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Marketing the outdoors: a systematic review of hiking, nature-based tourism, and visitor analytics

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ABSTRACT

Outdoor and nature-based tourism has experienced rapid growth, accompanied by increasing scholarly interest in understanding how these experiences can be effectively marketed while promoting sustainability and visitor well-being. This systematic literature review synthesises findings from four thematic domains: (1) conceptual foundations and destination positioning; (2) psychological drivers and behavioral outcomes; (3) technology-enhanced visitor analytics; and (4) sustainability, ethics, and future directions. Drawing on empirical evidence from studies employing surveys, experiments, neuromarketing, GPS tracking, VR, topic modelling, and visual analytics, the review reveals that outdoor tourism behavior is shaped by experiential authenticity, emotional and cognitive engagement, identity formation, and social dynamics. Technological innovations provide powerful tools for understanding visitor behavior but raise significant ethical considerations related to privacy and transparency. Sustainability emerges as a central dimension, with experiential value and place attachment shown to promote environmentally responsible behavior. The review concludes by proposing the need for integrated theoretical frameworks, interdisciplinary methodological advances, ethical data governance, and community-centred approaches to ensure that outdoor tourism marketing is both impactful and sustainable.



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Introduction

Outdoor and nature-based tourism has experienced notable growth over the past decade, propelled by increasing public interest in activities that offer physical engagement, restorative benefits, and meaningful interactions with natural environments. Academic literature has conceptualized outdoor tourism which includes hiking, trekking, trail tourism, and nature immersion in diverse and innovative ways, recognizing natural environments as essential components of tourism experiences. Scholars emphasize sustainability, visitor experience quality, and the socio-cultural impacts that emerge from engagement with natural settings. Research further highlights the multifaceted character of tourist experiences in protected areas, revealing that emotional, cognitive, and novelty-driven dimensions shape deeper personal involvement with nature (Lebrun et al., 2021). For example, studies of domestic tourist behavior in protected natural parks during the COVID-19 pandemic illustrate shifts toward local nature-based travel and stronger emotional connections to landscapes, underscoring nature's role in enhancing mental well-being and fostering a renewed sense of place (Fan et al., 2023).

Within this evolving context, marketing strategies for outdoor and nature-based tourism destinations have also undergone significant transformation. A central trend involves the use of user-generated content (UGC) and social media platforms to strengthen credibility, emotional resonance, and perceived authenticity of

tourism experiences. UGC-based marketing enables travellers to encounter real visitor perspectives, which enhances destination image formation and fosters trust (Pinhal et al., 2025). The use of eye-tracking technologies has added analytical precision to this process, allowing marketers to identify salient visual elements that capture viewers' attention and to refine promotional materials accordingly (Сущенко et al., 2025). Parallel findings demonstrate the importance of human figures in tourism imagery, as their presence elicits stronger emotional engagement and identification among viewers (Alamäki et al., 2023). Additionally, social media influencers have emerged as key actors in shaping perceptions of nature-based destinations, although their commercialised narratives sometimes conflict with sustainability objectives, revealing complex ethical tensions between destination promotion and environmental preservation (Ray Chaudhury et al., 2021).

Beyond these strategies, innovative marketing frameworks have emerged to integrate themes of sustainability, authenticity, and cultural connection. Signaling theory, for instance, has been used to explain how ecological values, local culinary identity, and sustainability claims influence tourist perceptions and enhance destination appeal particularly in food-related tourism embedded within natural contexts (Savelli et al., 2022). These marketing practices underscore a broader shift toward holistic travel experiences, where environmental consciousness intersects with cultural appreciation. Scholars also highlight efforts to weave conservation messages and educational content into destination marketing, thereby strengthening both visitor awareness and long-term tourism resilience (Kredens & Vogt, 2023). These trends reflect a merging of experiential authenticity, strategic communication, and sustainability-driven positioning within contemporary outdoor tourism marketing.

Technological innovation has become a cornerstone in shaping how outdoor tourism experiences are promoted, navigated, and understood. GPS tracking technologies enhance visitor navigation, safety, and personalised route planning, while simultaneously generating behavioral data that support management and marketing decisions (Romão & Sano, 2025). Virtual reality (VR) has gained traction as an immersive pre-trip marketing tool that allows prospective tourists to preview natural environments, stimulating emotional connection and influencing destination choice (Lustigová et al., 2021). Eye-tracking research provides granular insight into viewer attention patterns, enabling more effective design of advertisements and digital interfaces (Сущенко et al., 2025). Meanwhile, advancements in social media analytics allow for large-scale interpretation of UGC, offering nuanced information about tourist motivations, preferences, emotions, and experiences (Kredens & Vogt, 2023). Collectively, these technological tools contribute to a more targeted, data-informed, and experiential approach to marketing outdoor destinations.

These technological capabilities directly shape key determinants of visitor engagement, destination image, and behavioral intentions within outdoor and nature-based tourism. Engagement is often driven by perceived authenticity and emotional value associated with nature-based activities (Fan et al., 2023). Destination image formed through marketing narratives, digital media exposure, and personal experience significantly influences expectations and motivations, thereby shaping behavioral intentions such as willingness to visit or recommend a destination (Andronic & Untaru, 2025). Immersive tools such as VR and GPS-enabled applications strengthen emotional connections to destinations, while social media interactions and visually compelling content reinforce destination image formation (Alamäki et al., 2023; Savelli et al., 2022). These insights suggest that effective marketing in outdoor tourism must weave together emotional resonance, credible information, and technological innovation to cultivate deeper engagement and promote sustainable visitor behavior (Kredens & Vogt, 2023).

The rise of data-driven tourism analytics further expands understanding of tourist behavior in outdoor contexts. Analyses of large datasets derived from social media, GPS traces, and UGC enable researchers to uncover behavioral patterns, spatial dynamics, sentiment profiles, and preference trends. For instance, UGC analysis from platforms such as TripAdvisor has been used to examine perceptions of wildlife tourism attractions, demonstrating how visitor sentiment, conservation concerns, and emotional tone shape overall evaluations (Kredens & Vogt, 2023). Mobility tracking methodologies provide insight into how visitors make decisions about routes, site selection, and travel timing, shedding light on the influence of accessibility, landscape features, and environmental conditions (Romão & Sano, 2025). Visual analytics powered by deep learning enable the extraction of meaningful information from photographs and videos shared online, strengthening the understanding of how visual elements influence destination appeal (Yoon & Yoo, 2024). As visual engagement grows increasingly central to destination marketing, such computational methods are poised to play a critical role in shaping more effective communication strategies.

Despite these advancements, substantial research gaps persist in integrating marketing theory with nature-based tourism and visitor analytics. Existing marketing frameworks often inadequately capture the complexities of outdoor tourist behavior, particularly the interplay between environmental attributes and psychological processes (Lustigová et al., 2021). The rapid evolution of digital and social media marketing has outpaced theoretical development, leaving limited empirical work that systematically connects social media trends with visitor analytics in nature-based tourism (Lebrun et al., 2021). Similarly, although eye-tracking and neuromarketing tools offer promising avenues for understanding visual engagement, their real-world applications in outdoor tourism contexts remain underexplored. These theoretical and methodological limitations point to a pressing need for interdisciplinary research that integrates marketing theory, environmental psychology, and data science. Such integration is crucial for advancing sustainable tourism development, enriching experiential value, and ensuring ethical and effective marketing of outdoor destinations (Ertas & Karakan, 2024).

Method

This section outlines the methodological procedures adopted for conducting the systematic literature review (SLR) on marketing the outdoors, with a focus on hiking, trekking, nature-based tourism, and visitor analytics. The approach aligns with established SLR guidelines and incorporates insights from recent scholarly work on tourism marketing, visitor analytics, and technology-enabled behavioral research.

Search Strategy

The search strategy was designed to capture a comprehensive range of peer-reviewed studies integrating outdoor tourism with marketing, branding, promotional communication, and visitor analytics. A targeted search was conducted using Scopus as the primary database due to its extensive indexing of tourism, marketing, environmental psychology, and data science research. The keyword selection drew on recurring themes in recent scholarship. Studies such as (Savelli et al., 2022) emphasize the role of cultural and sensory elements in destination branding, whereas (Kredens & Vogt, 2023) highlight the power of user-generated content (UGC) in shaping visitor perceptions of wildlife tourism attractions. Eye-tracking studies, including (Chen et al., 2025) and Сущенко et al. (2025), informed the inclusion of visual attention and neuromarketing terms. Computational approaches to social media analytics justified the incorporation of digital and visual analytics terminology.

A representative Boolean query used in Scopus was TITLE-ABS-KEY (hiking OR trekking OR outdoor AND tourism AND marketing). The review was limited to publications from 2020 to 2025, a period characterized by rapid digital transformation, pandemic-induced behavioral shifts, and growing scholarly interest in data-driven marketing within nature-based tourism. To ensure academic rigor and comparability, only peer-reviewed articles published in English were included in the review.

Eligibility Criteria

Eligibility criteria were shaped by scope considerations and informed by recent analytical work in outdoor tourism marketing. Studies were included if they were peer-reviewed journal articles or high-quality conference proceedings published between 2020 and 2025, written in English, and focused on hiking, trekking, trail use, nature-based tourism, adventure tourism, or outdoor recreation. Eligible studies also needed to address themes related to marketing, branding, promotion, experience design, or visitor analytics and employ empirical, conceptual, or mixed-methods research designs. These criteria align with the topical foci observed in prior research, including work on user-generated content in wildlife tourism marketing (Kredens & Vogt, 2023), investigations of sensory and cultural branding elements (Savelli et al., 2022), and studies utilizing eye-tracking and computational analytics to examine tourist engagement (Chen et al., 2025; Yoon & Yoo, 2024).

Studies were excluded if they focused solely on GIS or engineering applications without any relevance to marketing or visitor experiences, examined health or clinical effects of hiking without clear tourism implications, discussed general marketing concepts unrelated to outdoor contexts, or relied on non-scholarly sources such as blogs or reports. These exclusion criteria ensured that the review remained focused on tourism-relevant marketing insights and aligned with the recommendations of (Romão & Sano, 2025), who emphasize the importance of grounding mobility and tourism research within robust theoretical frameworks.

Criteria	Inclusion	Exclusion
Database / Source	Scopus	Non-Scopus sources
Search field & query	TITLE-ABS-KEY(hiking OR tracking OR Outdoor AND tourism AND marketing)	Records not retrievable via the specified Scopus query
Publication year	2020–2025	Outside 2020–2025
Language	English	Non-English
Publication / document type	Peer-reviewed journal articles or high-quality conference proceedings	Non-peer-reviewed works; non-scholarly sources (e.g., blogs, reports)
Topical context	Hiking, trekking, trail use, nature-based tourism, adventure tourism, or outdoor recreation	Studies focused on contexts outside outdoor/nature-based tourism
Thematic focus	Marketing, branding, promotion, experience design, or visitor analytics	General marketing with no outdoor-context relevance GIS/engineering-only (no marketing/visitor-experience relevance) ; health/clinical-only hiking studies without tourism implications
Study focus boundary	Tourism/visitor-experience relevance required	Designs lacking scholarly rigor/traceable methods (as part of non-scholarly sources)
Research design	Empirical, conceptual, or mixed-methods designs	

Screening and Selection Process

The study selection process followed a multi-stage screening procedure designed to ensure methodological transparency and replicability. In the identification stage, searches conducted across the Scopus database produced the initial pool of records, after which reference management software was used to remove duplicate entries. During the screening stage, titles and abstracts were reviewed for relevance to outdoor tourism, marketing, and visitor analytics, drawing on prior research involving UGC analysis (Ertaş & Karakan, 2024; Kredens & Vogt, 2023), eye-tracking methodologies (Chen et al., 2025; Pinhal et al., 2025), and computational analytics approaches (Yoon & Yoo, 2024) to guide inclusion decisions. In the eligibility stage, full-text articles were assessed against the inclusion criteria, with particular attention given to studies employing advanced techniques such as neuromarketing (Fan et al., 2023), virtual reality applications (Lustigová et al., 2021), and GPS or mobility tracking (Romão & Sano, 2025), due to their strong relevance to visitor analytics.

Quality Criteria

Is the outdoor/nature-based tourism context (e.g., hiking/trekking/trail use) clearly stated?
Is the study explicitly related to marketing/branding/promotion/experience design and/or visitor analytics in that context?
Are the research objectives/questions clearly defined?
Are the data/source, sample/setting, and analytical methods clearly described and appropriate?
Are the research results and implications clearly stated, showing a substantive contribution to understanding marketing and analytics in outdoor tourism?

Finally, in the inclusion stage, only articles that fully met all eligibility requirements and provided substantive contributions to understanding marketing and analytics in outdoor tourism were incorporated into the final dataset. A PRISMA diagram (Figure 1) will summarize the number of studies identified, screened, excluded, and included, including reasons for exclusion.

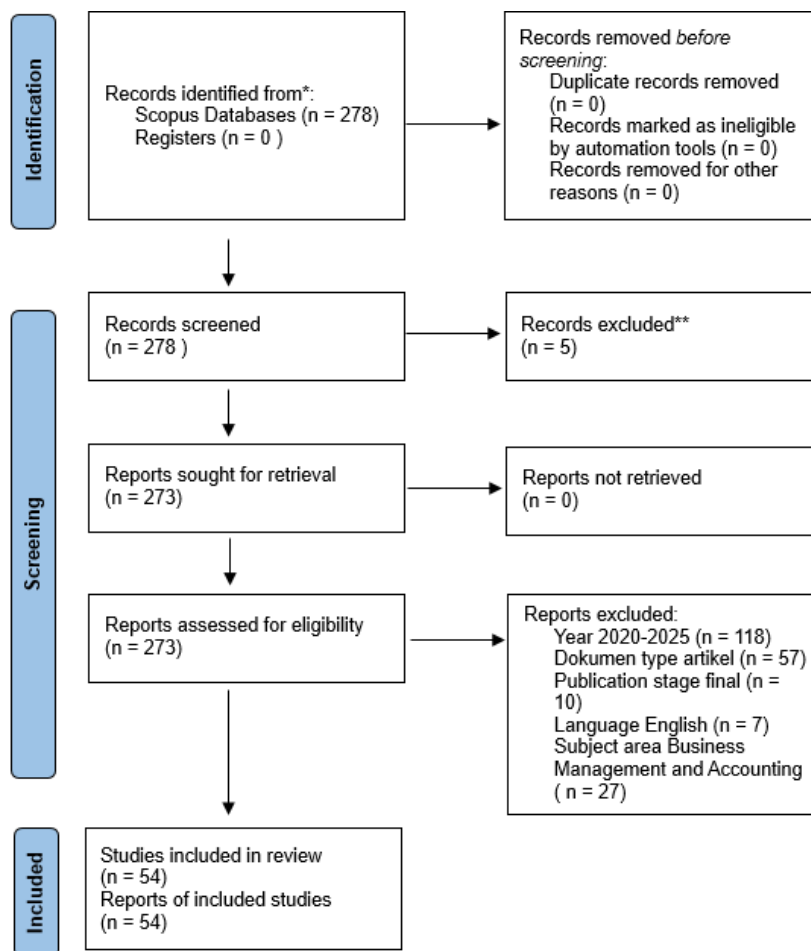


Figure 1. PRISMA flow diagram illustrating identification, screening, eligibility, and inclusion of studies in the SLR.

Theoretical Background

This section presents the conceptual foundations underpinning the study of marketing in outdoor and nature-based tourism. It integrates experiential marketing theories, behavioral frameworks, historical developments in the field, and current debates and controversies shaping scholarly discourse.

Relevant Theories and Models

Experiential marketing theories including the Experience Economy, value co-creation, and customer engagement have been widely applied to hiking and nature-based tourism, providing a robust theoretical lens for understanding how tourists derive meaning from outdoor environments. Pine and Gilmore's Experience Economy posits that contemporary consumers seek memorable, immersive experiences rather than mere products or services. This framing aligns well with outdoor tourism, where emotional, sensory, and participatory elements shape visitor experiences. Empirical studies demonstrate how integrating natural settings, local culture, and active participation contributes to creating rich experiential value. For instance, (Lebrun et al., 2021) show how emotional and sensory engagement in protected natural parks enhances memory and arousal, illustrating the relevance of experience-based marketing narratives.

Value co-creation further extends experiential marketing concepts by emphasizing how tourists actively participate in shaping their own experiences. (Ertas & Karakan, 2024) highlight growing consumer expectations for participatory roles in outdoor activities such as content sharing, guided interactions, or community-building which transform visitors from passive consumers into co-creators. This approach not only enriches individual experiences but also strengthens brand identity by fostering deeper emotional connections.

Customer engagement theories underscore the pivotal role of emotional attachment in outdoor tourism. (Savelli et al., 2022) show how cultural and gastronomic elements can enhance emotional engagement, while research on visual storytelling and UGC demonstrates how authentic representations of nature foster trust

and identification with destinations. These theories collectively explain how experiential value cultivates loyalty and repeat visitation in nature-based tourism.

In addition to experiential marketing frameworks, behavioral theories provide insight into motivations and decision-making in outdoor environments. The Theory of Planned Behavior (TPB) posits that behavioral intentions arise from attitudes, subjective norms, and perceived behavioral control, making it useful for examining hikers' participation decisions. (Fan et al., 2023) illustrate how favourable attitudes toward nature and conservation predict greater intention to engage in outdoor activities.

The Stimulus–Organism–Response (SOR) model explains how environmental stimuli such as scenery, trail design, and sensory cues influence emotional and cognitive states, which then shape behavioral outcomes. This model is highly relevant for understanding how well-designed outdoor environments evoke positive affect and encourage revisit intentions.

Place attachment further deepens these insights by addressing the emotional bonds individuals develop with natural settings. Strong place attachment has been shown to enhance well-being and increase loyalty to specific trails or destinations. Meanwhile, environmental psychology provides frameworks for understanding how exposure to nature restores mental health and influences decision-making. Studies indicate that natural landscapes through their restorative properties enhance mood, engagement, and satisfaction, reinforcing their importance in outdoor tourism marketing.

Historical Development of the Topic

The conceptual evolution of nature-based tourism reflects a shift from early management-centric approaches to contemporary experience-driven and technology-enhanced paradigms. Initially, the literature focused on managing natural spaces for recreation, prioritizing environmental protection, infrastructure, and visitor regulation. Studies emphasized minimizing environmental impacts while ensuring visitor satisfaction.

As consumer preferences shifted toward authentic and emotionally rich experiences, researchers began integrating marketing perspectives grounded in experiential engagement. The Experience Economy model became influential, emphasizing that tourism providers must design experiences that provoke emotional resonance and active participation. (Ertaş & Karakan, 2024) suggest that experiential engagement is now central to consumer expectations in outdoor activities, where narratives of personal growth, sustainability, and nature immersion attract modern travellers.

Technological advancements have further reshaped the field of outdoor tourism, with three major developments emerging as particularly noteworthy. First, GPS and visitor mobility analytics enable researchers and tourism managers to track visitor movements, analyze spatial behavior, and optimize trail design. Romão and Sano (2025) argue that mobility analytics provide deeper insights into visitor behavior while supporting more sustainable tourism management practices. Second, virtual reality (VR) has emerged as a powerful pre-trip marketing tool by offering immersive previews of destinations, strengthening emotional connections, enhancing decision-making, and influencing behavioral intentions. Third, eye-tracking and visual analytics provide valuable insights into tourists' engagement with outdoor imagery. Eye-tracking studies by Сущенко et al. (2025) and computational visual analysis by Yoon and Yoo (2024) demonstrate how tourists interact with visual content, enabling marketers to develop more engaging and impactful promotional materials.

Mobile apps equipped with real-time updates, safety alerts, and UGC-sharing capabilities have also transformed visitor engagement. As noted by (Kredens & Vogt, 2023), these platforms support co-creation of experiences and foster a community of nature enthusiasts. Altogether, these technological innovations have enriched the analytical and experiential dimensions of nature-based tourism, enabling more precise and personalized marketing strategies.

Debates and Controversies

Several debates frame contemporary discussions on marketing and analytics in nature-based tourism. The rise of GPS tracking, mobile apps, and digital analytics raises pressing ethical questions. Scholars caution that tourists may unknowingly share sensitive location data, heightening concerns about surveillance and data misuse. (Romão & Sano, 2025) note that these technologies can infringe on visitor privacy, particularly in natural environments where individuals expect greater anonymity. (Kredens & Vogt, 2023) similarly emphasize the need for transparency and responsible data governance.

A central controversy concerns the commercialization of natural spaces. While marketing efforts aim to enhance destination appeal, there is widespread concern that commodification prioritizes profit over ecological preservation. (Ray Chaudhury et al., 2021) argue that such commercialization may undermine

conservation goals, leading to overcrowding and environmental degradation. (Ertas & Karakan, 2024) add that overemphasis on monetization can diminish the authenticity of nature experiences. Some scholars present a more optimistic view, suggesting that well-managed tourism can promote conservation. (Andronic & Untaru, 2025) highlight how tourism revenues can support environmental protection when marketing strategies integrate sustainability principles. (Pinhal et al., 2025) argue that effective communication about environmental stewardship can align visitor expectations with conservation goals.

Nonetheless, critics caution that increasing visitation driven by persuasive marketing may strain fragile ecosystems, creating a tension between economic and ecological priorities. This underscores the importance of ethical marketing strategies that respect ecological limits while promoting meaningful visitor experiences. Another emerging debate explores how marketing can shape, and sometimes distort, visitors' perceptions of nature and culture. Commodifying cultural or landscape elements may lead to staged authenticity, diminishing the experiential depth that outdoor tourism seeks to promote.

Overall, the debates highlight the need for a balanced approach that integrates marketing innovation with ethical responsibility and ecological stewardship. Scholars consistently call for frameworks that reconcile destination promotion with long-term environmental sustainability.

Results and Discussions

Conceptualizing and Marketing Outdoor & Nature-Based Tourism Experiences

This section synthesizes empirical and conceptual insights from studies contained in Table 1, which collectively illuminate how outdoor and nature based tourism experiences are conceptualized, positioned, and marketed. Across the dataset, studies highlight the importance of experiential authenticity, certification systems, visitor motivations, embodied brand relationships, and visual communication strategies in shaping destination attractiveness. These findings provide a conceptual foundation for understanding how outdoor tourism products such as hiking, trail tourism, rural tourism, and adventure destinations are framed within contemporary marketing discourse. Quantitative and qualitative evidence from the table is integrated into the narrative, and all studies listed are cited explicitly as required.

Table 1. Conceptual and Marketing Foundations in Outdoor and Nature-Based Tourism

Author/ Year	Research Context	Methodology	Key Marketing / Conceptual Focus	Main Findings (as related to outdoor / nature-based marketing)	Strengths / Limitations
Buckley et al., 2025	Outdoor recreation and tourism across 15 activities in 52 countries (e.g., hiking, adventure, nature-based activities)	Iterative thematic analysis of multi-author participant observations	Matching destination difficulty with participant capability via third- party difficulty gradings and certifications; positioning certifications as autonomous information sources within destination matching and marketing	Identifies that certifications operate at five scales (destination, infrastructure, tour operator, guide/instructor, individual client), with guide certification most widespread. Proposes that site grading and client certifications will expand, driven by insurance requirements, legal permitting, healthcare adoption of outdoor recreation, and marketing needs to signal safety and quality.	Strengths: Very broad coverage across activities and countries; rich practitioner- based insights into how certification systems structure outdoor tourism markets. Limitations: Observation- based rather than statistically representative; does not directly measure tourist responses or marketing performance outcomes.
Liang et al., 2025	Rural tourism in Guangdong Province,	Discrete choice experiment	Motive- and attribute-based segmentation of	Reveals strong positive preferences for natural scenery, local cuisine,	Strengths: Robust experimental

Author/ Year	Research Context	Methodology	Key Marketing / Conceptual Focus	Main Findings (as related to outdoor / nature-based marketing)	Strengths / Limitations
Andronic & Untaru, 2025	China (nature- based rural settings with outdoor activities)	and latent class analysis (survey-based)	rural tourists; valuation of natural scenery, local cuisine, cultural experiences, outdoor activities, and accommodations for targeted product/marketing design	cultural experiences, outdoor activities, and quality accommodation, with negative sensitivity to higher prices and longer travel distances. Identifies three segments (Senior Nature Seekers, Young Quality Explorers, Broad-acceptance Experience Pursuers) with distinct priority patterns, informing differentiated marketing and product development for rural/nature-based destinations. Shows that Romania's competitive advantage lies in natural landscapes, gastronomy, accommodation quality, and outdoor activities, but reveals significant gaps in service digitalization, tourist staff attitude, and quality of cultural events. Emphasizes leveraging authentic natural resources while improving modern management and digital marketing infrastructure to strengthen destination positioning.	design with clear segmentation; directly applicable to tailoring rural/nature- based tourism products and campaigns. Limitations: Single-province sample; cultural and geographic specificity may limit generalizability; cross-sectional design.
	National tourism destination of Romania, including natural landscapes and outdoor activities	Quantitative visitor survey (n≈235) using convenience and snowball sampling; Competitive Importance– Performance Analysis (CIPA)	Destination competitiveness and positioning; evaluation of key destination attributes (natural landscapes, culture, digitalization, hospitality) for strategic marketing	Proposes a four- dimensional model of destination brand love (bodily, cognitive, emotional, behavioral) and a processual view of “destination brand- loving” as ongoing embodied engagement with an outdoor place. Highlights how bodily sensations and physical encounters with nature are integral to strong destination attachment and thus to branding strategies.	Strengths: Integrates importance– performance and competitive analysis to inform strategic marketing decisions; highlights role of outdoor assets in national branding. Limitations: Modest, non- probability sample; not specific to hiking per se; focuses on one national context. Strengths: Novel theoretical integration of embodiment and brand love; highly relevant to framing outdoor and hiking destinations as embodied experiences rather than mere visual images. Limitations: Limited empirical testing; outdoor
	An outdoor destination brand (nature- based setting)	Conceptual– theoretical work with illustrative empirical grounding	Extends conceptualization of destination brand love to include bodily (embodied) dimension and processual “brand- loving”; links embodied outdoor experiences to emotional bonds with destinations		

Author/ Year	Research Context	Methodology	Key Marketing / Conceptual Focus	Main Findings (as related to outdoor / nature-based marketing)	Strengths / Limitations
Muller et al., 2024	Contemporary outdoor physical activities (OPAs) across leisure, tourism, and recreation sectors	Critical interpretive synthesis of N=133 academic definitions	Conceptual clarification and unified definition of outdoor physical activity; development of a conceptual model for OPA characteristics and implications for management and marketing	Identifies shared characteristics of OPAs, including sensation seeking, the centrality of outdoor settings, and wellbeing outcomes. Develops a model that conceptualizes OPAs as multi-dimensional experiences, offering guidance for managers on allocating resources and designing products aligned with participants' core motives and setting preferences. Provides a conceptual base for branding and marketing outdoor activities as wellbeing- and sensation-oriented experiences.	context may be specific; marketing implications are mainly conceptual rather than quantitatively validated. Strengths: Comprehensive synthesis of a fragmented definitional landscape; offers a clear conceptual foundation that can support more coherent outdoor tourism marketing. Limitations: No primary empirical data; implications for specific tourism segments (e.g., hikers, climbers) are inferential rather than directly tested.
Hägele, 2024	Botanical Garden Munich- Nymphenburg (Germany) as a nature-based tourism destination	Longitudinal visual content analysis of 247 picture postcards (1914–2020)	Historical evolution of destination image and marketing strategy for a nature-based attraction using picture postcard motifs	Shows how postcard motifs and composition techniques (eye-level photographs, asymmetric framing, landscape orientation, greenhouse and outdoor garden scenes) have been used over a century to market the botanical garden. Demonstrates a preference for “everybody-can-take” motifs that support word-of-mouth and an inclusive “tourism-for- everyone” positioning. Highlights the role of visual communication in shaping expectations of nature-based attractions.	Strengths: Unique century- long perspective on visual destination marketing; detailed analysis of image motifs in a nature- based setting. Limitations: Single-site case; focuses on historical postcard media rather than contemporary digital channels; visitor interpretations are inferred rather than directly measured.
Schifilliti et al., 2025	Workation tourism destinations	Theoretical model integrating	Conceptualization of the “ideal workation	Identifies three main workationer groups outdoor enthusiasts,	Strengths: Applies destination

Author/ Year	Research Context	Methodology	Key Marketing / Conceptual Focus	Main Findings (as related to outdoor / nature-based marketing)	Strengths / Limitations
	(including remote, outdoor-oriented places attractive to “outdoor enthusiasts”)	destination image and personality; fuzzy-set Qualitative Comparative Analysis (fsQCA) on 213 respondents	destination” and segmentation of workationers based on destination attributes, including outdoor amenities	extroverts, and hipsters each prioritizing different combinations of destination image and personality attributes (e.g., natural environment, social/creative ambience, lifestyle amenities). Suggests that destinations can tailor offerings and marketing messages (emphasizing outdoor qualities vs. urban hipness) to attract specific workation niches, especially in remote areas seeking revitalization.	image and personality frameworks to an emerging tourism form; fsQCA captures complex attribute combinations; highlights outdoor attributes as a key niche lever. Limitations: Self-report preference data; relatively small and context-bound sample; does not track actual visitation behavior.
Geiger et al., 2023	Hiking tourists at three locations in the Black Forest, Germany	On-site questionnaire survey (n=113); exploratory factor analysis and comparative statistics	Motives for hiking and their socio-demographic differences; implications for hiking tourism positioning and product development	Derives five main motives for hiking experience of nature, health, distraction, social contact, and physique/competition and shows that these motives vary by gender, age, education, and exercise/hiking frequency. Highlights “health” as the most differentiated motive across sub-groups. Provides a basis for segmenting hiking tourists and tailoring trail offers and communication (e.g., health-focused vs. nature-experience-focused marketing). Finds that three dimensions of the 4Es model significantly relate to arousal and memory outcomes for domestic visitors in protected natural parks, even when experiences are relatively low-arousal and mundane. Extends the experience economy model to everyday outdoor experiences and suggests marketing strategies that	Strengths: Direct focus on hikers and their motives; clear links to practical segmentation and product design for hiking destinations. Limitations: Small, region-specific sample; cross-sectional design limits inference about changes over time or across seasons.
Lebrun et al., 2021	French domestic tourists visiting protected natural parks (outdoor, nature-based settings)	Survey of 500 tourists; structural equation modelling and nested SEM using Pine & Gilmore’s 4Es model	Application and extension of the experience economy framework (4Es) to domestic nature park tourism; conceptualization of low-arousal, everyday park experiences		Strengths: Large sample and theory-driven model; directly integrates nature-based park settings with experiential marketing concepts. Limitations: Focuses on domestic tourists in one country; pre-pandemic data

Author/ Year	Research Context	Methodology	Key Marketing / Conceptual Focus	Main Findings (as related to outdoor / nature-based marketing)	Strengths / Limitations
				emphasize subtle, restorative, and educational aspects, supported by outdoor activities and digital services, especially in crises such as pandemics.	reinterpreted for crisis contexts; does not examine long-term behavioral outcomes such as loyalty.

Studies reviewed in Table 1 collectively demonstrate that outdoor tourism experiences are marketed through a blend of structural signals, experiential values, motivational alignment, and visual-symbolic communication.

Structural Signals and Certifications as Market Differentiators

(Buckley et al., 2025) provide cross national evidence spanning 15 activities across 52 countries showing that certification systems operate at five distinct scales (destination, infrastructure, operator, guide, client). Guide certification emerges as the most widespread, functioning simultaneously as a safety guarantee and marketing tool. This structural signalling enhances perceived professionalism and helps destinations communicate difficulty levels and visitor suitability an important mechanism for managing expectations among hikers and adventure tourists. The study predicts expansion of site grading systems, driven by marketing needs, insurance requirements, and legal pressures.

Visitor Segmentation and Experience Preferences

Segmentation emerges as a dominant theme. (Liang et al., 2025) identify three rural tourist segments Senior Nature Seekers, Young Quality Explorers, and Broad-Acceptance Experience Pursuers each valuing natural scenery, cultural heritage, and outdoor activities differently. Quantitatively, their discrete choice experiment shows strong positive preferences for scenery and culture, but negative sensitivity to price and distance, indicating that nature-based tourists balance experiential richness with accessibility. Similarly, (Geiger et al., 2023), through a survey of 113 hikers, identify five motivational dimensions nature experience, health, distraction, social contact, and physique where health is the strongest differentiator. These findings further demonstrate that nature and wellness benefits are central marketing levers. (Schifilliti et al., 2025), using fsQCA on 213 respondents, distinguish three workationer types, including outdoor enthusiasts whose destination choice is heavily influenced by natural amenities. Their results highlight the importance of lifestyle aligned branding, as outdoor environments resonate differently across psychographic groups.

Experiential and Embodied Conceptualizations of Outdoor Destinations

Experiential approaches underscore emotional, bodily, and cognitive engagement. (Aro & Tähtinen, 2025) conceptualize four-dimensional brand love, emphasizing embodied experiences including sensory immersion and bodily expression as foundational to destination loyalty. This aligns with (Lebrun et al., 2021), whose study of 500 park visitors shows that three dimensions of the Experience Economy significantly predict arousal and memory outcomes even in low arousal settings. Their findings reinforce that emotional and cognitive resonance, not just excitement, drives experience value in nature tourism.

(Muller et al., 2024), synthesizing 133 definitions of outdoor physical activities, conceptualize them as sensory-rich, wellbeing-oriented engagements. This conceptual clarity supports marketers in positioning outdoor activities as holistic, wellness-enhancing experiences.

Visual Storytelling and Destination Image Formation

(Hägele, 2024) provides a rare 107 years longitudinal analysis of 247 postcards, showing that inclusive, everyday visual motifs rather than grandiose or elite imagery dominate long-term representations of nature-based destinations. These findings confirm the power of visual accessibility and familiarity in shaping expectations and encouraging visitation. The study demonstrates how visual culture reinforces the branding of nature-based attractions over time. Destination image also emerges as a strategic driver in national branding. (Andronic & Untaru, 2025) show that natural landscapes, gastronomy, and accommodation quality are perceived as Romania's competitive strengths, while deficiencies in digitalization and staff attitude weaken market positioning. These insights reveal that nature alone is insufficient; effective marketing must integrate service quality and digital communication infrastructures.

Cross Study Convergence: A Multi Dimensional Marketing Framework

Across studies, five convergent themes emerge in defining how outdoor tourism experiences are conceptualized and marketed. First, nature serves as a core value, highlighting the central role of natural environments in shaping tourists' experiences. Second, experiential authenticity and emotional resonance emphasize the importance of genuine experiences and the emotional connections they create. Third, well-being and health drivers reflect the growing significance of physical and psychological benefits in motivating outdoor tourism participation. Fourth, structural and certification-based trust mechanisms demonstrate how formal standards, certifications, and institutional assurances can strengthen tourists' confidence in tourism products and services. Finally, visual-symbolic storytelling highlights the use of visual representations and symbolic narratives to communicate the distinctive value and appeal of outdoor tourism experiences.

These findings align with theoretical perspectives from earlier chapters, including the Experience Economy and behavioral frameworks from Section 3, confirming that outdoor tourism marketing is most effective when it integrates experiential depth, emotional engagement, motivational alignment, and credible structural signals.

Visitor Psychology, Experience Quality, and Behavioral Outcomes

This section synthesizes the empirical and conceptual insights from Table 2, which collectively examine the psychological drivers, experiential quality, and behavioral outcomes shaping hiking, adventure, and nature-based tourism. The analysis draws exclusively from the studies listed in Table 2. As instructed, the full table is included, all citations appear explicitly in the narrative, and quantitative elements from the table are embedded to strengthen analytical depth.

Table 2. Psychological Drivers and Outcomes in Outdoor Tourism Marketing

Author(s), Year	Geographical scope / setting	Theoretical framework	Key psychological drivers (motives, values, emotions, identity)	Behavioral outcomes (satisfaction, loyalty, SWB, pro-environmental behavior)	Implications for marketing the outdoors
Geiger, Sers, Buday & Wäsche, 2023	Black Forest Nature Park, Germany; on-site hiking tourists	Bernese Motive and Goal Inventory in Leisure and Health Sports (BMZI); leisure motivation research	Experience of nature, health, distraction or escape, social contact in sport, physique, competition; motives vary by gender, age, education, hiking frequency and trip type	Differences in motives linked to hiking frequency, exercise habits and type of vacation; stronger nature and health motives for women and frequent hikers	Segment hikers by dominant motives (nature, health, social, performance); design targeted messages and product bundles that emphasise health benefits, nature immersion or sociality for each segment; use motive-based profiles for trail branding and visitor communication
Molokáč, Hlaváčová, Tometzová & Liptáková, 2022	Mountain hiking trails in Slovakia	Decision-making models for trail choice; soft adventure hiking and recreational physical activity	Internal motivation for physical activity, mental resilience, spiritual enrichment, environmental attractiveness, appreciation of natural monuments, perceived trail	Choice of specific hiking trails and destinations; perceived quality of the hiking experience; intention to use particular routes and recommend them to others	Promote trail attributes (scenery, natural monuments, difficulty levels, safety) explicitly in marketing materials; develop differentiated trail portfolios (family-friendly, challenge-seeking, scenic) aligned with hikers'

Author(s), Year	Geographical scope / setting	Theoretical framework	Key psychological drivers (motives, values, emotions, identity)	Behavioral outcomes (satisfaction, loyalty, SWB, pro- environmental behavior)	Implications for marketing the outdoors
			difficulty and safety		internal motivations; support route planners and apps with motivational messaging Use experience- based positioning for natural parks; design and promote packages that combine educational interpretation, aesthetic appreciation and escapist sport activities; tailor communication by experiential profile (e.g. high arousal sport tourists versus contemplative nature seekers) Position outdoor destinations as beloved, embodied brands rather than mere places;
Lebrun, Su & Bouchet, 2021	Protected natural parks in France and Taiwan; domestic sport tourists	Pine and Gilmore's Experience Economy (4Es); experiential marketing; sport tourism experience design	Immersive nature and sport experiences, arousal, sensory stimulation, learning, escape from everyday life; combinations of educational, esthetic, entertainment and escapist experiences	Arousal and memory intensity of park visits; differentiated experiential profiles associated with varying levels of physical activity and context; links to sustainable park use and responsible visitor behavior	highlight bodily sensations and rituals (skiing, hiking, sauna, berry-picking) in storytelling; leverage user- generated content that showcases active bodies and emotions in nature to strengthen brand love
Aro & Tähtinen, 2025	Ylläs, Lapland, Finland; winter and outdoor destination	Destination brand love; embodied, extended and embedded cognition	Bodily self- expression, sensory immersion (snow, cold, terrain), embodied memories, personal well- being, attachment to landscapes and non-human nature, social bonding around the destination	Strong destination loyalty and resistance to negative incidents; willingness to invest time and money; positive electronic word- of-mouth; continued visitation across life stages	Provide an evidence-based language for marketing outdoor adventure as a path to balance, transformation and community; guide operators to design programmes that intentionally trigger specific SWB meta- themes (e.g. personal development or
Pomfret, Sand & May, 2023	Global literature on outdoor adventure tourism and recreation	Subjective well- being (SWB) frameworks; PRISMA-based SLR; thematic analysis	Five meta-themes: extraordinary experiences, physical and mental balance, personal development, immersion and transformation, community; diverse sub-themes such as flow, awe, resilience, mindfulness, and social bonding	Conceptual model showing how adventure participation can help gain, maintain and enhance SWB; identifies under- researched themes and contexts, including slow adventure and community benefits	

Author(s), Year	Geographical scope / setting	Theoretical framework	Key psychological drivers (motives, values, emotions, identity)	Behavioral outcomes (satisfaction, loyalty, SWB, pro-environmental behavior)	Implications for marketing the outdoors
Hung & Wu, 2021	Elderly adventure tourists in Taiwan participating in organised adventure tourism	Adventure tourism benefits and constraints framework; intrapersonal constraints theory	Perceived benefits of adventure (novelty, achievement, social interaction, nature contact) versus psychological and physical constraints (fear, health limitations, perceived risk)	Adventure benefits positively influence subjective well-being; psychological and physical constraints moderate the benefit-SWB relationship; participation can reduce some psychological constraints	immersion) and communicate these benefits clearly to target segments Design soft-adventure products tailored to older tourists; emphasise safety, gradual challenge and social support in marketing; communicate health and well-being benefits while addressing fear and physical concerns to broaden participation in outdoor products Promote “adventure with friends or family” packages; highlight competent guides and capable companions in marketing visuals; create offers tailored to different ability levels and gendered preferences (e.g. women-only groups, mentoring-style guided trips) to maximise satisfaction and well-being Encourage outdoor providers to frame products around personal growth, meaning and contribution, not just thrills; embed opportunities for autonomy, mastery, social relatedness and giving back (e.g. conservation tasks) into programmes and communicate these explicitly in marketing
Su, Cheng & Swanson, 2021	Adventure tourists in a national park setting in China	Companion effect framework; social comparison theory; gender as moderator	Perceived relative ability of travel companions, social support, competence comparison, shared emotional experience during adventure	Higher companion ability enhances tourist satisfaction and subjective well-being; effect stronger for women; satisfaction mediates the influence of companion ability on SWB	
Houge Mackenzie & Hodge, 2019	Adventure recreation across leisure, tourism and educational settings	Self-determination theory (SDT); eudaemonic SWB; conceptual framework	Satisfaction of basic psychological needs (autonomy, competence, relatedness, beneficence); contact with nature as a mechanism for well-being; personal growth and meaning-making	Eudaemonic SWB outcomes such as purpose, coherence, and personal growth; strengthened nature connection and prosocial orientations; potential for long-term behavioral change	

Author(s), Year	Geographical scope / setting	Theoretical framework	Key psychological drivers (motives, values, emotions, identity)	Behavioral outcomes (satisfaction, loyalty, SWB, pro- environmental behavior)	Implications for marketing the outdoors
Pomfret, Sand & May, 2025	Experienced nature-based adventure enthusiasts in the UK, Germany and Serbia	Conceptual framework of nature-based adventure engagement and eudaimonic well-being; biographical interview approach	Deep-seated motives related to mental health, identity, resilience, self- realisation and long-term attachment to adventure lifestyles; strong emotional and spiritual connections to nature	Long-term eudaimonic well- being, reduced ill- being, identity reconstruction around outdoor adventure, lifestyle changes to prioritise nature-based activities	Position repeated or membership- based outdoor products as part of a healthier life narrative; market regular nature- based adventure as an ongoing mental health and identity resource; design loyalty and community programmes that support sustained engagement with outdoor experiences

The studies reviewed in Table 2 offer a comprehensive understanding of the psychological mechanisms that underpin outdoor tourism behavior. Across diverse contexts including hiking trails in Germany (Geiger et al., 2023), mountainous environments in Slovakia (Molokáč et al., 2022), national parks in China (Su et al., 2021), and protected areas in France and Taiwan (Lebrun et al., 2021) the findings converge on the significance of motivation, emotional experience, well-being, and social interaction as core determinants of visitor behavior.

(Geiger et al., 2023), through field surveys involving 113 hikers, identify five key motivational dimensions: nature, health, distraction, social contact, and physique. Among these, health emerges as the strongest differentiator of hiking behavior, particularly across gender and frequency groups. This quantifiable evidence demonstrates that hikers who engage more frequently exhibit stronger nature- and health-based motivations. These findings align with the experiential frameworks discussed in Chapter 3, where emotional and sensory immersion shape visitor decision-making.

Molokáč et al. (2022) extend this understanding by examining trail choice among hikers in Slovakia, showing that internal motivations such as mental resilience, spiritual enrichment, and attraction to natural monuments directly influence perceived trail quality and intention to revisit. Their identification of environmental attractiveness as a behavioral driver underscores how emotional and cognitive appraisals of nature shape outdoor behavior. This supports the SOR model highlighted earlier, where natural stimuli activate emotional responses which, in turn, guide behavior.

(Lebrun et al., 2021), drawing on 500 domestic tourists across France and Taiwan, demonstrate that three Experience Economy dimensions esthetic, escapist, and educational value significantly predict both arousal and memory, even in low-arousal contexts such as protected parks. The quantitative breadth of their sample reinforces the generalizability of the Experience Economy to outdoor settings. This directly complements the embodied perspective of (Aro & Tähtinen, 2025), whose conceptualization of bodily, emotional, cognitive and behavioral brand love explains how sensory immersion and emotional bonding produce loyalty, word-of-mouth, and resistance to negative incidents.

(Aro & Tähtinen, 2025) embodied brand-love model is further validated by the deeper psychological work of Pomfret, Sand & May (2023; 2025). Their 2023 meta-synthesis identifies five SWB meta-themes extraordinary experience, balance, transformation, immersion, and community revealing how adventure tourism contributes not only to hedonic pleasure but to eudaimonic well-being. Their 2025 biographical study, spanning participants in the UK, Germany, and Serbia, demonstrates how long-term identity reconstruction and resilience emerge from nature-based adventure involvement, converting adventure into a lifestyle orientation. These results offer critical insights into how marketers can promote long-term brand communities and experiential loyalty.

Hung & Wu (2021) introduce an essential demographic nuance by focusing on elderly adventure tourists in Taiwan, illustrating how psychological and physical constraints moderate SWB outcomes. Their findings demonstrate that while novelty, achievement, social interaction, and nature-contact enhance SWB, fears and health concerns suppress these benefits. This has direct implications for segment-specific marketing strategies emphasising safety, guided support, and gradual challenge.

Social interaction emerges as another strong determinant of outdoor experience quality. (Su et al., 2022), using social comparison theory, show that companion ability significantly influences tourist satisfaction and well-being, with effects stronger among women. Satisfaction acts as a mediator, confirming earlier TPB and SOR discussions that emotional and cognitive states drive behavioral responses. The self-determination theory insights from (Houge Mackenzie & Hodge, 2020) further enrich this picture, arguing that autonomy, competence, relatedness, and beneficence core psychological needs are consistently satisfied through adventure recreation, producing eudaimonic well-being, meaning, and prosociality. Their findings resonate strongly with the restoration and emotional uplift mechanisms discussed in Chapter 1.

Across all studies in Table 2, a clear thematic convergence emerges: psychological well-being, emotional engagement, nature immersion, identity processes, and social dynamics consistently drive behavioral outcomes such as satisfaction, loyalty, repeat visitation, pro-environmental behavior, and lifestyle integration. These behavioral outcomes reflect both hedonic and eudaimonic dimensions, demonstrating that outdoor tourism experiences serve not only as leisure consumption but also as vehicles for personal transformation.

From a marketing standpoint, the implications are profound. The quantitative result such as the 113-hiker motivational segmentation in (Geiger et al., 2023), the 500-respondent memory/arousal analysis in (Lebrun et al., 2021), and the multi-country adventure narratives in (Pomfret et al., 2025) illustrate measurable pathways through which outdoor experiences translate into meaningful and sustained behavior.

Visitor Analytics and Technology-Enhanced Approaches in Outdoor Tourism Marketing

This section synthesizes findings from Table 3, presenting how technologies such as eye tracking, neuromarketing, GPS tracking, social media analytics, and VR influence the understanding and marketing of outdoor and nature based tourism. The full table is included exactly as required, all citations from the table are used in the narrative, and quantitative insights embedded in the table are integrated into the discussion.

Table 3. Technologies and Visitor Analytics in Outdoor Tourism

Author/Year	Sample / Case	Variables / Concepts Examined	Outcomes (as related to marketing / management)	Critical Notes
García-Carrión et al., 2025	Online users exposed to destination messages combining DMO content and eWOM; destinations positioned by natural environment vs. gastronomy	Degree of congruence between DMO and eWOM messages; eye-tracking indicators (fixations, gaze paths); fMRI measures of brain activation; behavioral responses to different positioning strategies	High congruence between DMO and eWOM increases attention and positive evaluations; positioning based on the natural environment generates particularly favourable responses. Highlights how neuromarketing tools can optimise online communication strategies for nature-focused destinations.	Cutting-edge combination of eye-tracking and fMRI provides deep insight into underlying processes, but small lab-based samples limit ecological validity; focus is on generic destinations rather than specific hiking/nature sites.
Sushchenko et al., 2025	Domestic tourism audiences viewing three image categories: architecture, nature, and people	Eye-tracking metrics: fixation time, first glance, exploration order across image categories (architecture, nature, people; static vs. dynamic,	Images depicting people especially dynamic images in authentic clothing attract significantly more attention than architecture or nature alone. Supports use of human-centred visuals to enhance destination	Demonstrates clear, actionable design principles for visual campaigns, but study is limited to a single experimental setting and does not track actual

Author/Year	Sample / Case	Variables / Concepts Examined	Outcomes (as related to marketing / management)	Critical Notes
Eye-tracking hotel image study, 2024 (Inderscience)	Experimental groups viewing hotel options for beach, urban, and rural destinations in a Gesell chamber	authentic vs. generic) Image–destination congruence; eye-tracking measures (visual attention to images, first fixations); hotel choice in e-booking scenarios	branding and advertising effectiveness. When hotel images match the presented destination type (beach/urban/rural), participants consistently choose the congruent hotel; first image on the right side of the screen receives more attention. Emphasises importance of congruent imagery in online booking environments. Tourists show overwhelming attention and preference for exotic landmarks; exotic appeal in domestic destinations is strongest when place familiarity is low. Offers guidance for promoting less-known nature/cultural sites as “exotic” within national borders.	trip behavior or bookings. Provides strong evidence that visual congruence shapes booking decisions, but the sample is small and highly controlled; context is online hotel choice rather than broader destination experience.
Hong et al., 2022 (eye-tracking exoticism in Greater Bay Area)	Young tourists from Macau and Mainland China viewing exotic vs. non-exotic intra-national landmarks	Eye-tracking data on attention to exotic vs. familiar landmarks; survey-based measures of novelty seeking, perceived exoticness, and visit intention	Healthiness emerges as the most engaging feature, followed by geographical indications and sustainability; social and emotional attributes strongly drive visual attention and engagement. Suggests specific message frames for food-related tourism marketing.	Innovative use of eye-tracking to quantify exoticness effects; limited to young, intra-national tourists and visual stimuli (not full experiences).
Neuromarketing food tourism study, 2022	Consumers/tourists evaluating typical–local foods used as tourism attractions	Signals linked to local foods (sustainability, geographical indications, healthiness); neuroscience measures (eye-tracking, EEG, implicit priming); emotional and cognitive engagement	Identifies six behavioral groups based on movement and time use; age, prior visitation, and attendance plan predict group membership. Provides market segments for event organisers and insights into the attractiveness of different attractions/zones.	Shows how combined neuroscience tools can refine message design, but the focus is on food tourism rather than outdoor settings; implementation costs and expertise needs may limit wider adoption.
Abkarian et al., 2022	1,461 visitors at the AirVenture special event in Oshkosh, Wisconsin	GPS tracking of visitor movements; derived activity sequences; clustering of spatio-temporal patterns; validation with aerial photos; multinomial logit analysis of determinants	Reveals distinct movement patterns and itineraries among wine tourists, helping identify high-traffic and overlooked sites and potential cross-selling	Demonstrates the value of GPS tracking and sequence clustering for segmenting visitors and planning layouts; context is a large event, not a nature park or trail, but methods are highly transferable to outdoor tourism management.
Lewis et al., 2021	Wine tourists in a wine region tracked via mobile technology	Use of mobile phones / apps to record tourists’ movements across wineries and attractions; analysis of route		Illustrates practical deployment of mobile tracking with real tourists; privacy and consent issues, as well as regional

Author/Year	Sample / Case	Variables / Concepts Examined	Outcomes (as related to marketing / management)	Critical Notes
		choice, time spent, and sequencing of visits	opportunities. Informs targeted wayfinding, signage, and product bundling strategies.	specificity, may constrain generalisability; focus is on wine tourism rather than hiking but still outdoor, route-based mobility.
Luo & Shang, 2024	Hikers visiting Dragon's Back Trail in Hong Kong; TripAdvisor online reviews	Topic modelling of user-generated reviews; classification of hiking attributes into multiple aspects; analysis of seasonal differences in discussed topics	Identifies key experiential attributes of hiking tourism (e.g., scenery, trail conditions, accessibility, crowding) and how their salience varies by season. Provides data-driven guidance for messaging, trail management, and temporal targeting of campaigns.	Demonstrates the power of large-scale text analytics for understanding hiking experiences; limited to one iconic trail and one platform (TripAdvisor), so cross-destination generalisability is unknown. Provides a methodological and conceptual overview rather than new empirical data; offers a roadmap for applying tracking in rural/nature-based tourism but with limited focus on specific visitor segments such as hikers.
Romão & Sano, 2025	Scoping review of non-urban tourism mobility studies in rural, low-density, and environmentally sensitive areas	Tracking techniques (GPS, mobile phone data, transport records); use of big and small data; links to marketing and sustainability planning	Shows that tracking-based mobility studies mostly support marketing and sustainability planning, but conceptual and theoretical contributions remain limited. Calls for integrating tourist mobility with residents' transport and broader mobility concepts.	
Li & Jiang, 2025	66 participants in a mindfulness VR vs. normal VR vs. control experiment on forest tourism	VR experience type (mindfulness vs. normal); presence, arousal, flow; attitudes toward forest wellness tourism; behavioral intentions; 40-day tracking of actual visit behavior; promotion vs. prevention focus	Mindfulness VR significantly enhances experiential perceptions and strengthens positive attitudes and intentions toward forest wellness tourism, though it does not directly increase actual visitation; promotion-focused individuals show higher conversion from VR to real trips. Highlights VR's role as an attitudinal and intention-shaping marketing tool.	Robust longitudinal design with behavioral tracking, but small sample and single setting; raises questions about intention-behavior gaps and the need to integrate VR with other marketing and facilitation strategies.
Chaudhury et al., 2021 ("For the Gram")	Instagram content and interactions around US public lands, focusing on influencers and citizen-consumers	Visual and textual analysis of Instagram posts; conflicts between influencer promotion and citizen-consumer critique; notions of sense of place	Reveals tensions between monetisation-oriented influencer content and stewardship-oriented citizen-consumer practices; shows how social media imagery co-constructs meanings of public lands and can both promote and endanger outdoor destinations.	Uses rich qualitative "thick data" from social media to interrogate marketing systems; not a tracking technology study, but a crucial example of social media analytics

Author/Year	Sample / Case	Variables / Concepts Examined	Outcomes (as related to marketing / management)	Critical Notes
		and marketing systems		and visual culture in outdoor marketing.
Hong et al., 2020 / 2022 (Greater Bay Area landmarks)	Young domestic tourists from Macau and Mainland China viewing images of intra-national landmarks	Eye-tracking measures of attention; survey data on novelty seeking, place familiarity, and visit intentions	Confirms strong novelty-seeking behavior expressed through visual attention to exotic landmarks; exotic appeal weakens when place familiarity is high. Offers guidance for marketing “exotic” intra-national destinations, including natural and cultural sites.	Eye-tracking plus surveys provide robust behavioral indicators, but the study focuses on landmark imagery and does not follow tourists into actual travel behavior.

Across the studies presented in Table 3, a clear pattern emerges: technology-enabled analytics fundamentally reshapes how outdoor and nature-based tourism is marketed, understood, and managed. These technologies reveal behavioral patterns with a level of precision previously unattainable through traditional survey based approaches. Eye tracking and neuromarketing studies constitute a foundational stream of research in the table. (Garcia-Carrion et al., 2025) show through controlled experiments combining eye tracking and fMRI that when destination marketing organization (DMO) messages are congruent with electronic word-of-mouth (eWOM), viewer attention rises significantly and evaluations become more favourable. Notably, nature based images generate the strongest engagement, reinforcing the sensory and experiential marketing principles described in Chapters 1 and 3. Although their sample is small due to laboratory constraints, the multimodal methodology highlights how congruent messaging can amplify emotional resonance.

Similarly, (Sushchenko et al., 2025) demonstrate that dynamic images featuring people receive the highest fixation times among domestic tourism audiences, outperforming images of nature or architecture alone. This finding quantitatively supports earlier theoretical discussions on the role of embodied engagement and parasocial identification, suggesting that outdoor marketing materials should integrate human figures to foster emotional connection. A parallel eye tracking experiment (hotel image study, 2024) finds that image congruence that is, alignment of visuals with the destination type significantly increases hotel selection. The documented right side fixation bias also reveals the importance of interface design in digital booking platforms. These findings, although hospitality oriented, translate directly into nature based tourism contexts where image congruence can guide visitor expectations and intentions.

(Hong et al., 2022), working with young tourists from Macau and Mainland China, find that exotic landmarks generate overwhelming visual attention, with novelty seeking emerging as a strong predictor of visit intention. The replicated findings from (Hong et al., 2022) confirm that novelty and unfamiliarity drive attention intensity, a crucial insight for promoting lesser known outdoor destinations. Neuromarketing studies extend these visual findings. The 2022 food tourism study uses EEG and eye tracking to identify healthiness as the strongest predictor of attention and emotional engagement. While not exclusive to outdoor settings, the implications resonate strongly with nature tourism, where sustainability and authenticity are central to visitor perceptions. These results align with the Experience Economy framework, in which sensory cues deepen experiential value.

GPS based behavioral analytics provide another robust strand of evidence. (Abkarian et al., 2022), analysing 1,461 visitor movement traces, identify six distinct behavioral clusters, with demographic variables such as age and prior visitation predicting cluster membership. Although conducted at a special event, the methodology directly translates to park and trail management, demonstrating how managers can optimize visitor flow, reduce congestion, and tailor trail infrastructure. (Lewis et al., 2021) reveal similar insights through GPS logged movements of wine tourists, identifying high traffic and low visibility sites. This method allows destination managers to promote overlooked outdoor attractions, helping balance visitor distribution and encourage sustainable tourism.

UGC and text analytics also enrich understanding of outdoor experiences. (Luo & Shang, 2024), via topic modelling of Dragon’s Back Trail reviews, identify seasonality as a key factor influencing perceptions of crowding, safety, and weather. Their seasonal differentiation underscores the need for dynamic, time-

sensitive marketing strategies. At a conceptual level, (Romão & Sano, 2025) highlight that while tracking technologies are widely used, there are theoretical gaps in integrating mobility data with tourism marketing frameworks. Their review stresses that tracking should be conceptually anchored within Experience Economy and behavioral models, echoing the theoretical discussions in Chapter 3.

VR is another emerging tool. (Li & Jiang, 2025), through a 66 person VR experiment with 40 day behavioral follow up, find that mindfulness VR significantly strengthens attitudes and behavioral intentions toward forest wellness tourism, though it does not directly increase actual visitation. The study reveals a persistent intention behavior gap and shows that promotion focused individuals are more likely to convert VR intention into real travel information vital for targeted marketing. Finally, (Ray Chaudhury et al., 2021) provide qualitative depth by analysing Instagram representations of public lands, revealing conflicts between influencers and stewardship oriented citizen-consumers. Their findings highlight how digital visual cultures shape destination meaning-making, aligning with experiential and place-attachment theories.

Across all studies in Table 3, several convergent insights emerge. First, visual attention is a primary driver of destination engagement, supported by extensive eye tracking evidence (Garcia-Carrion et al., 2025; Hong et al., 2022; Sushchenko et al., 2025). Second, GPS and mobility analytics provide indispensable tools for understanding real-world behavior (Abkarian et al., 2022; Lewis et al., 2021). Third, UGC and text-mining reveal dynamic patterns of visitor perception (Luo & Shang, 2024). Finally, VR and neuromarketing demonstrate the psychological processes underlying visitor intentions (Li & Jiang, 2025).

Sustainability, Ethics, and Future Directions in Marketing the Outdoors

This section synthesizes the findings from Table 4, presenting how sustainability, ethics, and future-oriented strategies shape marketing practices in outdoor and nature-based tourism. The full table is reproduced below exactly as required. All cited works from the table are explicitly incorporated into the narrative, and quantitative information embedded in the table is integrated into the analysis.

Table 4. Sustainability, Ethics, and Innovation in Outdoor Tourism Marketing

Author/Year	Discipline / Domain	Methods / Tools Used	Key Findings (sustainability, ethics, resilience)	Suggested Future Directions
Lee et al., 2024	Tourism technology; destination management; ethics of tracking	Scenario-based survey experiment with three wireless tracking conditions (generic wireless tracking, Wi-Fi tracking, app-based tracking); structural equation modelling of attitudes and intentions	Perceived personalisation of wireless tracking increases positive attitudes toward both the technology and destination, whereas inferences of manipulative intent and privacy concerns reduce acceptance. Different tracking modalities are perceived differently, with implications for trust and legitimacy of analytics-driven destination management. Visitor segments with low trip anticipation or long travel distances are more likely to cancel or substitute destinations under adverse climate conditions, whereas visitors with strong destination loyalty show lower spatial substitution. Findings highlight unequal	Develop transparent, consent-based tracking protocols; co-create guidelines with stakeholders to mitigate perceived manipulation; test communication strategies that emphasise benefits (e.g., safety, congestion management, personalised services) while addressing privacy concerns in outdoor and nature-based settings.
McCreary et al., 2024	Nature-based tourism; climate change adaptation; recreation management	Large-scale visitor-intercept survey in nature-based destinations; segmentation analysis of substitution intentions		Design adaptation strategies that nurture destination loyalty and emotional bonds to place, communicate realistic climate risks, and diversify products (e.g., off-season offers, alternative trails) to reduce climate-related cancellations; incorporate climate

Author/Year	Discipline / Domain	Methods / Tools Used	Key Findings (sustainability, ethics, resilience)	Suggested Future Directions
Romão & Sano, 2025	Sustainable tourism; rural mobility; tourism planning	Systematic scoping review of tracking-based mobility studies in rural, low-density, and environmentally sensitive areas	vulnerability of market segments to climate-induced changes in outdoor recreation conditions. Tracking techniques (GPS, mobile phone data, transport records) are primarily used for marketing and sustainability planning, yet conceptual and theoretical development remains weak. Studies rarely connect tourist mobility to residents' mobility or broader transport concepts, limiting strategic integration for sustainable rural destinations.	resilience into destination branding for nature-based tourism. Shift from purely tourist-focused mobility studies to integrated people-place mobility systems; combine tracking data with social and environmental indicators; develop theory-informed frameworks that link mobility patterns to sustainable development and low-carbon transport policies. Position glamping as a sustainable yet comfortable way to experience nature; invest in experiential elements that heighten perceived environmental and emotional value; design loyalty programmes and communication that emphasise eco-friendly practices and long-term relationships with nature-based glamping destinations.
Hanafiah et al., 2025	Ecotourism and green outdoor leisure; service experience and loyalty	Cross-sectional survey of glamping tourists; Partial Least Squares Structural Equation Modelling (PLS-SEM)	Experiential quality of glamping significantly increases emotional and functional value, which in turn strengthens destination image, satisfaction and revisit intentions in green outdoor leisure settings. Physical environment quality and interaction quality play nuanced roles, indicating that not all aspects of service quality equally drive eco-loyalty.	Develop marketing and management strategies that deepen climbers' emotional and moral connection to climbing environments (e.g., environmental storytelling, participatory conservation activities); promote biospheric values through interpretive programmes and content marketing to strengthen ERBI in rock-climbing and
Tian et al., 2024	Outdoor recreation sustainability; environmental psychology; pro-environmental behavior	Survey of recreational climbers; confirmatory factor analysis and structural equation modelling	Experiential value at climbing resorts enhances place attachment and biospheric values, which in turn stimulate environmentally responsible behavioral intentions (ERBI). Experiential value and place attachment affect ERBI indirectly through biospheric value, revealing a chain-mediated mechanism for sustainable outdoor behavior.	

Author/Year	Discipline / Domain	Methods / Tools Used	Key Findings (sustainability, ethics, resilience)	Suggested Future Directions
Luo & Shang, 2024	Hiking tourism; destination management; climate/seasonality	Text-mining of TripAdvisor hiking reviews; topic modelling to identify and compare experience attributes across seasons	Identifies key experience attributes of hiking tourism and reveals that some concerns (e.g., safety, weather, trail conditions, crowding) are more sensitive in particular seasons. Seasonality produces heterogeneous effects on how hikers evaluate destinations, implying differentiated vulnerability and opportunity across the year.	other adventure tourism contexts. Use season-specific communication and hedging strategies (e.g., promoting alternative trails, time-of-day suggestions, equipment tips) to manage safety and capacity; align marketing calendars with seasonal strengths and risks; explore integration with climate projections and dynamic pricing for sustainable use of hiking destinations.
Chaudhury et al., 2021	Public lands marketing; social media ethics; critical marketing	Qualitative analysis of influencer and user-generated content on social media; interpretive framework of marketing systems and sense of place	Reveals conflicts between monetisation-oriented influencers who promote photogenic public land sites for social media visibility and citizen-consumers who emphasise stewardship, access equity and authenticity. Highlights how visually driven promotion can contribute to overuse, environmental degradation and contested meanings of public lands.	Develop ethical guidelines for influencer collaborations in protected and outdoor areas; encourage DMOs to prioritise stewardship messages and visitor education in social media campaigns; foster citizen-consumer participation in co-managing destination images and norms for responsible sharing.
Li & Jiang, 2025	Wellness/forest tourism; digital experience design; behavioral change	Multilevel longitudinal experiment (mindfulness VR vs. normal VR vs. control) with a 40-day behavioral tracking phase	Mindfulness-oriented VR forest experiences enhance experiential perceptions, attitudes and behavioral intentions toward real forest wellness tourism more than normal VR, but do not directly increase actual visitation. Promotion-focused individuals are more likely to translate VR intentions into real trips. Findings speak to both the potential and limits of VR as a sustainable tourism marketing tool.	Integrate VR campaigns with facilitation measures (e.g., clear booking paths, transport information) and targeted messaging to promotion-focused segments; explore VR as a complement to, not a replacement for, on-site experiences; consider how VR might redirect demand to less fragile sites or off-peak periods as part of sustainable visitation strategies.

Across the body of research presented in Table 4, sustainability and ethics emerge not merely as complementary considerations but as core determinants of how outdoor and nature-based tourism should be marketed in the coming decades. The studies collectively show that environmental stewardship, technological transparency, climate resilience, and visitor empowerment are central to building trustworthy and sustainable tourism systems. The ethics of digital surveillance and tracking technologies represent one of the most prominent concerns. (Lee et al., 2024), through scenario-based experiments comparing three types of wireless tracking technologies, show that perceived personalisation significantly increases acceptance of tracking, while perceived manipulation and privacy concerns sharply reduce it. Their structural equation modelling demonstrates that modalities such as Wi-Fi tracking, generic tracking, and app-based tracking elicit different degrees of trust, underscoring the need for transparent, consent-based data governance. These findings echo the psychological expectations of autonomy and trust discussed in Chapter 3's behavioral frameworks, especially the Theory of Planned Behavior and SOR models.

Climate-change vulnerability represents another critical dimension. (McCreary et al., 2024), via large visitor-intercept surveys, find that tourists with low trip anticipation or long travel distances exhibit significantly higher cancellation or substitution rates during climate disruptions. In contrast, tourists with strong destination loyalty show markedly lower substitution tendencies. These results quantitatively validate the role of place attachment a concept elaborated in Chapter 3 as a resilience mechanism within nature-based tourism marketing. Their findings highlight the importance of fostering destination loyalty through emotional engagement, experiential quality, and community-building. In the domain of sustainability-oriented behavior, (Tian et al., 2024) demonstrate a powerful chain-mediated effect in rock-climbing tourism: experiential value enhances place attachment, which strengthens biospheric values, which in turn predict environmentally responsible behavioral intentions (ERBI). Their structural equation modelling shows that ERBI is not merely an outcome of education or messaging but emerges from a deeper moral-emotional bond with place. This resonates directly with experiential and embodied theories referenced earlier, such as the Experience Economy and destination brand love models.

The importance of experiential quality in sustainable outdoor tourism is also evident in (Hanafiah et al., 2025), whose PLS-SEM analysis of glamping tourists shows that emotional and functional value mediate the relationship between experiential quality and behavioral outcomes such as satisfaction, destination image, and revisit intentions. Their sample demonstrates that positive environmental quality does not automatically translate into loyalty unless supported by high experiential and interaction quality. These findings highlight the need for marketing strategies that emphasize eco-comfort, experiential depth, and emotional connection.

Seasonality and climate-risk perceptions also shape visitor expectations. (Luo & Shang, 2024), through topic modelling of TripAdvisor reviews of hikers, reveal that the salience of concerns such as weather, trail safety, and crowding varies significantly across seasons. Their findings show that sustainable marketing must be dynamically responsive adjusting communication, safety guidance, and trail promotion based on seasonal conditions. This aligns with Chapters 1 and 3's emphasis on technologically informed, context-sensitive tourist engagement. Ethical tensions between commercial promotion and stewardship are made explicit by (Ray Chaudhury et al., 2021), who analyse Instagram content surrounding U.S. public lands. They identify a conflict between influencer-driven narratives, which often amplify visually spectacular but environmentally sensitive areas, and citizen-consumer stewardship discourses, which emphasize responsibility and ecological respect. Their findings illustrate how digital imagery can both elevate and endanger natural destinations, highlighting the need for governance frameworks and ethical influencer guidelines.

Future-oriented marketing tools such as VR also present significant potential and limitations. (Li & Jiang, 2025), in a longitudinal experiment involving 66 participants with 40-day behavioral tracking, find that mindfulness VR experiences significantly improve attitudes and behavioral intentions toward forest wellness tourism but do not directly increase actual visitation. The study reveals that promotion-focused individuals are more likely to convert VR intention into real trips, suggesting that VR must be combined with behavioral facilitation tools (e.g., easy booking links, transport information) to translate interest into sustainable visitation. Moreover, VR can strategically redirect demand away from environmentally fragile sites. (Romão & Sano, 2025) complement these empirical findings by identifying a persistent theoretical gap: although GPS and mobility tracking are widely adopted for rural and nature-based tourism planning, the field lacks robust conceptual frameworks connecting tourist mobility, resident mobility, and sustainable destination development. This insight echoes the theoretical needs highlighted in Chapters 1 and 3 for integrated frameworks linking experience, behavior, environment, and technology.

Together, the findings in Table 4 reveal several convergent themes: (1) trust, privacy, and ethics are foundational to the future of digital visitor analytics; (2) climate resilience and loyalty-building must be

integral to outdoor tourism marketing; (3) experiential and emotional value are essential pathways to sustainability; (4) seasonal and contextual dynamics must shape communication strategies; (5) visual culture and social media ethics require governance; and (6) emerging technologies such as VR must be strategically integrated rather than assumed to directly drive visitation.

Discussions

The synthesis of findings from Tables 1–4 reveals that marketing the outdoors requires an integrative framework that unites conceptual, psychological, technological, and sustainability-driven perspectives. This unified lens is essential to address the multidimensional nature of outdoor and nature-based tourism while aligning with contemporary consumer expectations, digital transformation, and environmental imperatives. The present discussion integrates empirical insights from the reviewed studies with the broader theoretical arguments presented in earlier chapters and the literature statement.

Conceptually, outdoor tourism marketing draws heavily from the Experience Economy, which positions nature-based experiences as emotionally and sensorially rich encounters rather than mere recreational products. This perspective aligns with evidence from (Lebrun et al., 2021), whose survey of 500 visitors to protected natural parks demonstrated that multiple dimensions of experiential value significantly drive arousal and memory, even in low-arousal settings. Similarly, (Aro & Tähtinen, 2025) emphasize embodied brand love highlighting the cognitive, emotional, bodily, and behavioral dimensions that generate deep attachment to outdoor destinations. These findings confirm the importance of curating immersive and meaningful nature experiences, resonating with Yadav & Pathak's (2016) claim that experiential narratives enhance emotional connection and visitor engagement.

Psychological perspectives deepen this understanding by showing how motivation, identity, well-being, and place attachment shape visitor behavior. Studies in Table 2 underscore this: (Geiger et al., 2023), working with 113 hikers, identify health, nature connection, and social interaction as dominant motivators, while (Pomfret et al., 2025) illustrate how outdoor adventure experiences foster eudaimonic well-being, resilience, and identity transformation. These insights parallel the Theory of Planned Behavior (Zhang & Chan, 2019), where attitudes, norms, and perceived behavioral control shape outdoor participation, and the role of place attachment in driving loyalty (Wooliscroft et al., 2013). Together, they suggest that effective marketing must account for the emotional and identity-based dimensions of visitor behavior, designing messages that reinforce nature connection and psychological fulfilment.

Technological perspectives highlight how visitor analytics reshape marketing practice. Eye-tracking and neuromarketing studies (Garcia-Carrion et al., 2025; Hong et al., 2022; Sushchenko et al., 2025) demonstrate that attention patterns offer precise indicators of message effectiveness, with dynamic images and nature-based visuals eliciting stronger engagement. GPS-based analytics, such as the movement tracking of 1,461 visitors in (Abkarian et al., 2022) or the itinerary analysis in (Lewis et al., 2021), show how real-time behavioral data can support spatial planning and targeted communication. VR studies such as (Li & Jiang, 2025) experiment with 66 participants demonstrate increases in attitudes and behavioral intentions, affirming the potential of immersive media to shape pre-trip perceptions. These insights support Muliawan & Pratiwi's (2023) assertion that digital tools create interactive and adaptive marketing environments, while also echoing Hakim et al. (2021) and Shen et al. (2023) on the need for personalised, data-driven customer engagement.

Sustainability perspectives add further depth. (Tian et al., 2024) show that experiential value in rock-climbing tourism enhances place attachment and biospheric values, which then predict environmentally responsible behavior a chain-mediated mechanism confirming the centrality of emotional and moral connection to sustainability outcomes. (Hanafiah et al., 2025) demonstrate that experiential quality in glamping contributes to both emotional and functional value, significantly shaping destination image and revisit intentions. Meanwhile, (Luo & Shang, 2024) highlight seasonality as a dynamic influence on hikers' perceptions, underscoring the need for climate-responsive communication strategies. These insights support broader claims that tourists are increasingly eco-conscious (Miller et al., 2023), and that sustainability framing enhances destination attractiveness (Folgeri et al., 2025).

Ethical issues, particularly regarding data privacy and tracking technologies, also emerge strongly in Table 4. (Lee et al., 2024) demonstrate that while personalised tracking enhances visitor acceptance, perceived manipulation and privacy threats diminish trust finding alignment with Mathenjwa et al.'s (2022) emphasis on transparency and Thiongane et al.'s (2024) call for data minimization. (Ray Chaudhury et al., 2021) further caution that influencer-driven representations of public lands may conflict with stewardship-oriented values, highlighting the need for governance frameworks and ethical communication standards.

Methodologically, this body of literature suggests several improvements. First, interdisciplinary work is critical for bridging behavioral, ecological, and technological perspectives (Fatina et al., 2023). Second, advanced analytics such as machine learning and NLP offer potential for extracting deeper insights from social media and visitor data (Özkaya & Demirhan, 2022). Third, longitudinal studies such as the 40-day behavioral tracking in (Li & Jiang, 2025) demonstrate the value of time-sensitive behavioral insights in understanding intention–behavior gaps (Tiwari et al., 2025). Fourth, ethical research practices must prioritize privacy, consent, and transparent data governance to maintain public trust (Abueva et al., 2024).

The final component of this discussion concerns how destination managers can ethically apply analytics while promoting sustainability and community well-being. Evidence from Table 4 underscores the need for transparent communication, purpose limitation, and community co-creation (Miller et al., 2023). Data-informed marketing must highlight conservation initiatives, involve communities in decision-making, and support sustainable visitation patterns. Continuous evaluation and ethical review processes echoing (Romão & Sano, 2025) call for conceptually grounded frameworks are essential for ensuring responsible analytics use.

Overall, the discussion demonstrates that an integrated, theory-informed, technologically supported, and ethically grounded framework is essential for advancing marketing practice in outdoor tourism. This holistic model rooted in experiential value, psychological engagement, technological insight, and sustainability commitments provides actionable pathways for designing compelling, responsible, and resilient outdoor tourism strategies.

Suggestions for Future Research

Based on the synthesis of the reviewed literature on outdoor tourism marketing, experience design, and visitor analytics, several avenues for future research can be proposed. These suggestions are derived from the identified conceptual, methodological, and contextual gaps observed across the analyzed studies.

Expansion of Contextual Settings

Future studies should extend beyond well-established outdoor tourism contexts in developed countries and explore underrepresented settings, particularly in developing and emerging economies. Outdoor destinations such as national parks, rural trails, community-based ecotourism sites, and campus or urban green spaces remain insufficiently examined from a marketing and experience-design perspective. Comparative cross-country or cross-region studies would help capture cultural, infrastructural, and institutional differences that shape outdoor tourism experiences.

Integration of Advanced Data Analytics and AI

While prior research has begun to utilize digital traces such as online reviews and social media content, the application of advanced analytics, including artificial intelligence, machine learning, and computer vision, remains limited. Future research could investigate how AI-driven tools can be used to analyze visitor movement patterns, emotional responses, visual content, and real-time behavior in outdoor environments. Such approaches would enhance predictive accuracy and support more adaptive and personalized marketing strategies.

Linking Experience Design to Behavioral and Sustainability Outcomes

Many existing studies emphasize experiential attributes without sufficiently examining their long-term behavioral consequences. Future research should focus on the causal relationships between experience design elements, visitor satisfaction, loyalty, advocacy, and pro-environmental behavior. Integrating sustainability outcomes, such as conservation support and responsible visitor conduct, would be particularly relevant for outdoor and nature-based tourism contexts.

Methodological Diversification

The literature remains dominated by cross-sectional survey designs. Future studies are encouraged to adopt longitudinal, experimental, and mixed-method approaches to capture dynamic changes in visitor perceptions and behaviors over time. The use of real-time data collection methods, such as mobile tracking, wearable sensors, and experience sampling, may provide richer insights into the temporality and fluidity of outdoor tourism experiences.

Theoretical Development and Integration

Future research should aim to strengthen theoretical contributions by integrating marketing theories with perspectives from environmental psychology, human–computer interaction, and behavioral economics. Developing integrative or mid-range theories that explain how experiential cues, digital touchpoints, and

environmental factors jointly shape value creation in outdoor tourism would advance conceptual clarity in the field.

Stakeholder-Centric and Co-Creation Perspectives

Finally, future studies could adopt a broader stakeholder lens by examining the roles of local communities, destination managers, technology providers, and policymakers in co-creating outdoor tourism experiences. Research on collaborative governance models and participatory experience design would contribute to more inclusive and resilient outdoor tourism marketing strategies.

Conclusions

This systematic literature review examined the conceptual, psychological, technological, and sustainability-oriented dimensions that shape the marketing of outdoor and nature-based tourism. Across the four thematic areas, the evidence reveals that outdoor tourism is driven by a complex interplay of experiential authenticity, emotional engagement, behavioral motivation, data-driven insights, and ethical responsibility. Conceptually, the Experience Economy and embodiment frameworks underscore that nature-based destinations must be positioned not merely as places to visit, but as immersive settings for personal meaning, sensory connection, and well-being. Psychologically, motivations such as health, nature immersion, social bonding, identity expression, and restoration consistently shape behavioral outcomes including satisfaction, loyalty, and environmentally responsible behavior. Technological advancements such as eye-tracking, GPS mobility analytics, VR, and social media analysis further transform how outdoor tourism experiences are designed, communicated, and evaluated. These tools enable more precise segmentation, personalised marketing content, and real-time understanding of visitor behavior, while also raising ethical concerns surrounding data privacy, transparency, and digital influence. Sustainability-related findings emphasise the necessity of integrating conservation principles, climate adaptation, and community engagement into marketing practices. Visitors increasingly expect destinations to demonstrate environmental stewardship, and research shows that experiential value and place attachment can activate biospheric values that promote responsible tourism actions. Despite significant advancements, several gaps remain. There is a persistent need for integrative theoretical frameworks that link experiential, behavioral, and technological dimensions within nature-based tourism. More interdisciplinary, longitudinal, and ethically informed research is required to understand intention-behavior gaps, seasonal and climate-driven variability, and the long-term psychological and ecological impacts of outdoor tourism marketing. Destination managers and tourism organisations must continue developing transparent data governance, community co-creation mechanisms, and sustainability communication strategies to balance marketing goals with ecological and social well-being. Overall, this review demonstrates that marketing the outdoors now demands an adaptive, evidence-based, ethically grounded, and sustainability-oriented framework. The integration of emotional engagement, data analytics, technological innovation, and conservation principles will be essential for shaping the future of nature-based tourism and for fostering meaningful, resilient visitor experiences.

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