal, visual, and structural) impact consumers' attention and emotional responses—including cognitive, emotional, and behavioral responses. This identifies the opportunity these methods provide to better explore decision-making in brand experience.

Within the study's limitations, it is notable that the analysis only included indexed journal publications, potentially excluding relevant literature such as book chapters or conference papers. Finally, the exploratory nature of this study restricts the ability to establish causal relationships, emphasizing the need for empirical studies to validate the constructs, patterns and trends identified.

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