Journal for Business Education and Management
ISSN (Print): 2790–7848, ISSN (Online): 2790-7856
Volume 5, Issue 1, Page 147-182

EXPLORING THE ACADEMIC NEXUS: BIBLIOMETRIC MAPPING OF SOCIAL MEDIA, WOM, AND DESTINATION IMAGE IN ECOTOURISM RESEARCH

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Abstract

This study presents a comprehensive bibliometric analysis of 727 Scopus-indexed publications (2005–2025) that examine the nexus of social media, electronic word-of-mouth (e-WOM), and destination image in ecotourism research. Findings indicate an exceptional 47.2% compound annual growth rate, with research peaking in 2024 (190 publications), reflecting pandemic-driven digitalisation and sustainability awareness. China (161 publications), Malaysia (77), and Indonesia (64) dominate the contributions, while the Hong Kong Polytechnic University (38) and Sejong University (36) are the leading institutional hubs. Author productivity highlights Han (15 publications) and Luong T.B. (11) as influential scholars who have advanced the discourse. Five thematic clusters emerged: digital communication ecosystems, sustainability-centred experiences, tourist behaviour modelling, tourism development frameworks, and destination image constructs. From a managerial perspective, the findings underscore critical implications for Destination Marketing Organisations (DMOs) and tourism businesses. Evidence suggests that user-generated content, influencer engagement, and video storytelling have a strong impact on eco-destination images and visit intentions. To remain competitive, DMOs must design platform-specific digital strategies, leverage AI-enabled analytics for personalised targeting, and prioritise authentic, community-based narratives to avoid greenwashing. Moreover, cross-border research networks (36% international co-authorship) highlight the necessity of culturally nuanced marketing strategies. This bibliometric mapping equips practitioners with evidence-based insights to optimise digital communication, strengthen destination branding, and align business practices with sustainability-driven competitive advantage.

Keywords: Social Media, Word-of-Mouth, Destination Image, Sustainable Tourism, Digital Communication.

Introduction

Background and Context

Ecotourism is different from conventional mass tourism. The International Ecotourism Society defines it as "responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves

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interpretation and education" (TIES, 2015). Fennell defines it as "a sustainable form of natural resource-based tourism focused on experiencing nature, ethically managed to be low-impact and locally oriented, occurring in natural areas to contribute to their conservation."(Fennell & Malloy, 1999) The World Tourism Organisation identifies the following key characteristics: nature-based tourism, educational features, specialised operators, minimal impacts, and support for natural areas. The global ecotourism market is projected to reach $497.65 billion by 2029, with an annual growth rate of 15.5%. Costa Rica demonstrates this potential, earning $3.4 billion annually while protecting biodiversity. Ecotourism offers market-driven solutions that incentivise the protection of bio-cultural diversity while funding conservation efforts. Environmental benefits include habitat protection and a reduced carbon footprint compared to mass tourism, which accounts for 8% of global CO_2 emissions.

The social significance lies in empowering local communities through economic benefits. (Hook, 2004) defines it as "sustainable tourism with a natural area focus, which benefits the environment and communities visited, and fosters environmental and cultural understanding." Ecotourism's educational mandate promotes an understanding of nature and local culture through interpretation, thereby engaging visitors in learning experiences. This creates experiences that raise environmental awareness, potentially transforming tourists into environmental advocates. Aligning with the UN Sustainable Development Goals, ecotourism contributes to poverty reduction and environmental protection, while providing a framework for sustainable global travel and tourism.

The digital revolution has transformed the acquisition and decision-making process for tourists through social media. Social media affects visitor behaviour while enabling authentic experiences through user-generated content.(Acharjee et al., 2023; Joseph et al., 2024). Social media drives destination branding and offers marketing platforms.(Joseph et al., 2024). Research has shown that social media variables have a significant impact on tourism decisions.(Acharjee et al., 2023). User-generated content has become a trusted source of information in traditional marketing.(Joseph et al., 2024). Video marketing strategies are crucial for showcasing tourist attractions, presenting destinations, and creating immersive experiences. Studies have shown that video content affects tourists' visit intention.(Zhou et al., 2022).

Digital transformation has evolved from word-of-mouth into electronic word-of-mouth (E-WOM) on digital platforms. Electronic word-of-mouth refers to online customer statements about products (Hennig-Thurau et al., 2004). The quantity and quality of online WOM impact tourists' visit intentions and perceived product quality(Zhou et al., 2022). E-WOM mediates the relationship between destination perception and visit intentions, with positive E-WOM strengthening the destination image and negative E-WOM weakening it (Zhou et al., 2022). Research has shown that social media vlogs and e-WOM drive tourism intentions.(Nofrizal & Arizal, 2023). Reviews, source credibility, and e-WOM quality affect travel plans.(Akhi et al., 2023). Gender differences exist in tourists' responses, with women placing greater value on review quality. (Zhou et al., 2022). Tourism stakeholders must integrate social media into their strategic development.(Acharjee et al., 2023). Tourism providers must prioritise quality services that generate positive content. Social media content creators share destination information that requires stakeholder engagement and interaction. Social media and e-WOM represent peer-influenced decisions, with platforms serving as planning channels that shape destination choices.

ISSN (Print): 2790–7848, ISSN (Online): 2790-7856
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Destination image, a key tourism construct since the 1970s, includes environmental consciousness and authentic ecotourism experiences. It comprises cognitive, affective, and conative components that influence tourist behaviour and choices. Studies have shown that an eco-destination image impacts ecotourism intentions and fosters tourist trust. Local community participation enhances trust. "Slow destination" image affects pro-environmental behaviour. Destination images influence decisions via emotional and cognitive pathways, thereby promoting positive emotions. Cognitive aspects related to environmental attributes and the shaping of destination selection. Digital transformation alters the formation of destination images through online co-creation and social media. Natural scenery is central to the destination image, while service and cost can deter it. Destination images aid market segmentation in ecotourism. Biospheric values and eco-destination image moderate relationships and motives. Authenticity and community participation offer a competitive advantage. Despite research on social media and destination image, gaps remain in their application to ecotourism, particularly in the decision-making process of "urban millennials' decision-making."

Problem Statement

Despite substantial growth in research on social media, electronic word-of-mouth (e-WOM), and destination image, the integrated role of these factors within ecotourism remains underexplored. Prior studies (Huete-Alcocer, 2017; Gössling et al., 2020) show social media and WOM's influence on tourist decision-making, yet the dynamics among these constructs in shaping eco-destination image and sustainable behavioural intentions are insufficiently theorised. Existing works primarily adopt siloed perspectives, focusing on communication strategies, destination branding, or consumer behaviour, without a unified framework that connects digital platforms, peer-to-peer communication, and sustainability-driven perceptions. This creates a gap considering that ecotourism thrives on authentic narratives, trust, and environmental engagement (Chen et al., 2024).

Recent technological shifts have deepened this gap. Studies conducted between 2023 and 2025 demonstrate that AI-driven recommendation systems personalise tourism suggestions and promote eco-friendly options (Zhang et al., 2025). AR/VR technologies transform visitor expectations by providing immersive previews of ecotourism sites, thereby enhancing virtual co-creation and anticipation of the destination image (Özkan et al., 2025). Research shows that generative AI tools are increasingly mediating e-WOM through automated reviews and planning assistance, raising concerns about authenticity (Nagvanshi & Gupta, 2024). Short-video platforms have accelerated digital engagement, with content virality reshaping destination image formation (Joseph et al., 2024). In ecotourism contexts, these technologies present opportunities and risks. While AI and immersive media can promote conservation education, they raise challenges of greenwashing and cultural misrepresentation if not managed. However, systematic investigation through bibliometric mapping remains limited. This study addresses this gap by analysing 727 publications (2005–2025) tracing how social media, WOM, and destination image converge in ecotourism research, highlighting intersections with emerging technologies, engagement strategies, and sustainable development.

Research gaps exist in understanding the influence of social media on ecotourism decisions. Studies have yielded contradictory findings on the role of E-WOM in influencing social media content and destination choice. Decision-

making complexity influences the role of e-WOM, yet research lacks comprehensive models. Most studies focus on developed markets rather than emerging destinations. Research shows online recommendation trustworthiness varies across cultures in ecotourism. Gaps exist in understanding demographic responses to social media and the impact of environmental values and AI on ecotourism marketing. Limited research exists on the influence of AR and VR technologies, as well as on distinguishing authentic environmental messaging from greenwashing. Current research offers limited insight into the relationships between social media and destination image, particularly in the context of environmental and post-pandemic changes. These gaps necessitate interdisciplinary approaches to understand digital communication in sustainable ecotourism.

Research Questions

1. How have social media, word-of-mouth (WOM), and destination image evolved in ecotourism research between 2005 and 2025?

2. What are the key thematic clusters that define the academic nexus of social media, WOM, and destination image in ecotourism studies?

3. How do collaboration networks among authors, institutions, and countries shape the development of ecotourism research in the context of digital communication?

4. What role does electronic word-of-mouth (e-WOM) play in shaping eco-destination images and influencing tourist behavioural intentions?

5. How do demographic and cultural factors moderate the relationship between social media, destination image, and tourist decision-making in ecotourism?

6. What gaps remain in integrating social media, WOM, and destination image within sustainable tourism frameworks?

7. How can bibliometric mapping provide insights into the intellectual structure and future directions of research in ecotourism communication?

Research Objectives

- To examine the evolution of social media, word-of-mouth (WOM), and destination image in ecotourism research between 2005 and 2025.

- To identify the key thematic clusters that define the academic nexus of social media, WOM, and destination image in ecotourism studies.

- To analyse collaboration networks among authors, institutions, and countries in shaping the development of ecotourism research.

- To investigate the role of electronic word-of-mouth (e-WOM) in shaping eco-destination images and influencing tourist behavioural intentions.

- To explore how demographic and cultural factors moderate the relationship between social media, destination image, and tourist decision-making in ecotourism.

ISSN (Print): 2790–7848, ISSN (Online): 2790-7856
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- To highlight the gaps in integrating social media, WOM, and destination image within sustainable tourism frameworks.

- To utilise bibliometric mapping for understanding the intellectual structure and suggesting future research directions in ecotourism communication

Research Motivation

The convergence of social media, word-of-mouth (WOM), and destination image in ecotourism requires a systematic bibliometric investigation. Bibliometric analysis uses quantitative techniques to explain research situations.(Lukose et al., 2024). Ecotourism has evolved in tandem with the digital revolution's impact on tourism communication, with social media accelerating the dissemination of sustainable content. (Nagvanshi & Gupta, 2024). Bibliometric methodology identifies research trends through the analysis of publication and citation patterns.(Lukose et al., 2024). In ecotourism research, bibliometric analysis tracks the evolution, identifies key contributors, and highlights emerging themes. Bibliometric mapping enables practitioners to make evidence-based decisions and identify opportunities for wellness services.(Lukose et al., 2024). Researchers have guided the field's development.(Nagvanshi & Gupta, 2024).

Bibliometric tourism reviews measure influence and identify research networks.(Gössling et al., 2020; Lukose et al., 2024). Social media integration in tourism marketing emerged during 2005-2025, expanding to include medical tourism in 2010-2015(Lukose et al., 2024). Research peaked during the 2019-2021 period, influenced by the 2008 crisis and the COVID-19 pandemic.(Nagvanshi & Gupta, 2024). Future scope includes AI and post-pandemic recovery, with a recent focus on regenerative tourism and climate adaptation. The impact of social media on destination images requires a bibliometric analysis for sustainable tourism.(Gössling et al., 2020).

Paper Structure

This paper comprises seven sections analysing social media, word-of-mouth, and destination image in ecotourism research. Section 2 examines the social media theory, word-of-mouth communication, destination image frameworks, and ecotourism principles. Section 3 outlines the bibliometric research design, including data collection from Scopus, paper screening, and analysis using VOSviewer and Biblioshiny. Section 4 presents the findings through a descriptive analysis, publication trends, journal analysis, author productivity, citation patterns, and thematic mapping. Section 5 explores the Discussion for destination marketing organisations and researchers. Section 6 synthesises the findings and provides recommendations for stakeholders to leverage social media, word-of-mouth, and destination image in ecotourism development.

Literature Review

Theoretical Foundations

Social Media in Tourism: Role of Digital Platforms in Destination Marketing

Social media has transformed tourism marketing, reshaping how destinations communicate with potential visitors and influencing the travel decisions of tourists. Research has shown that digital technologies have

empowered tourists to gather unbiased information for travel planning. This shift has moved away from traditional marketing to user-generated, peer-influenced information. The theoretical foundation of social media in tourism combines social influence and network theory, explaining how digital platforms enable information sharing. These platforms connect consumers and tourism providers, facilitating decision-making from initial interest to post-purchase satisfaction.(Liang & Furkan, 2025).

Social media influences destination choice, itinerary planning, accommodation selection, and activity preferences. This impact requires tourism stakeholders to adopt integrated marketing approaches across platforms to maintain their brand identity. Studies show that consumers who trust Social Media Influencers (SMIs) make more confident purchasing decisions, creating authentic narratives that strengthen destination branding. (Liang & Furkan, 2025).

Word-of-Mouth Theory: Traditional and Electronic WOM in Tourism Contexts

Word-of-mouth communication has undergone significant evolution with the digital transformation (Dellarocas, 2003). Based on social proof theory and interpersonal influence models, WOM in tourism shows how peer recommendations influence consumers more than commercial communication. Traditional WOM involves person-to-person communication, where receivers perceive information about products as non-commercial. This exchange is crucial in tourism, as services are intangible and difficult to evaluate (Huete-Alcocer, 2017). Electronic word-of-mouth (e-WOM) has expanded these communication possibilities, enabling customers to compare tourism services through user-generated platforms and reviews. E-WOM is considered the most influential factor in tourism consumers' buying decisions (Daugherty & Hoffman, 2014; Litvin et al., 2008; Jalilvand & Samiei, 2012), providing experiential information beyond formal advertising. Tourist satisfaction leads to destination recommendations through positive WOM (Sotiriadis & Van Zyl, 2013), as cited in creating feedback loops where satisfied tourists influence future visitors.

Destination Image Theory: Cognitive, Affective, and Conative Components

Destination image theory explains how tourists perceive destinations through psychological dimensions. The tri-dimensional model, comprising cognitive, affective, and conative components, helps to understand tourists' behaviour toward revisiting and making recommendations (Yang et al., 2022). The cognitive component relates to tourists' knowledge of destination attributes, including information about attractions, infrastructure, and services (Tan & Wu, 2016). This represents a rational evaluation of destination features that tourists use to assess the suitability of a destination for their needs. Cognitive images encompass both tangible and intangible attributes, including natural scenery, cultural attractions, and service quality.

The affective component encompasses emotional responses to destinations. Research has shown that positive destination images and experiences promote positive emotions toward destinations. Affective images mediate between cognitive and conative images, translating rational evaluations into behavioural intentions. The conative component represents behavioural intentions and the likelihood of visiting destinations.(Yang et al., 2022). Both cognitive perception and affective appraisal shape future destination selection (Chen & Lin, 2012).

ISSN (Print): 2790–7848, ISSN (Online): 2790-7856
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Contemporary studies demonstrate that cultural dimensions, such as individualism and uncertainty avoidance, moderate the relationship between affective and conative images, suggesting that cultural background influences how emotions translate into behavioural intentions.

Ecotourism Principles: Sustainability, Conservation, and Community Involvement

Ecotourism principles provide a framework for sustainable tourism that integrates environmental conservation with cultural experience and community empowerment. The International Ecotourism Society (TIES) defines it as "responsible travel to natural areas that conserves the environment, sustains the well-being of local people, and involves interpretation and education" (TIES, 2015). Sustainable tourism minimises adverse impacts through management approaches(Baloch et al., 2023)Maintaining destination ecology and ensuring the long-term viability of tourism resources.

The sustainability framework emphasises low environmental impact and cultural sensitivity. Conservation creates economic incentives for enhancing bio-cultural diversity by deriving value from preservation rather than exploitation (TIES, 2022). Community involvement distinguishes ecotourism through local empowerment and capacity building. The framework ensures community participation in decision-making while recognising Indigenous Peoples' rights. (Baloch et al., 2023). Education transforms tourism into conservation advocacy by promoting an understanding of nature and culture through interpretation, building environmental awareness, and increasing sensitivity to host countries. These foundations influence tourist behaviour and destination outcomes.

Convergence of Concepts: From Interaction to Integration

Social Media as the Infrastructure of WOM

Social media has become the infrastructure where WOM and destination image converge. Platforms such as TikTok or Instagram amplify viral micro-moments of eco-destinations, which simultaneously construct an image and spread e-WOM (Azhar et al., 2022). However, most studies stop at descriptive observations, seldom theorising how platform algorithms curate WOM visibility, a gap highlighted in recent calls for "algorithmic WOM" research (Tam et al., 2025).

User-Generated Content and Tourism Authenticity

While user-generated content (UGC) builds trust and authenticity (Aboalganam et al., 2025), it also creates contradictions. On the one hand, UGC acts as a democratised branding tool; on the other, it risks over-commercialisation and staged “eco-experiences.” Studies increasingly suggest that influencer tourism narratives often privilege aesthetics over sustainability, creating aspirational imagery that may undermine ecotourism principles (Hussain et al., 2024). A critical examination of authentic eco-storytelling versus influencer-driven commodification is still needed.

Digital Engagement and Immersive Media

Emerging technologies expand the scope of digital engagement far beyond static images. Studies have noted the rising role of VR/AR simulations, offering "try-before-you-travel" experiences that strengthen the eco-destination image

(Özkan et al., 2025). While immersive media can enhance conservation education and reduce overtourism, its impact on actual visit intention is not yet settled. Similarly, AI-driven personalisation (Zhang et al., 2025) raises tensions between efficiency and ethical transparency. To date, few studies have critically examined how these technologies intersect with ecotourism's sustainability ethos, a significant gap for future bibliometric and empirical inquiry.

Research Gaps and Contradictions

This critical synthesis highlights three overarching gaps:

1. **Fragmented Integration:** While each construct (social media, WOM, destination image) is well studied, their interrelation in *ecotourism-specific contexts* remains shallow. Contradictions persist regarding whether e-WOM strengthens or merely moderates the effects of social media.

2. **Under-theorised Algorithms and Influencers:** Research overlooks how **social media algorithms** and **influencer-driven branding** reshape visibility, potentially privileging marketable destinations over authentic, community-based ones.

3. **Immersive Media and AI Uncertainty:** Studies celebrate AR/VR for engagement but provide little evidence on long-term behavioural outcomes. Similarly, **AI-mediated WOM** remains an emerging field with ethical uncertainties around trust, manipulation, and sustainability messaging.

Research Methods

Research Design

Descriptive Bibliometric Analysis Approach

This study employs descriptive bibliometric analysis to examine social media, word-of-mouth (WOM), and destination image in the context of ecotourism research. A descriptive bibliometric analysis evaluates publication patterns, citation networks, and thematic evolution using standardised metrics. (Jangid et al., 2023). It systematically assesses research outputs and collaborative networks. The research design used a quantitative analysis of the bibliometric dimensions. Publication trend analysis examines yearly patterns, whereas citation pattern analysis reveals influential works and authors (Jangid et al., 2023). Citation network analysis established linkages between articles (Mejia et al., 2021). Authorship analysis identifies key contributors and collaborations between the authors and institutions. A co-authorship analysis revealed collaborative dynamics (Jangid et al., 2023). Keyword analysis reveals themes through the co-occurrence of keywords. Journal analysis examines the distribution of publications across various outlets (Jangid et al., 2023). The research design employed a combination of direct citation network analysis, hierarchical topic tree construction, and term-citation analysis methods (Mejia et al., 2021).

Data Collection

Database: Scopus

Scopus was selected for its comprehensive coverage and advanced bibliometric functionality, making it the standard for systematic literature reviews

ISSN (Print): 2790–7848, ISSN (Online): 2790-7856
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in tourism research (Falagas et al., 2008). It indexes peer-reviewed journals, conference proceedings, and book chapters across various disciplines, featuring international representation and high-quality metadata for citation analysis. Scopus offers superior tools for tracking publication trends and analysing thematic evolution, surpassing those of the Web of Science and Google Scholar. Its search capabilities enable precise data retrieval and integration using bibliometric software.

Search Strategy

Keywords: The search string captured literature intersecting social media, word-of-mouth (WOM), destination image, and ecotourism. Keywords included: "ecotourism" OR "eco-tourism" OR "sustainable tourism" social media" OR "digital communication" OR "Instagram" OR "Facebook" OR "TikTok" word-of-mouth" OR "WOM" OR "E-WOM" destination image" OR "destination branding" OR "destination perception. “Boolean operators were used to filter the relevant intersections. Searches were restricted to the titles, abstracts, and keyword fields for relevance to the topic.(Donthu et al., 2021a). Example: TITLE-ABS-KEY ("ecotourism" AND "social media" AND "destination image")

Inclusion/Exclusion Criteria

Inclusion Criteria

- Peer-reviewed articles, reviews, and conference papers
- Studies focused on ecotourism or sustainable tourism and at least one digital communication component (social media, WOM, and destination image)
- Empirical studies, review articles, and conceptual papers

Exclusion Criteria

- Duplicate records
- Non-English publications
- Grey literature (e.g., theses, non-peer-reviewed reports)
- Papers not relating to ecotourism and the selected digital communication constructs

These steps ensure that the resulting dataset is both comprehensive and methodologically rigorous for a bibliometric analysis.

Time Period: 2005–2025

The temporal scope of 2005-2025 was selected to analyse the evolution of digital technologies in tourism marketing.(Nagvanshi & Gupta, 2024). This period encompassed the emergence of social media, the advent of Web 2.0, the widespread adoption of smartphones, and the post-pandemic digital shifts. Bibliometric studies indicate that digital tourism trends gained significance after 2005, with publications covering developments in visual platforms and AI recommendations by 2025.

Only English-language publications were included to ensure consistency in bibliometric data and software compatibility.(Donthu et al., 2021b). English dominates international tourism research, enabling global synthesis through the use of standardised metadata formats.

Data Screening and Cleaning

Initial Retrieval and Screening

The Scopus database search yielded documents, including peer-reviewed articles, conference proceedings, and review papers, on ecotourism, social media, word-of-mouth (WOM), and destination image, spanning the years 2005 to 2025. After screening and cleaning, the final dataset comprised 727 papers.

Removal Criteria

Following bibliometric guidelines (Donthu et al., 2021c)These removal criteria were applied:

- **Duplicates:** Entries from multiple indexing or conference-to-journal republishing were removed through software and manual inspection.
- **Non-relevant Publications:** Papers without a substantial focus on ecotourism and digital communication were excluded.
- **Incomplete Records:** Publications missing bibliometric metadata or full-text availability were excluded to maintain the integrity of the analysis.
- **Language:** Non-English publications were removed for analysis comparability.

Analytical Tools

VOS viewer: Network Visualisation and Cluster Analysis. VOS viewer is a bibliometric software tool for constructing and visualising networks. It maps publication, citation, and co-authorship relationships using algorithms to reveal intellectual structures and thematic clusters in the scientific domains.(Van Eck & Waltman, 2010a). The key applications include the following.

- **Co-authorship networks:** The VOS viewer visualises collaborations among authors, institutions, and countries, offering insights into research community structures within ecotourism and digital communications.
- **Keyword co-occurrence mapping:** This tool identifies clusters of co-occurring keywords, revealing emerging themes and conceptual linkages central to the domain. This reveals patterns at the intersection of social media, WOM, and destination image.
- **Citation analysis:** The VOSviewer investigates citation networks at various levels, highlighting influential works and tracing themes. The VOS viewer interface supports cluster detection and knowledge map generation, which are essential for visualising complex bibliometric relationships.
- **Biblioshiny:** The Web-Based Interface of Bibliometrix R Package. Biblioshiny is the graphical user interface (GUI) of the Bibliometrix R package, a tool for

ISSN (Print): 2790–7848, ISSN (Online): 2790-7856
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bibliometric and science mapping analysis in R.(Aria & Cuccurullo, 2017a). As a web-based application, Biblioshiny enables users to interactively explore bibliometric datasets. Core analytical functions

- **Descriptive analysis:** Computation of dataset metrics, including publications, annual production, authorship patterns, and document types.

- **Trend analysis:** Visualisation of research activity, topical emergence, and evolution of themes, including trends in social media, WOM, and destination image research in ecotourism(Moral-Muñoz et al., 2020).

- **Production over time:** Biblioshiny tracks growth rates, enabling identification of prolific periods and scholarly focus shifts.

- **Source impact analysis:** This tool calculates bibliometric indices, detects core journals based on Bradford's law, and assesses citation metrics. Biblioshiny supports co-authorship networks, thematic mapping, and science overlay visualisation through a point-and-click environment(Moral-Muñoz et al., 2020).

Analytical Framework

Performance Analysis

Performance analysis evaluates scholarly productivity and impact through quantitative indicators. It involves tracking publication trends to assess growth rates, citation patterns to measure influence, and calculating the h-index to evaluate cumulative impact.(Aria & Cuccurullo, 2017b; Donthu et al., 2021a). The performance analysis used the following metrics:

- Annual scientific production: Publications per year showing temporal engagement trends.

- Citation analysis: Citation of articles, authors, and journals to identify influential works.

- h-index reflects productivity and citation impact, showing publications (h) with at least h citations(Hirsch, 2005).

These indicators provide evidence of research evolution and scholarly impact, strengthening domain analysis.

Science Mapping

Science mapping reveals intellectual structure, thematic evolution, and collaboration networks in research fields.(Cobo et al., 2011; Moral-Muñoz et al., 2020).

Key components include:

- Intellectual structure: Relationships between research topics and influential work through network analyses.

- Thematic evolution: Tracks how concepts and research fronts emerge over time.

- Collaboration networks: Maps co-authorship at individual, institutional, and national levels, showing research clusters(Perianes-Rodriguez et al., 2016).

- Science mapping provides insights into knowledge diffusion and research communities in ecotourism and digital communications.

Content Analysis

Content analysis systematically examines textual and semantic features to identify keywords, co-occurrence patterns, and emerging research themes. (Aria & Cuccurullo, 2017a; Moral-Muñoz et al., 2020). The essential components are as follows:

- **Keyword analysis:** Extraction of high-frequency keywords to recognise prevalent topics.

- **Co-occurrence mapping:** Visualises relationships among keywords, revealing conceptual linkages (Perianes-Rodriguez et al., 2016).

- **Emerging themes identification:** Detects rising topics by tracking temporal shifts in published content. Content analysis enhances interpretation by contextualising metrics, ensuring that performance and mapping results reflect meaningful themes that drive field innovation.

Future Methodological Enrichment through Qualitative Validation

While bibliometric analysis provides quantitative insights into publication trends, knowledge structures, and collaboration networks, it is limited in capturing contextual, cultural, and qualitative nuances of ecotourism communication. Citation patterns and keyword clusters can illustrate intellectual structures, but they do not necessarily reflect the authenticity of narratives, stakeholder perceptions, or community impacts.

To address this limitation, future research should incorporate qualitative validation techniques alongside bibliometrics. Content analysis of highly cited articles, social media campaigns, and UGC could provide deeper insights into how messages are framed, received, and contested within ecotourism contexts. Similarly, case studies of destinations or digital campaigns can assess whether bibliometrically identified themes translate into practical applications and meaningful tourist experiences. Ethnographic and participatory approaches can also capture the perspectives of local communities and destination marketing organisations (DMOs), voices that are often underrepresented in bibliometric datasets.

Integrating these qualitative methods with bibliometric findings would enable mixed-methods research that validates patterns with lived experiences, highlights contradictions (e.g., authenticity versus marketing narratives), and ensures sustainability values remain central. This approach reflects methodological calls in tourism research to move beyond metrics toward contextually grounded, multi-method knowledge production.

Main Information about Data

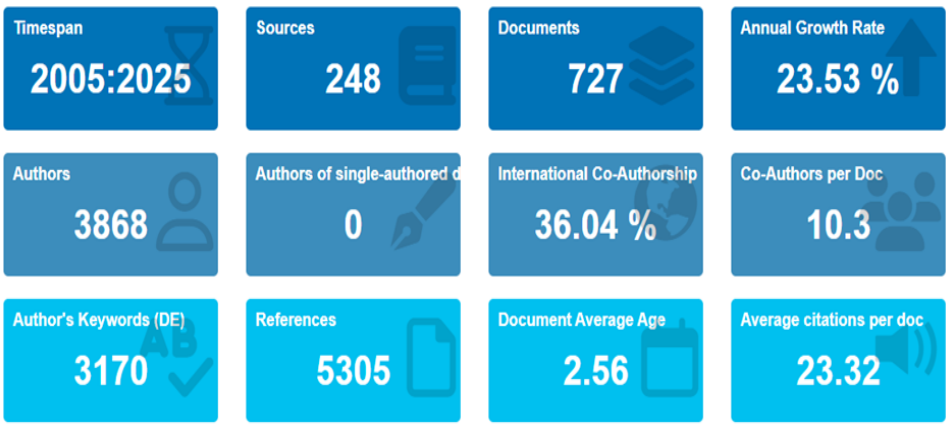


Figure 01: Main Information about Data

Table 01: Main Information about Data	
Description	Results
Timespan	2005:2025
Sources (Journals, Books, etc.)	248
Documents	727
Annual Growth Rate %	23.53
Document Average Age	2.56
Average citations per doc	23.32
References	5305
DOCUMENT CONTENTS	
Keywords Plus (ID)	1009
Author's Keywords (DE)	3170
AUTHORS	
Authors	3868
Authors of single-authored docs	0
AUTHORS COLLABORATION	
Single-authored docs	0
Co-Authors per Doc	10.3
International co-authorships %	36.04
DOCUMENT TYPES	
Article	727

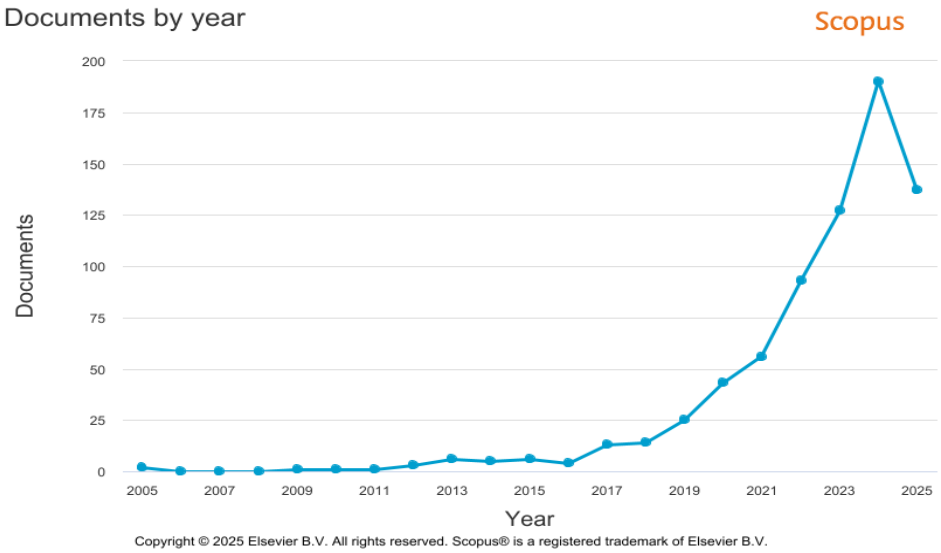
Results and Discussion

Publication Trends and Growth Patterns

Annual publication volume (2005-2025)

Annual production rises through 2016, accelerates from 2017 to 2019, and surges from 2020 to 2024 before normalising in 2025, reflecting platform innovations (short videos, livestreaming), pandemic-induced digital reliance, and sustainability narratives in travel discourse (cognitive information quality and

imagery intensifying affective image and conative intentions). This aligns with the cognitive–affective–conative (CAC) sequence, where content quality and imagery during uncertainty strengthen intention formation, as explained by research output and practice inflexions from around 2020 to 2024 (Yang et al., 2022). Visual platform features (stories, short videos) increase mental imagery and engagement, amplifying affective responses in the CAC pathway, which the 2017–2019 expansion mirrors through the adoption of image-centric formats (Yang et al., 2022; Zhou et al., 2022). The 2025 decline suggests saturation and resource constraints rather than theoretical exhaustion; citation patterns indicate that recent cohorts will accrue impact as CAC-informed designs (characterised by information quality, emotional resonance, and clear calls-to-action) continue to evolve (Van Eck & Waltman, 2010; Donthu et al., 2021).



ISSN (Print): 2790–7848, ISSN (Online): 2790-7856
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Figure 02: Annual Publication Volume

Table 02: Annual Publication Volume	
Year	Articles
2005	2
2006	0
2007	0
2008	0
2009	1
2010	1
2011	1
2012	3
2013	6
2014	5
2015	6
2016	4
2017	13
2018	14
2019	25
2020	43
2021	56
2022	93
2023	127
2024	190
2025	137

Average Citations Per Year

Early foundational papers exhibit high citation counts due to their first-mover advantages in defining constructs and methods, whereas post-2019 cohorts show lower averages, consistent with citation lag and field expansion effects across a larger corpus. This follows the maturation of literatures, where initial theoretical scaffolds (e.g., destination image, e-WOM) enable empirical growth, and where affective mediation in CAC models becomes operationalised via digital content quality and engagement proxies. The stabilisation of mean citations reflects consolidation around mechanisms linking online information quality and imagery to conative image, consistent with CAC and platform-native research designs.

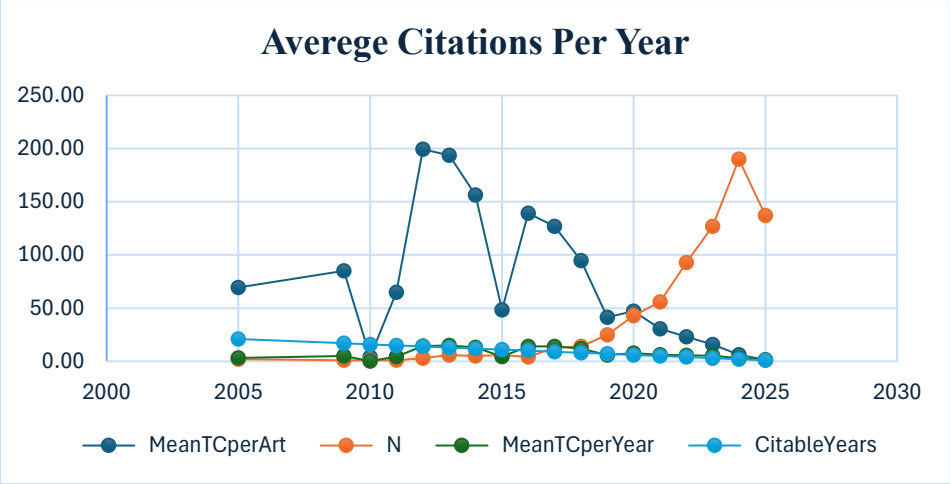


Figure 03: Average Citations Per Year

Table 03: Average Citations Per Year				
Year	MeanTCperArt	N	MeanTCperYear	CitableYears
2005	69.50	2	3.31	21
2009	85.00	1	5.00	17
2010	4.00	1	0.25	16
2011	65.00	1	4.33	15
2012	199.33	3	14.24	14
2013	193.83	6	14.91	13
2014	156.40	5	13.03	12
2015	48.33	6	4.39	11
2016	139.25	4	13.93	10
2017	126.77	13	14.09	9
2018	94.64	14	11.83	8
2019	41.44	25	5.92	7
2020	47.28	43	7.88	6
2021	30.57	56	6.11	5
2022	22.99	93	5.75	4
2023	15.96	127	5.32	3
2024	6.09	190	3.04	2
2025	1.41	137	1.41	1

Journal Analysis

Most productive journals

The prominence of sustainability, tourism management, and destination marketing outlets reveals an applied orientation that integrates behavioural theory (destination image and CAC), communication design (message quality, credibility, narrative), and stewardship outcomes (trust, satisfaction, intention), reflecting sustainable tourism's requirement to balance attraction with conservation. This distribution indicates editorial preference for studies that connect platform mechanics and e-WOM credibility to behavioural intentions within ecological and community constraints. The clustering around marketing and sustainability

journals signals a field identity where managerial levers (content quality, influencers, immersive media) are evaluated through behavioural theory and measured against conservation-compatible goals.

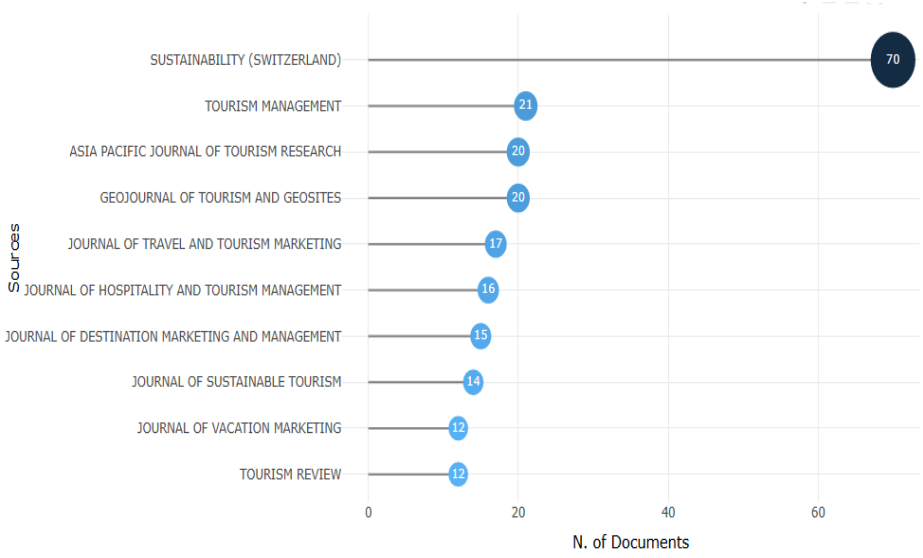


Figure 04: Most Productive Journals

Table 04: Most Productive Journals	
Sources	Articles
Sustainability (Switzerland)	70
Tourism Management	21
Asia Pacific Journal of Tourism Research	20
Geojournal of Tourism and Geosites	20
Journal of Travel and Tourism Marketing	17
Journal of Hospitality and Tourism Management	16
Journal of Destination Marketing and Management	15
Journal of Sustainable Tourism	14
Journal of Vacation Marketing	12
Tourism Review	12

Author, Institutional and Country Analysis

Most productive authors and their contributions

Leading authors and institutions are concentrated in hubs that combine platform access, analytics capability, and proximity to biodiverse destinations, creating a research-production loop where user-generated content (UGC) supplies data, laboratories test CAC pathways, and managerial outlets disseminate actionable findings. Asia's institutional leadership (e.g., Hong Kong, Korea, Indonesia, China) is structurally consistent with regional platform penetration, policy emphasis on smart/sustainable tourism, and availability of ecotourism field sites.

This configuration supports faster cycles of content–theory iteration, with image-rich ecosystems enabling precise tests of affective mediation and conative outcomes under real platform conditions.

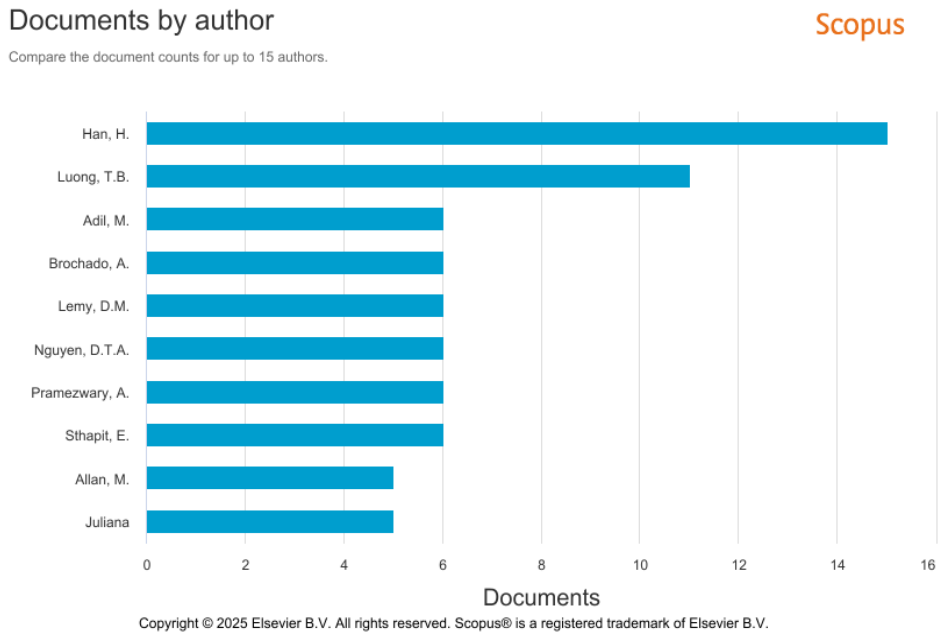


Figure 05: Most Productive Authors

Table 05: Most Productive Authors	
Author	Articles
Han, H.	15
Luong, T.B.	11
Adil, M.	6
Brochado, A.	6
Lemy, D.M.	6
Nguyen, D.T.A.	6
Pramezwary, A.	6
Sthapit, E.	6
Allan, M.	5
Juliana	5

Institutional productivity and international collaborations

Institutional affiliation analysis reveals global academic leadership in social media and ecotourism research. Hong Kong Polytechnic University leads with 38 articles (16.8% of the top 10 institutions' output) focusing on digital tourism communication. Sejong University's 36 articles established South Korea's leadership in smart tourism technology. Universitas Pelita Harapan has contributed 33 articles on community-based ecotourism. Huaqiao University (23 articles) and Nanjing Agricultural University (14 articles) focus on China's rural ecotourism. King Faisal University's 22 articles reflect Saudi Arabia's initiative in desert ecotourism. Universidad de Granada (20 articles), Universiti Teknologi MARA (19 articles), and Brawijaya University (15 articles) emphasised regional ecotourism

strategies. Kyung Hee University added 14 articles. The institutional distribution spans Asia-Pacific, the Middle East, Europe, and Southeast Asia, with Asian institutions focusing on smart technologies, the Middle East on cultural sustainability, Europe on destination management, and Southeast Asia on biodiversity conservation. International opportunities for collaboration exist between these regions(Lukose et al., 2024).



Figure 06: Most Productive Institution

Table 06: Most Productive Institution	
Affiliation	**Articles**
The Hong Kong Polytechnic University	38
Sejong University	36
Universitas Pelita Harapan	33
Huaqiao University	23
King Faisal University	22
Universidad De Granada	20
Universiti Teknologi Mara	19
Brawijaya University	15
Kyung Hee University	14
Nanjing Agricultural University	14

Country/Territory Research Productivity and Global Collaboration Analysis

Asia's dominance (China, Malaysia, Indonesia, South Korea) reflects five drivers: (1) mobile-first, short-video ecosystems and high social commerce adoption; (2) national policies coupling tourism growth with digitalization and conservation; (3) biodiversity-rich destinations generating compelling UGC for image formation; (4) strong university capacity in tourism analytics; and (5) cultural dimensions (collectivism, uncertainty avoidance) that strengthen social proof and affect to intention transitions in CAC models. These drivers intensify the effects of affective mediation and e-WOM credibility, explaining the volume and behavioural emphasis of regional studies. The underrepresentation of Africa and Latin America highlights constraints in funding, data access, and platform interoperability, which limit cross-context CAC testing and may bias generalisations toward digitally mature ecotourism markets. Co-authorship maps reveal dense intra-regional clusters but weak cross-regional bridges, which can be

attributed to the linguistic segmentation of outlets, domestic funding tied to national priorities (such as smart tourism pilots and protected areas), and platform heterogeneity (e.g., Douyin/RED vs. Instagram/TikTok), all of which fragment data pipelines. This constrains comparative tests of CAC moderation, limits the generalizability of algorithmic exposure, and argues for shared corpora with harmonised constructs and behavioural surveys across regions. Remedies include multi-country UGC repositories, standardised CAC instruments, and protocols to align message features, credibility signals, and conative proxies.

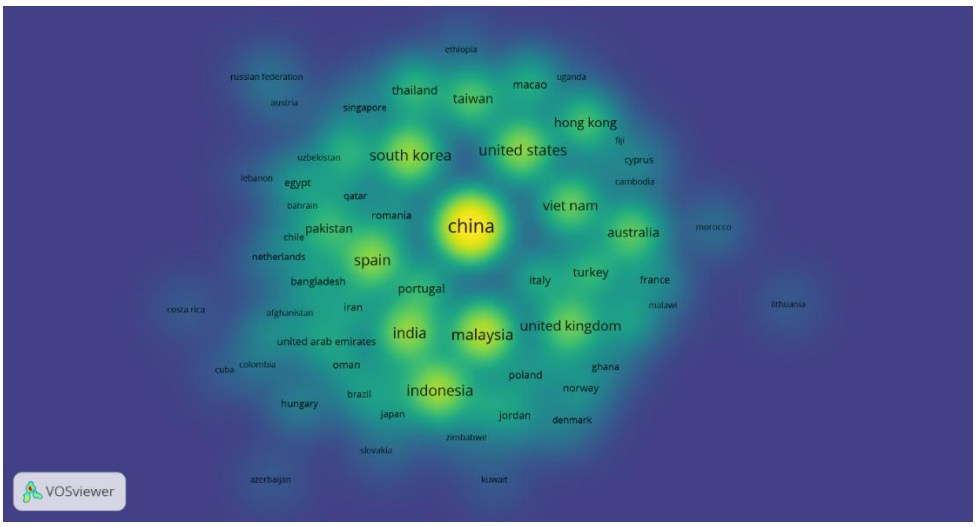


Figure 07: Most Productive Country

Table 07: Most Productive Country	
Country/Territory	Articles
China	161
Malaysia	77
Indonesia	64
South Korea	61
India	58
United States	58
Spain	57
United Kingdom	43
Viet Nam	43
Australia	41

Citation Analysis

Most Cited papers and their Contributions

The most-cited works converge on the predictive power of the destination image and the mediating role of affect, with contemporary contributions highlighting online information quality, narrative resonance, and video imagery as levers that influence the conative image. This consolidates CAC as the explanatory spine, while e-WOM credibility and authenticity emerge as boundary conditions necessary to sustain the translation of affect to intention in ecotourism. Normalised citation peaks in recent years correspond to studies that specify content cues and

platform dynamics, reinforcing the managerial value of theory-informed creative and distribution strategies.

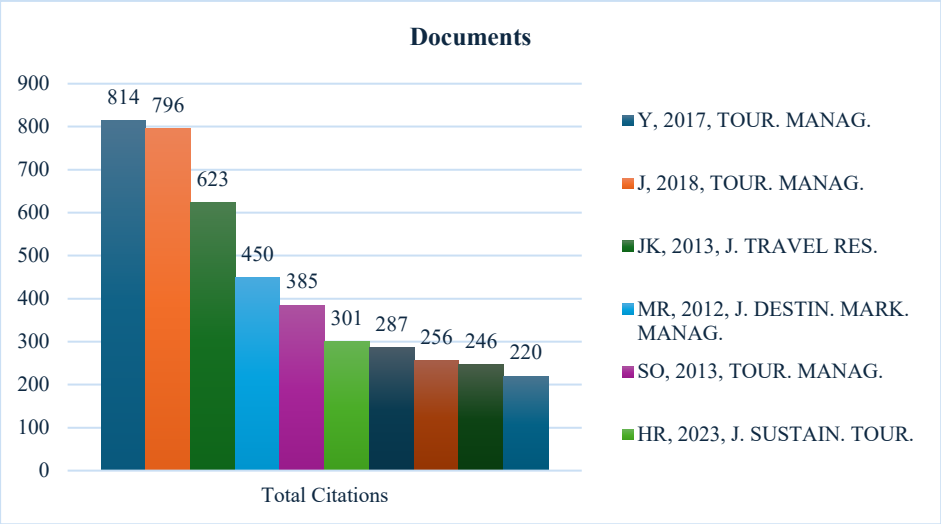


Figure 08: Most Cited Papers

Table 08: Most Cited Papers

Paper	DOI	Total Citations	TC per Year	Normalized TC
Y, (2017). TOUR. MANAG.	10.1016/j.tourman.2016.09.009	814	90.44	6.42
J, (2018). TOUR. MANAG.	10.1016/j.tourman.2018.03.009	796	99.50	8.41
JK (2013). J. TRAVEL RES.	10.1177/0047287512475217	623	47.92	3.21
MR (2012). J. DESTIN. MARK. MANAG.	10.1016/j.jdmm.2012.10.001	450	32.14	2.26
SO, 2013, TOUR. MANAG.	10.1016/j.tourman.2012.08.006	385	29.62	1.99
HR (2023). J. SUSTAIN. TOUR.	10.1080/09669582.2020.1858091	301	100.33	18.86
E, (2020). J. HOSP. TOUR. MANAG.	10.1016/j.jhtm.2020.04.003	287	47.83	6.07
P, (2020). INT. J. CONTEMP. HOSP. MANAG.	10.1108/IJCHM-05-2020-0477	256	42.67	5.41
L, (2014). INT. J. HOSP. MANAG.	10.1016/j.ijhm.2013.12.004	246	20.50	1.57
YL (2016). INT. J. HOSP. MANAG.	10.1016/j.ijhm.2016.01.010	220	22.00	1.58

Keyword and Thematic Analysis

The co-occurrence clusters form a coherent system that maps directly to CAC and sustainable tourism governance, yielding clear managerial implications.

Digital communication ecosystem (social media, UGC, Instagram, video, VR): Emphasises platform-native, imagery-rich content that triggers affective states (awe, tranquillity) from cognitive attributes (biodiversity, access, safety), raising conative image and intent; immersive media (VR/AR) enhances pre-visit mental imagery and learning for sensitive habitats. Practically, DMOs should storyboard CAC progression, optimise early engagement kinetics, and track conative proxies alongside reach.

Sustainable experiences (ecotourism, authenticity, cultural heritage): Highlights authenticity and verifiable stewardship as credibility anchors; content should feature community voices, conservation actions, and certification signals to prevent greenwashing backlash, thereby stabilising affect to conation.

Behavioural foundations (attitude, concern, intention): Suggests content calendars constructed as CAC sequences: phase cognitive (facts, itineraries, biodiversity), phase affective (stories, micro-moments), phase conative (clear CTAs to certified eco-operators), with message tests for affect intensity and credibility.

Tourism development (economics, stakeholders): Indicates marketing's role in demand management; integrates carrying capacity cues (seasonality, dispersal), real-time conditions, and community benefit narratives to align positive image with sustainability thresholds.

Destination image constructs (image, satisfaction): Encourages closed-loop strategies by utilising post-visit UGC and satisfaction reviews to fuel next-cycle e-WOM, and measures shifts in conative image pre- and post-campaign to refine tactics.

Integrating Results with Theory

Cognitive–affective–conative model: The surge in visual platforms and emphasis on information quality align with a pathway where cognitive cues (attributes, credibility) generate affect through storytelling and imagery, converting to intention. Cultural dimensions moderate the effect on conation strength, helping to explain Asia's high-output focus on imagery and electronic word of mouth (e-WOM). This provides a robust theoretical basis for designing platform-specific communications in ecotourism.

Sustainable tourism lens: Keyword themes and journal patterns indicate a governance turn, where the destination image is not only promotional but also serves as a policy instrument to shape demand toward capacity, disperse visitation, and foreground community benefits, aligning market signals with conservation objectives.

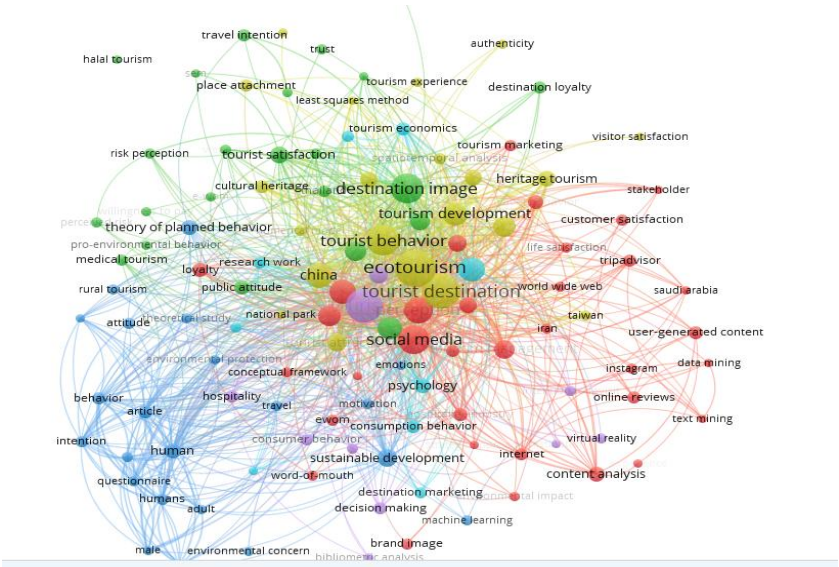


Figure 09: Keyword Co-occurrence

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Word Cloud Analysis: Thematic Prominence and Conceptual Hierarchy

Word cloud visualisation reveals thematic hierarchies in ecotourism research through social media, word of mouth, and destination image. The font size indicates the importance of themes (Hunt et al., 2014). "Tourist destination" emerges as the most prominent concept, reflecting destinations as the central research focus, aligning with bibliometric findings (Ahmad et al., 2025). "Ecotourism" appears as a significant secondary concept, linking environmental consciousness with tourism communication (de Bruyn et al., 2023). "Social media" and "tourist behaviour" demonstrate integration of technological platforms with behavioural approaches. "Destination image" mediates between digital communication and behavioural outcomes. "Sustainability," "tourism development," and "satisfaction" contextualise communication effectiveness, while "perception" reflects cognitive processes in destination image formation.

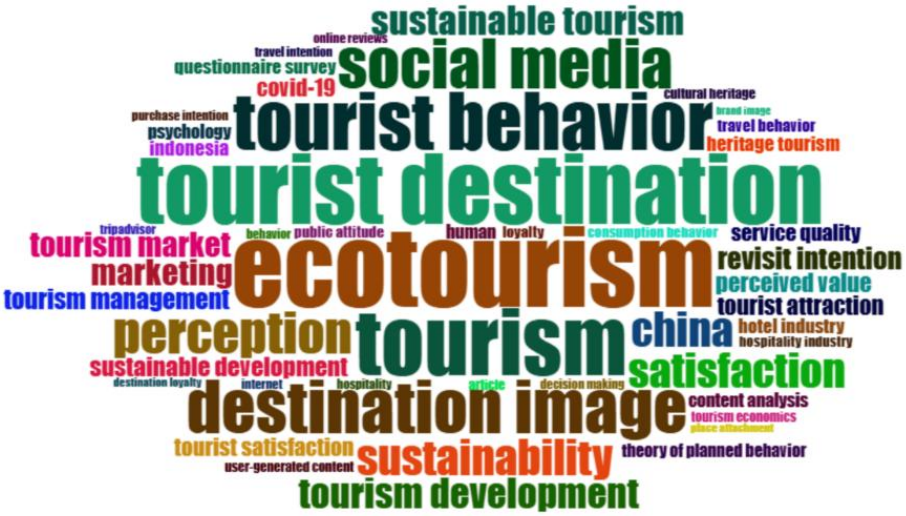


Figure 10: Word Cloud Analysis

Word Tree Analysis: Hierarchical Theme Structure

Word tree visualisation provides a hierarchical representation of research themes across domains. "Ecotourism" (116 instances, 7%) represents the largest concept, with environmental sustainability as the primary anchor. "Tourism" (96 instances, 6%) appears as a substantial secondary concept. "Tourist behaviour" (83 instances, 5%) leads the red cluster, focusing on sustainable tourism choices. The "Destination image" (76 instances, 5%) mediates the relationship between digital communication and behaviour. "Tourist destination" (102 instances, 6%) indicates place-based research dominance. "Social media" (72 instances, 5%), "sustainability" (51 instances, 3%), and "sustainable tourism" (43 instances, 3%) show environmental applications. "Tourism development" (44 instances, 3%) provides a strategic context for implementation.



Figure 11: Word Tree Analysis

Thematic Map Analysis: Strategic Research Positioning and Evolution

Thematic map analysis employs Callon's centrality-density framework to categorise research themes in social media, word-of-mouth, and destination image within ecotourism research (Cobo et al., 2011). The horizontal axis measures theme interaction, whereas the vertical axis shows internal cohesion (Moral-Muñoz et al., 2020). In the Motor Themes quadrant, "Tourism" emerges as the dominant theme driving research development in digital communication for sustainable tourism. "Satisfaction" and "sustainable development" emerge as significant motivational themes, reflecting digital strategy measurement and sustainability principles. The Basic Themes quadrant contains high-centrality, low-density themes, such as "ecotourism", "tourist destination", and "tourist behaviour", serving as theoretical foundations that need refinement. This aligns with findings that tourism concepts require interdisciplinary integration (Hunt et al., 2014). The Niche Themes quadrant indicates broad field applicability rather than specialisation, suggesting opportunities for platform-specific communication research.

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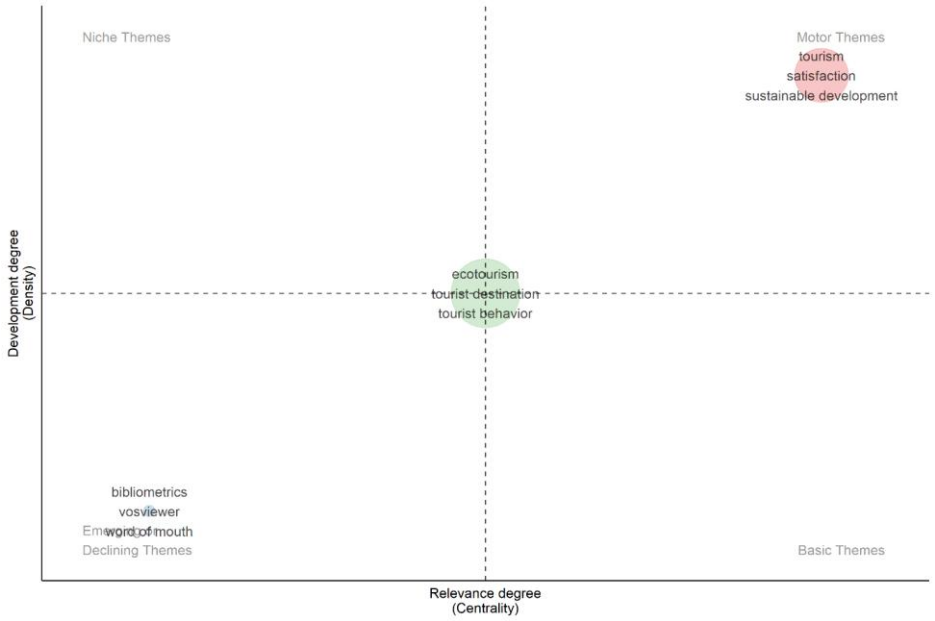


Figure 12: Thematic Map Analysis

Table 09: Most frequent Keywords and their Evolution	
Terms	Frequency
ecotourism	116
tourist destination	102
tourism	96
tourist behavior	83
destination image	76
social media	72
perception	60
sustainability	51
china	50
satisfaction	50

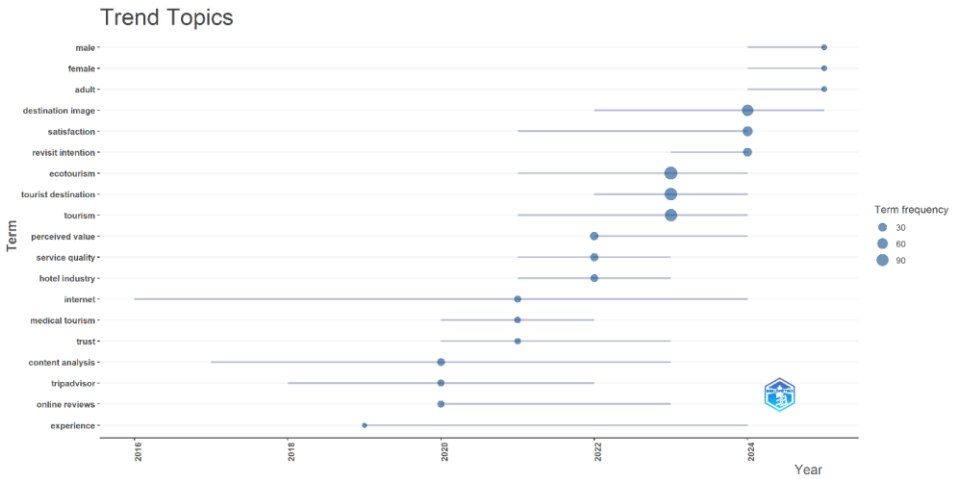


Figure 13: Trend Topics

Co-Citation Analysis

Co-Citation Analysis by Authors

Co-citation analysis revealed intellectual foundations in social media and destination image research in ecotourism. Visualisation shows scholar connections through co-citation patterns (van Eck & Waltman, 2010). Anderson emerged as a central (large green node), indicating influence through co-citations with researchers in tourism behaviour and destination marketing theories. This aligns with the central nodes representing theoretical bridge builders (Zupic & Čater, 2015). Bagozzi appears as another major node (large green), contributing to structural equation modelling in tourism. Baker represents a cluster centre (purple node) in consumer behaviour research. The green cluster (Anderson, Bagozzi, Baron) represents behavioural psychology in tourism. Purple cluster (Baker and Aaker): Indicates marketing perspectives. Orange cluster (Buckley, Armitage): represents sustainability researchers. Red cluster: Digital tourism communication specialists.

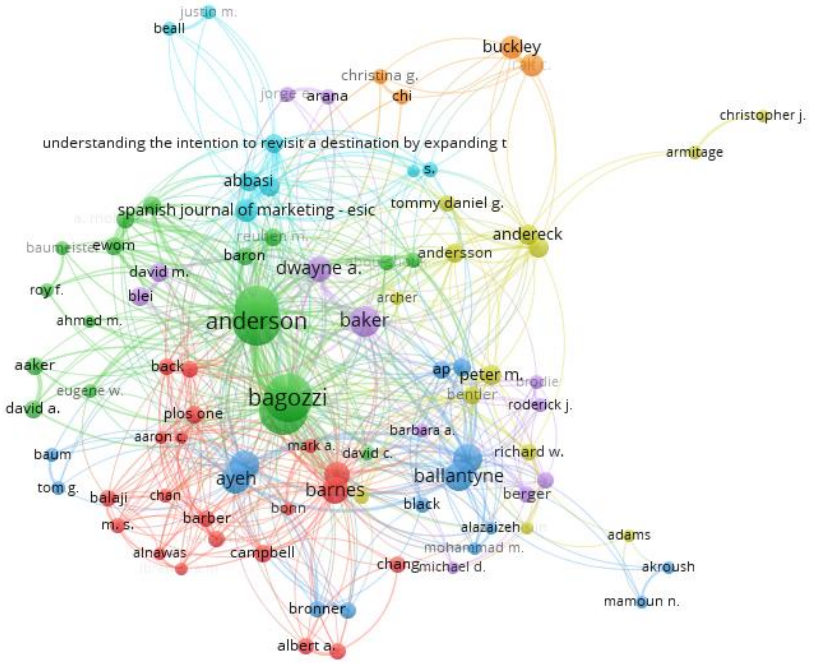


Figure 14: Co-Citation Analysis by Authors

Co-Citation Analysis by Sources

Co-citation analysis revealed publication networks and patterns of knowledge dissemination. The Annals of Tourism Research hold a central position, confirming its status as the most influential tourism journal (de Bruyn et al., 2023). Tourism Management appears to be another major node reflecting practical applications. The Journal of the Academy of Marketing Science represents the integration of tourism and marketing. The Psychological Bulletin and Journal of Personality and Social Psychology contribute to behavioural theory. At the same time, the Journal of Sustainable Tourism and Geo Journal of Tourism and Geo sites focus on environmental applications. The Journal of Business Research and

California Management Review emphasise the strategic implications of digital tourism.

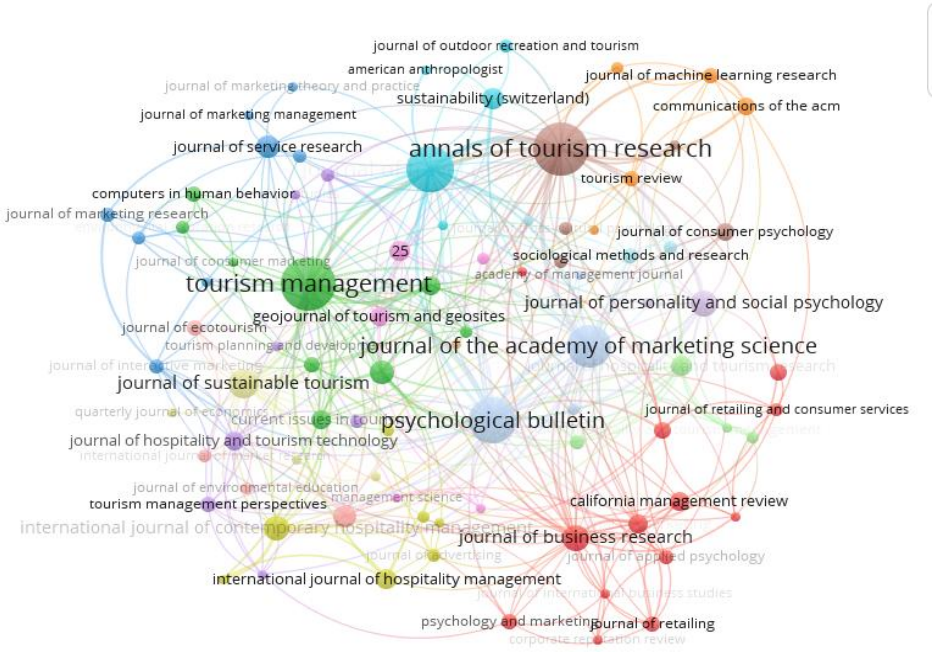


Figure 15: Co-Citation Analysis by Sources

Co-Citation Analysis by Cited References

The co-citation analysis of the cited references identifies influential foundational work. Ajzen's Theory of Planned Behaviour (90 local citations) has emerged as the most influential framework for understanding behavioural intentions in digital tourism communication (Chen et al., 2024). Anderson and James C. (1988) (51 local citations) represent the foundations of structural equation modelling. Bagozzi and Richard (1988) (47 local citations) contribute to attitude-behaviour theories for tourist intentions. Baloglu and Seyhmus (35 local citations) provide destination image formation theory for social media influence. Beeri-Palacio, Asunción (30 local citations), and Afshardoost, Mona (23 local citations), demonstrated the practical implementation of digital tourism communication. Baker and Dwayne (2000) (20 local citations) contributed to the development of service quality measurement frameworks. The analyses showed integration across psychology, marketing, tourism management, and sustainability. The prominence of methodological contributors indicates rigorous analytical approaches, whereas cross-disciplinary citations suggest opportunities for enhanced collaboration and innovation in mixed-methods approaches.

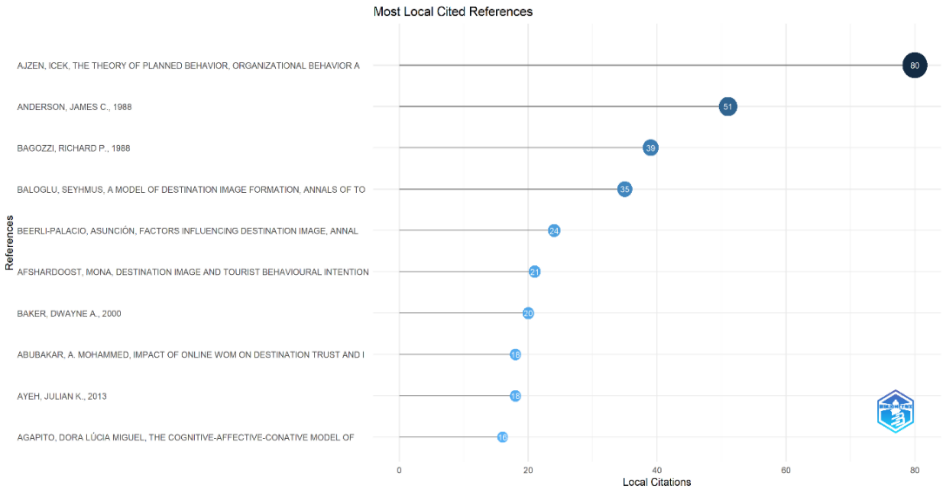


Figure 16: Co-Citation Analysis by Cited References

Actionable Strategies for DMOs from the Maps

- **Content design:** Produce short-form sequences that make attributes legible (cognition), elicit prosocial emotions (affect), and remove friction to eco-certified choices (conation); evaluate via conative metrics (save/share/intent) and eco-booking conversion rather than vanity views.

- **Influencer governance:** Engage micro/community creators; embed authenticity, conservation proofs, and community voice in briefs; require disclosure and share outcome data for continuous CAC optimisation.

- **Platform and algorithm strategy:** Treat ranking systems as distribution gatekeepers; A/B-test hooks/thumbnails and cadence to win early engagement; diversify themes to avoid algorithmic narrowing that sidelines remote or community-priority sites.

- **Immersive tools:** Use VR/AR for expectation-setting, conservation education, and demand staggering; success criteria are shifts in conative image and displacement from fragile cores to resilient zones, not views alone.

Collaboration Opportunities Inferred from Networks

Launch cross-platform, cross-region consortia that compare Douyin/RED and Instagram/TikTok, utilising harmonised CAC instruments, shared UGC datasets, and linked behavioural outcomes, thereby enabling culture-sensitive generalisation of affect to conation effects and algorithmic exposure dynamics for ecotourism.

Discussion

Synthesis with Prior Bibliometric Studies

This study's growth trajectory and post-2020 surge parallel bibliometric patterns linking external shocks to publication bursts, extending evidence from pandemic syntheses that documented a pivot toward digital information and sustainability framing in tourism discourse (Gössling et al., 2020; Donthu et al., 2021). The co-occurrence and co-citation structures confirm a field anchored in

ISSN (Print): 2790–7848, ISSN (Online): 2790-7856
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destination image and eWOM, with sustainability governance concerns, reflecting how prior bibliometric work describes maturing, application-oriented knowledge domains (Cobo et al., 2011; Moral-Muñoz et al., 2020; Donthu et al., 2021). The regional dominance of Asian institutions replicates the asymmetries reported in South Asian tourism bibliometrics, but with a stronger digital–ecotourism interface, due to platform penetration, biodiversity content, and policy incentives in regional mapping studies (Kumar et al., 2024). Collaboration patterns—dense intraregional ties with weaker cross-regional bridges—align with previous coauthorship mapping that attributes fragmentation to linguistic outlets, funding priorities, and platform ecosystems, highlighting the need for standardised constructs and shared datasets for cross-context generalizability (Mejia et al., 2021; Perianes-Rodriguez et al., 2016).

Theoretical Integration and Extensions

The cognitive-affective-conative (CAC) model remains the explanatory spine for how digital information quality and imagery translate into intentions, consistent with destination image theorisation, while authenticity and community narratives align with sustainable tourism's emphasis on credible stewardship signals to stabilise affect to conation pathways (Yang et al., 2022; Baloch et al., 2023). The eWOM stream reinforces social influence mechanisms that complement CAC by positioning credibility, trust, and volume/valence as moderators of image behaviour links in ecotourism, echoing reviews of WOM and eWOM's primacy in tourism decision-making (Huete Alcocer, 2017; Acharjee et al., 2023). The geographic patterning suggests cultural moderation on the effect of the conation link, such as uncertainty avoidance and collectivist norms, consistent with CAC refinements and value-belief-norm perspectives in eco-choice contexts, which explains the high salience of imagery-centric, community-validated narratives in Asian datasets (Yang et al., 2022; Zhang et al., 2025).

Technological Implications for the Field

- Artificial intelligence: The paucity of AI-related keywords flags a methodological and substantive opportunity to model algorithmic curation, generative content, and personalisation as antecedents of cognitive cues and affective activation in CAC, with managerial relevance for optimising discovery, credibility signalling, and bias auditing in eco-destination visibility (Nagvanshi & Gupta, 2024; Donthu et al., 2021).

- VR/AR and metaverse: Immersive media can intensify pre-visit mental imagery, convey conservation norms, and stagger demand for sensitive habitats by substituting or sequencing exposure; evaluating VR/AR effects on conative image and dispersal outcomes should complement vanity view metrics, a research–practice direction supported by emerging immersive tourism evidence and by sustainability governance needs (Özkan et al., 2025; Baloch et al., 2023).

- Influencer marketing: Creator-led narratives are powerful, effective vehicles yet require authenticity governance, disclosure, and conservation proof-points to avoid greenwashing; integrating influencer briefs with community voices and certification signals aligns with e-WOM credibility pathways identified in tourism behaviour research (Huete-Alcocer, 2017; Aboalganam et al., 2025).

- Short-video ecosystems: Findings that video imagery shapes intention reinforce a platform-native design logic—optimise early-engagement kinetics, narrative arcs, and credibility cues—especially salient in mobile-first regions that dominate the corpus and that rely on social commerce pathways from affect to action (Zhou et al., 2022; Kumar et al., 2024).

Practical Implications for Managers

- Design for CAC: Sequence content calendars from cognition (access, biodiversity, safety) to affect (human stories, micro-moments of nature, cultural encounters) to conation (low-friction pathways to certified eco-operators), and track conative proxies (saves, shares, eco-booking clicks) rather than reach alone to evaluate behavioral lift (Yang et al., 2022; Aboalganam et al., 2025).

- Authenticity and anti-greenwashing: Co-produce with local communities, foreground verifiable stewardship actions, and integrate recognised certifications to anchor credibility; this reduces scepticism and stabilises affect to intention conversion in ecotourism segments (Baloch et al., 2023; Huete-Alcocer, 2017).

- Influencer governance: Favour micro/community creators, codify conservation requirements and disclosures in briefs, and share outcome data to support continuous optimisation of CAC stages; align creator incentives with community benefits to safeguard social license (Acharjee et al., 2023; Aboalganam et al., 2025).

- Immersive media playbooks: Deploy VR/AR for pre-visit expectation-setting, conservation education, and demand dispersal; define success as shifts in conative image and observed displacement from fragile cores to resilient zones, not impressions alone (Özkan et al., 2025; Baloch et al., 2023).

- Algorithmic distribution: Treat platform ranking as a gatekeeper; A/B-test hooks/thumbnails, cadence, and metadata; diversify themes to prevent algorithmic narrowing that sidelines remote eco-sites and community priorities; audit exposure equity where possible (Donthu et al., 2021; Nagvanshi & Gupta, 2024).

- Measurement and loops: Close the loop with post-visit UGC and satisfaction to seed next-cycle e-WOM; integrate social listening with on-site KPIs (carrying capacity, seasonality) to ensure image strategies support stewardship objectives (Guerreiro et al., 2024; Baloch et al., 2023).

Policy Implications and Governance Guidance

- Data partnerships: Fund cross-regional UGC repositories with harmonised CAC instruments and post-exposure behavioural surveys to enable cultural moderation tests and platform comparisons, addressing collaboration gaps identified in co-authorship maps (Mejia et al., 2021; Perianes-Rodriguez et al., 2016).

- Standards and certification: Strengthen digital transparency standards for eco-claims (e.g., interoperable certifications, verifiable proof-points) to reduce information asymmetry and fortify authenticity signals in e-WOM and creator content (Baloch et al., 2023; Huete-Alcocer, 2017).

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- Capacity and inclusion: Support training for community content creation, influencer collaborations, and immersive media so that local voices shape destination image; prioritise underrepresented regions (Africa, Latin America) to reduce evidence and visibility gaps (Kumar et al., 2024; Baloch et al., 2023).

- Demand management: Embed carrying capacity, dispersal, and seasonality in public communication strategies; align digital promotion with conservation targets through real-time conditions and dynamic incentives (Gössling et al., 2020; Baloch et al., 2023).

- Ethical AI and immersive tech: Issue guidance on AI-generated content disclosure, bias auditing in algorithmic distribution, and environmental safeguards for VR/AR/metaverse deployments in protected areas (Donthu et al., 2021; Özkan et al., 2025).

Future Research Priorities

- Causal chains and moderation: Multi-country experiments connecting message features, algorithmic exposure, and CAC outcomes with cultural moderation tests to generalise beyond single-market designs (Yang et al., 2022; Mejia et al., 2021).

- Immersive media evaluation: Field trials that quantify VR/AR impacts on conative image, dispersal, and on-site behaviours, integrating environmental KPIs with digital analytics (Özkan et al., 2025; Baloch et al., 2023).

- Influencer accountability: Comparative studies on creator type (micro vs. macro), disclosure practices, and authenticity cues on e-WOM credibility and intention in ecotourism niches (Huete-Alcocer, 2017; Aboalganam et al., 2025).

- AI and fairness: Audits of platform curation on eco-destination visibility, including impacts on lesser-known community sites, with policy-ready metrics for exposure equity (Donthu et al., 2021; Nagvanshi & Gupta, 2024).

The discussion situates the field's growth and structure within established tourism bibliometrics, extends theory by specifying digital levers within CAC under sustainability constraints, and provides a technology-aware blueprint for managers and policymakers to align destination image with conservation and community outcomes.

Conclusion

This study advances tourism science by integrating social media dynamics, electronic word-of-mouth (eWOM), and destination image into an ecotourism framework based on the cognitive–affective–conative (CAC) pathway and principles of sustainability governance. It shows how platform content quality and visual storytelling (cognitive cues) drive affective responses that shape conative image and behavioural intentions, while credibility and authenticity through eWOM, influencer narratives, and certification signals stabilise this mediation in ecotourism settings (Yang et al., 2022; HueteAlcocer, 2017; Baloch et al., 2023). Science mapping reveals five clusters: digital communication ecosystems, sustainable experiences, behavioural foundations, tourism development, and destination image constructs, positioning destination image as a governance

instrument aligning market attraction with conservation and community outcomes (Cobo et al., 2011; MoralMuñoz et al., 2020; Baloch et al., 2023).

Asian leadership reflects MobileFirst short video ecosystems, biodiversity-rich content, analytics capacity, and policy support for smart/sustainable tourism, implying cultural moderation in the effect to conation link and highlighting the need for cross-regional replication (Kumar et al., 2024; Zhou et al., 2022; Yang et al., 2022). The study contributes methodologically by triangulating performance indicators with coauthorship, co-citation, and keyword cooccurrence maps to identify intellectual anchors (destination image, CAC, eWOM credibility) and practical levers (imagery design, influencer governance, immersive media) connecting consumer behaviour theory to sustainable tourism practice (Donthu et al., 2021; PerianesRodriguez et al., 2016; Guerreiro et al., 2024). These contributions clarify how digital communication architectures can be designed to support conservation-compatible demand shaping, community voice, and authenticity in ecotourism.

Future research: Specific and Actionable Directions

Cross-cultural Comparative Studies

Design multicountry experiments that harmonise CAC constructs and eWOM credibility cues to assess cultural moderation (e.g., uncertainty avoidance, collectivism) on the affect-to-conation relationship across platform ecosystems (Douyin/RED vs. Instagram/TikTok). Use shared UGC corpora, standardised surveys, and conative proxies (saves, shares, Eco booking clicks) to improve external validity (Yang et al., 2022; Mejia et al., 2021; Kumar et al., 2024). Compare authenticity signals (certifications, community voice, and ranger/guide narrators) across regions to quantify the anti-greenwashing effects on trust, destination image, and intention in ecotourism niches (Huete Alcocer, 2017; Baloch et al., 2023).

Longitudinal analysis of digital engagement

Track cohorts across preexposure, exposure, and postexposure windows for 6–18 months to model dynamics in cognitive image, affective states, and conative image under changing platform algorithms and seasonal conditions, addressing citation lag and maturation effects noted in bibliometric trends (Donthu et al., 2021; MoralMuñoz et al., 2020). Integrate social listening with sustainability KPIs (carrying capacity, dispersal, seasonality) to assess whether content strategies that raise conative image achieve stewardship outcomes, using mixed models to link digital engagement with visitation dispersion and satisfaction trajectories (Guerreiro et al., 2024; Baloch et al., 2023).

Impact of AI-driven Recommendations on Destination Image

Conduct field tests manipulating recommendation intensity and personalisation in short video feeds to estimate effects on cognitive image (attribute recall/diagnostic), affect (awe/serenity), and conation (intent/choice), while auditing exposure equity for lesser-known community sites (Nagvanshi & Gupta, 2024; Donthu et al., 2021). Evaluate generative AI versus human/mixed creator content on authenticity perceptions, eWOM credibility, and intention, with disclosure conditions and conservation proof points as moderators to mitigate greenwashing risks in ecotourism (HueteAlcocer, 2017; Aboalganam et al., 2025).

ISSN (Print): 2790–7848, ISSN (Online): 2790-7856
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Immersive Media and Metaverse Trials

Implement VR/AR revisit modules for sensitive habitats to assess changes in image, knowledge gain, and displacement from fragile cores to resilient zones; benchmark against video to quantify effects and persistence (Özkan et al., 2025; Baloch et al., 2023). Explore metaverse microitineraries for expectation setting and conservation education, tracking downstream visitation patterns, community benefits, and sentiment shifts in eWOM (Guerreiro et al., 2024; Özkan et al., 2025).

Influencer Governance and Community Voice

Compare micro/community versus macro influencer formats in terms of authenticity, trust, and image, incorporating disclosures and community coproduction. Estimate the spillovers on post-visit UGC and satisfaction to fuel sustainable eWOM cycles (Acharjee et al., 2023; Huete Alcocer, 2017). Assess brief requirements for conservation proof points and certification visuals to raise credibility and reduce scepticism in Eco segments (Baloch et al., 2023; Aboalganam et al., 2025).

Methodological Infrastructure and Openness

Establish cross-regional, privacy-preserving UGC repositories with standardised CAC instruments and outcomes to reduce collaboration gaps and enable meta-analyses across platforms and cultures (Mejia et al., 2021; Perianes-Rodriguez et al., 2016). Pair bibliometric streams with ethnography and digital trace data to capture authenticity signals and community narratives, improving construct validity and theory–practice translation in ecotourism (Donthu et al., 2021; MoralMuñoz et al., 2020).

By specifying theory-driven designs and measurement frameworks that connect platform mechanics, e-WOM credibility, and destination image under sustainability constraints, these research avenues can generalise findings across cultures and time, quantify the real effects of AI-mediated discovery and immersive media, and operationalise destination image as a governance lever for conservation and community empowerment in ecotourism.

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