

Bibliometric Analysis on Ecotourism and Cultural Tourism Development

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ABSTRACT

This study presents a bibliometric analysis of ecotourism and cultural tourism research using data from Scopus and visualization through VOSviewer. The analysis identifies key research trends, influential scholars, and international collaborations that have shaped the academic landscape in these fields. The findings reveal that ecotourism research has evolved from a primary focus on environmental conservation and biodiversity to a broader integration of cultural heritage, economic sustainability, and digital transformation. Thematic clusters indicate a growing interest in climate change adaptation, stakeholder engagement, and smart tourism applications. Co-authorship and country collaboration networks demonstrate that the United States, China, Indonesia, and Malaysia lead in research output and international partnerships. However, some regions remain underrepresented in global research efforts. Challenges such as balancing conservation with tourism growth, ensuring economic viability, and fostering inclusive governance structures persist. The study underscores the need for interdisciplinary approaches, policy interventions, and technological innovations to enhance sustainable tourism development. Future research should focus on climate resilience, social entrepreneurship, and the role of digital technologies in responsible tourism practices.

Keywords: Ecotourism, Cultural Tourism, Bibliometric Analysis, Sustainable Tourism, Conservation.

1. INTRODUCTION

Tourism is one of the fastest-growing industries globally, contributing significantly to economic development, environmental conservation, and cultural preservation [1]. Among various forms of tourism, ecotourism and cultural tourism have gained increasing attention due to their sustainable and community-based approaches [2]. Ecotourism emphasizes responsible travel to natural areas, aiming to conserve the environment and enhance the well-being of local communities [3]. Meanwhile, cultural tourism focuses on experiencing local traditions, heritage, and arts, often serving as a tool for preserving intangible cultural assets [4]. These two tourism segments have evolved in response to growing global concerns about environmental sustainability and cultural heritage preservation, making them vital areas of academic and policy interest.

Over the past few decades, ecotourism and cultural tourism have been recognized as effective strategies for promoting sustainable development in both developed and developing countries [5]. Many nations have integrated these tourism forms into their national policies to balance economic growth with environmental and cultural conservation. Ecotourism has been particularly emphasized in biodiversity-rich countries such as Costa Rica, Kenya, and Indonesia, where it provides economic incentives for conservation [6]. Likewise, cultural tourism has been promoted in historic cities and UNESCO heritage sites, where it helps sustain local traditions while generating economic benefits [7]. However, despite these advantages, challenges remain in terms of managing tourism's environmental and socio-cultural impacts.

The rapid expansion of ecotourism and cultural tourism has led to an increasing body of academic literature exploring their implications, opportunities, and challenges [8]. Bibliometric analysis, as a research method, has become an essential tool in understanding trends, research gaps, and emerging themes in tourism studies [9]. By analyzing academic publications, citation networks, and keyword trends, bibliometric studies provide insights into how research on ecotourism and cultural tourism has evolved over time. This methodological approach enables researchers and policymakers to identify influential works, leading scholars, and dominant themes in the field, which can guide future research and decision-making [10].

Given the interdisciplinary nature of ecotourism and cultural tourism, researchers have examined these topics from various perspectives, including sustainability science, economics, sociology, and anthropology [11]. While some studies focus on the economic impacts and market trends of these tourism forms, others investigate their environmental and cultural implications. Additionally, recent studies have incorporated technology and digital transformation into tourism research, emphasizing how smart tourism, virtual reality, and social media influence ecotourism and cultural tourism [12]. The evolving nature of this research area necessitates a comprehensive bibliometric analysis to map its intellectual structure and highlight key trends.

Despite the growing body of literature on ecotourism and cultural tourism, there remains a need for a systematic review that consolidates existing research and provides a structured overview of knowledge development in this field [13]. A bibliometric analysis can fill this gap by identifying research clusters, influential studies, and collaborative networks among scholars. Such an analysis is crucial for guiding future research, informing policy decisions, and fostering international collaboration in sustainable tourism development. By synthesizing existing research, this study aims to provide a comprehensive understanding of how ecotourism and cultural tourism have evolved as academic disciplines and what directions they are likely to take in the future.

Despite the significant growth in ecotourism and cultural tourism research, there is a lack of comprehensive bibliometric analysis that synthesizes trends, research gaps, and key contributions in this field. Previous studies have explored specific aspects of these tourism forms, such as their economic, environmental, and cultural impacts, but a holistic understanding of their academic evolution remains limited. Additionally, existing literature reviews often focus on qualitative assessments rather than data-driven bibliometric approaches, making it difficult to quantitatively assess research patterns and scholarly influence [14]. This study addresses this gap by employing bibliometric analysis to map the intellectual structure of ecotourism and cultural tourism research, providing valuable insights for academics, policymakers, and practitioners. This study aims to (1) identify key research themes and trends in ecotourism and cultural tourism literature, (2) examine the most influential authors, journals, and institutions in the field, (3) analyze the citation and collaboration networks among scholars, and (4) highlight research gaps and potential future directions for sustainable tourism studies.

2. LITERATURE REVIEW

2.1 *Theoretical Foundations of Ecotourism and Cultural Tourism*

Ecotourism and cultural tourism are grounded in several theoretical frameworks that explain their significance and impact on sustainable development. The sustainable tourism development model, derived from the broader concept of sustainable

development, emphasizes balancing economic, environmental, and socio-cultural aspects of tourism [15]. This model underscores the need to preserve natural and cultural resources while ensuring long-term economic viability for local communities. The triple-bottom-line approach [16] further strengthens this notion by advocating for economic profitability, social inclusiveness, and environmental responsibility in tourism operations. In addition to sustainability theories, Tourism Area Life Cycle (TALC) model provides a relevant framework for understanding the evolution of ecotourism and cultural tourism. According to this model, destinations undergo various stages from exploration and development to stagnation and potential rejuvenation or decline. For ecotourism and cultural tourism destinations, the TALC model helps assess how tourism growth affects the ecological and cultural integrity of a place over time. Moreover, Irridex Model highlights the host community's reaction to tourism development, ranging from euphoria to antagonism, a concept that is particularly relevant in understanding the social impacts of cultural tourism.

2.2 *Ecotourism: Conservation and Community Development*

Ecotourism is often linked to conservation efforts and community development initiatives. Scholars have explored the impact of ecotourism on biodiversity conservation, particularly in protected areas and national parks [17]. Research suggests that ecotourism can serve as a financial incentive for conservation by generating revenue for environmental protection programs [18]. However, challenges such as over-tourism, habitat degradation, and conflicts between conservation objectives and local livelihoods remain significant concerns [19]. Community-based ecotourism (CBE) has gained traction as an alternative to mainstream tourism models. CBE emphasizes local participation, equitable benefit-sharing, and cultural preservation [20]. Studies indicate that successful CBE projects can enhance local socio-economic conditions while fostering environmental stewardship [21]. However, governance issues, power imbalances, and inadequate capacity-building initiatives often hinder the effectiveness of CBE initiatives [22].

2.3 *Cultural Tourism: Heritage Preservation and Identity*

Cultural tourism plays a crucial role in preserving tangible and intangible heritage. Scholars have examined how cultural tourism contributes to the safeguarding of historical landmarks, traditional arts, and indigenous practices [23]. UNESCO's World Heritage designation has been instrumental in boosting cultural tourism, attracting international visitors while ensuring heritage site protection [24]. However, issues such as cultural commodification, loss of authenticity, and the displacement of local communities have been widely debated in the literature [25]. Intangible cultural heritage, including festivals, rituals, and traditional crafts, has also gained attention in cultural tourism studies. Research suggests that cultural tourism can empower local communities by creating economic opportunities and fostering cultural pride (Richards, 2018). However, there is a growing concern that commercialization may dilute the intrinsic value of cultural traditions, leading to a staged authenticity phenomenon [26].

3. METHODS

This study employs a bibliometric analysis approach to examine the research landscape of ecotourism and cultural tourism development. The analysis is conducted using data retrieved exclusively from the Scopus database, covering peer-reviewed journal articles, conference proceedings, and book chapters published over the past three decades. The study utilizes bibliometric indicators, including citation analysis, co-authorship networks, and keyword co-occurrence analysis, to identify influential authors, institutions, and research trends. VOSviewer is used for data visualization and network mapping to illustrate research clusters and thematic evolution in the field.

4. RESULTS AND DISCUSSION

4.1 Network Visualization

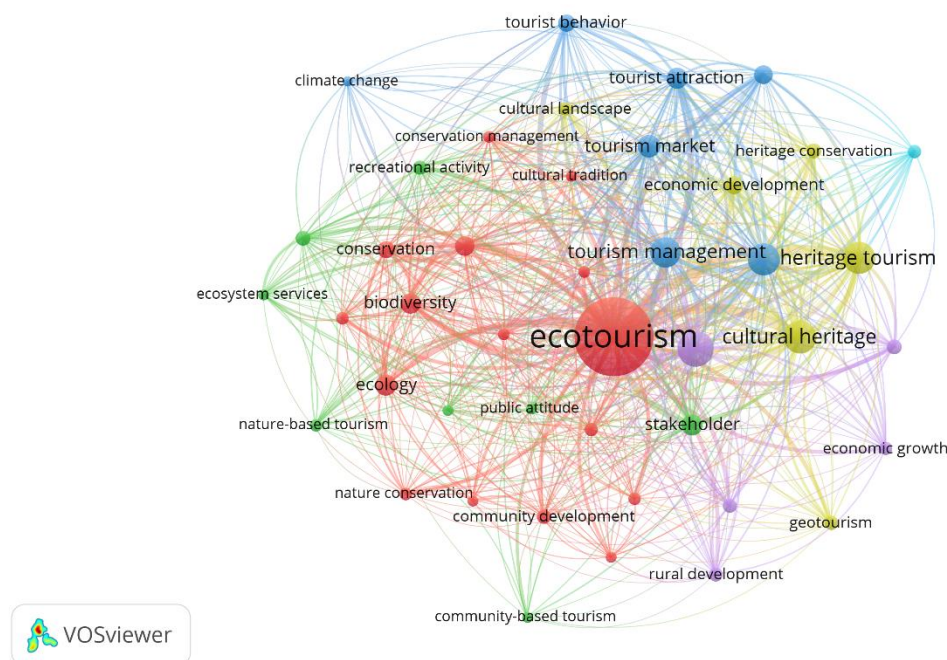


Figure 1. Network Visualization

Source: Data Analysis Result, 2025

The visualization presented is a bibliometric network map of keywords related to ecotourism and cultural tourism, generated from Scopus data. The network consists of interconnected nodes, where the size of each node represents the frequency of occurrence of a keyword, and the lines (or edges) indicate co-occurrence relationships between terms in academic literature. Different colors represent clusters of closely related terms, highlighting key themes and research directions in the field. At the center of the network, "ecotourism" appears as the most dominant term, depicted with the largest node, signifying its central role in the research landscape. Surrounding this core concept, several other significant terms such as "conservation," "community development," "cultural heritage," and "tourism management" indicate the interdisciplinary nature of ecotourism. The strength of connections between these terms suggests that ecotourism research is deeply intertwined with issues of environmental sustainability, community involvement, and tourism governance.

The visualization also reveals multiple thematic clusters. The red cluster (left side) is heavily associated with ecology, biodiversity, conservation, and ecosystem services, reinforcing the strong environmental emphasis in ecotourism research. The green cluster includes keywords like

community development, public attitude, and nature conservation, signifying a focus on the social and economic dimensions of ecotourism, particularly its role in empowering local communities. The blue cluster on the top relates to tourist behavior, tourist attractions, and tourism market, showing the demand-side perspective in tourism studies. Another critical area identified in the yellow and purple clusters is heritage tourism, cultural heritage, and economic growth, emphasizing the interconnection between cultural tourism and ecotourism. These clusters indicate that sustainable tourism does not solely rely on natural preservation but also on the protection and promotion of cultural assets. This highlights a growing research interest in integrating cultural heritage into ecotourism strategies to enhance economic benefits and preserve intangible heritage.

4.2 Overlay Visualization

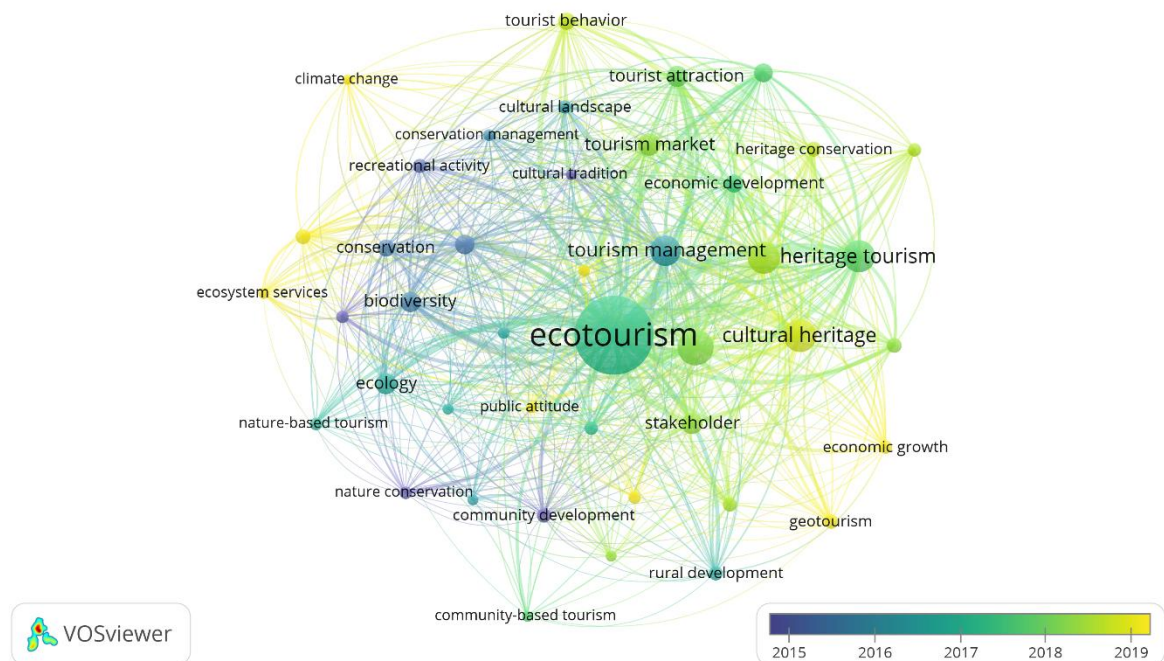


Figure 2. Overlay Visualization

Source: Data Analysis Result, 2025

The visualization represents a temporal bibliometric analysis of keywords associated with ecotourism and cultural tourism, highlighting the evolution of research trends over time. The color gradient, ranging from blue (2015) to yellow (2019), indicates the average publication year of articles containing specific keywords. The size of the nodes reflects the frequency of keyword occurrences, while the lines connecting them illustrate co-occurrence relationships, signifying research interconnections. At the center of the network, "ecotourism" remains the dominant theme, with strong associations with cultural heritage, conservation, tourism management, and economic development, indicating the interdisciplinary nature of ecotourism research.

From a temporal perspective, earlier studies (2015-2016, represented in blue) focused on biodiversity, ecology, conservation, and nature-based tourism, emphasizing environmental concerns and sustainable tourism practices. Over time, newer themes (2017-2019, represented in green to yellow) emerged, including climate change, ecosystem services, heritage tourism, and geotourism, reflecting a shift towards integrating ecotourism with broader socio-economic and climate resilience discussions. Notably, terms such as tourism market, stakeholder involvement, and economic growth gained prominence in recent years, suggesting increased academic and policy interest in balancing tourism's economic benefits with sustainability.

The visualization suggests future research directions by revealing gaps and evolving trends in ecotourism and cultural tourism studies. The growing emphasis on climate change and heritage conservation points to the need for more research on adaptive tourism strategies and cultural sustainability in the face of global environmental challenges. Additionally, stakeholder involvement and community-based tourism remain crucial themes, emphasizing the importance of inclusive tourism planning. The bibliometric analysis underscores the dynamic nature of ecotourism research and highlights the necessity for continued interdisciplinary approaches to address emerging sustainability challenges in tourism development.

4.3 Citation Analysis

Table 2. The Most Impactful Literatures

Citations	Authors and year	Title
400	[27]	Geotourism's Global Growth
398	[28]	Advances and challenges in sustainable tourism toward a green economy
374	[29]	Can community-based tourism contribute to sustainable development? Evidence from residents' perceptions of the sustainability
358	[30]	Collaboration theory and tourism practice in protected areas: Stakeholders, structuring and sustainability
353	[31]	Information and empowerment: The keys to achieving sustainable tourism
271	[32]	Tourism, farming and diversification: An attitudinal study
233	[33]	The ethics of tourism development
230	[34]	Managing Educational Tourism
225	[35]	Food tourism, niche markets and products in rural tourism: combining the intimacy model and the experience economy as a rural development strategy
219	[36]	Implementing std on a small island: Development and use of sustainable tourism development indicators in samoa

Source: Scopus, 2025

4.4 Density Visualization

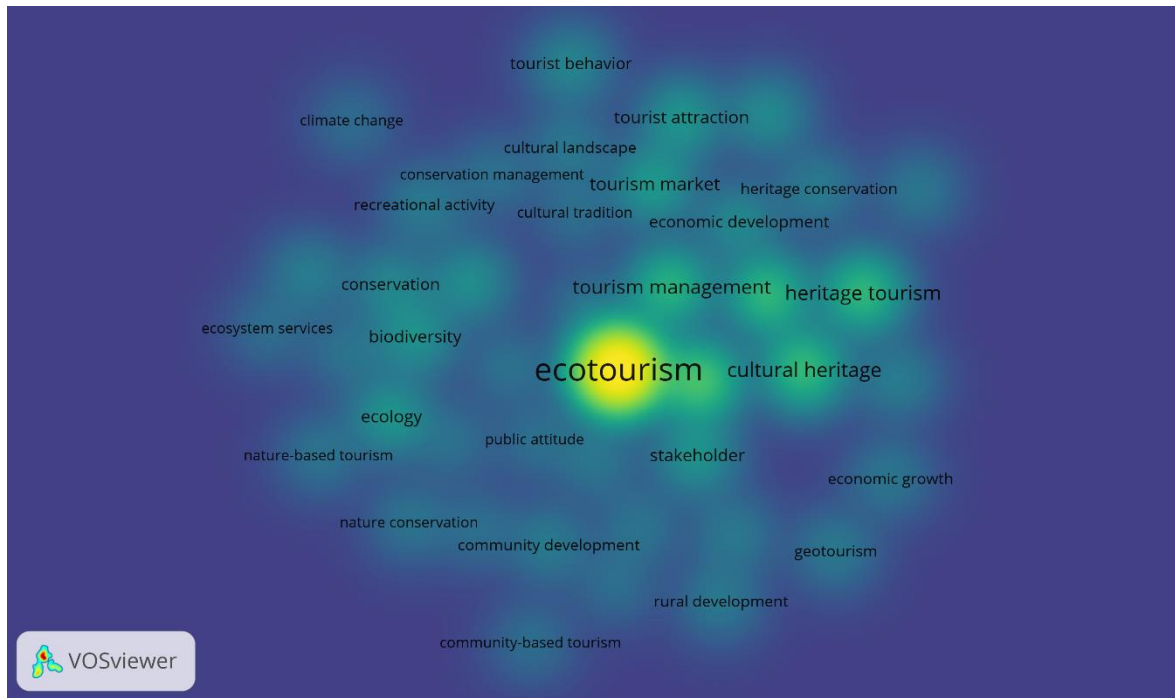


Figure 3. Density Visualization

Source: Data Analysis Result, 2025

The heatmap visualization represents the intensity of keyword occurrences related to ecotourism and cultural tourism research. The yellow regions indicate the highest concentration of studies, with "ecotourism" being the most frequently occurring term at the core. Surrounding it, terms such as "cultural heritage," "tourism management," "heritage tourism," and "conservation" appear in green, signifying their substantial presence in the academic literature. The blue-to-green gradient across the image suggests areas with moderate to lower research frequency, indicating varying degrees of academic attention to different themes within ecotourism and cultural tourism. The heatmap highlights key research focuses and potential gaps in the field. The strong presence of conservation-related terms such as "biodiversity," "ecology," and "nature conservation" suggests that ecotourism studies heavily emphasize environmental sustainability. However, topics like "geotourism," "economic growth," and "stakeholder involvement" are relatively less intense, implying opportunities for further exploration. Additionally, emerging areas such as climate change and ecosystem services show moderate frequency, indicating a growing but still underdeveloped research direction.

4.5 Co-Authorship Network

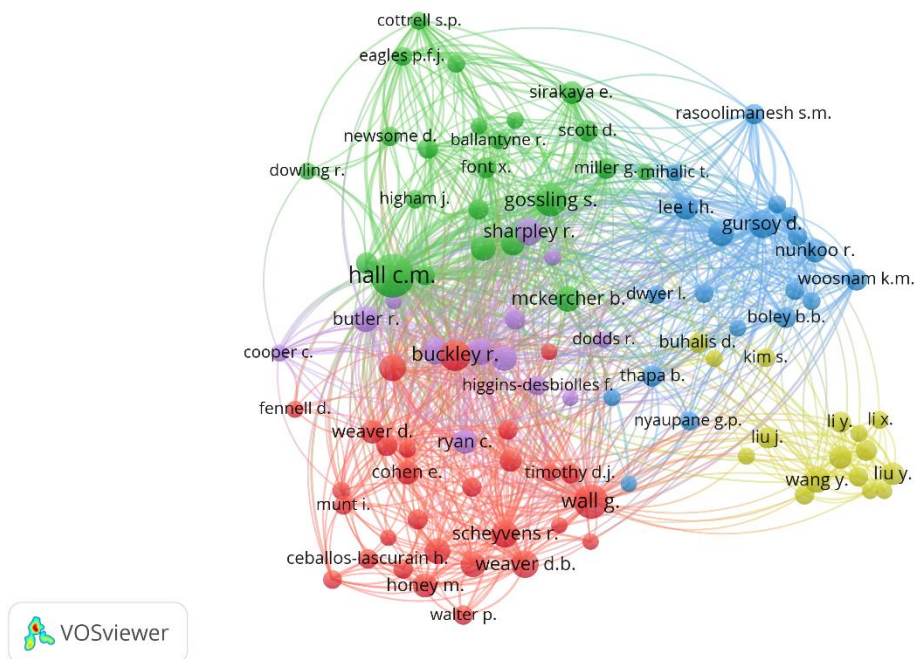


Figure 4. Authorship Visualization

Source: Data Analysis Result, 2025

The co-authorship network visualization presents a bibliometric mapping of influential researchers in ecotourism and cultural tourism studies. Each node represents an author, and the size of the node indicates the number of publications and citations attributed to that scholar. The connections (edges) between nodes indicate co-authorship relationships, while different colors represent clusters of authors who frequently collaborate. Notably, Hall C.M. (green cluster) and Buckley R. (red cluster) appear as central figures, suggesting their strong academic influence and extensive collaborations. The blue cluster, including Gursoy D. and Nunkoo R., represents another influential research group focusing on tourism studies, while the yellow cluster, including Liu Y. and Wang Y., indicates a separate research network with fewer direct connections to the others. The structure of this visualization highlights the existence of multiple research communities within ecotourism and cultural tourism, with some scholars forming tight-knit collaborations while others bridge across clusters, fostering interdisciplinary connections.

The temporal analysis of keywords highlighted a significant evolution in ecotourism and cultural tourism research. Earlier studies predominantly emphasized environmental conservation, biodiversity protection, and nature-based tourism. However, recent years have witnessed the emergence of themes such as climate change adaptation, geotourism, and digital transformation in tourism. The growing focus on climate change suggests that researchers are increasingly considering the long-term sustainability of ecotourism in the face of environmental challenges. Similarly, the rise of digital technologies, including smart tourism applications and virtual heritage experiences, reflects the impact of technological advancements on tourism management and visitor engagement.

Cultural tourism, as observed in the bibliometric network, has gained increasing academic interest, particularly in its role in heritage preservation and community-based tourism development. The intersection of ecotourism and cultural tourism in recent research highlights the recognition that environmental conservation and cultural heritage protection are interconnected. This trend aligns with the principles of sustainable tourism, where economic benefits, social inclusivity, and environmental responsibility must be balanced. The integration of cultural heritage within ecotourism frameworks allows destinations to diversify their tourism offerings while fostering local identity and traditional knowledge preservation.

3. Influential Scholars and Research Collaboration

The co-authorship analysis revealed several key scholars who have significantly shaped ecotourism and cultural tourism research. Scholars such as Hall C.M., Buckley R., and Weaver D. emerged as central figures, with extensive research contributions and strong collaborative networks. These authors have produced foundational studies on sustainable tourism, tourism management, and the socio-economic impacts of ecotourism. Their influence underscores the importance of interdisciplinary research in addressing complex tourism-related challenges. International collaboration patterns showed that research in ecotourism and cultural tourism is highly globalized, with strong networks among institutions in the United States, China, and Indonesia. Southeast Asia, in particular, has emerged as a critical region for ecotourism studies due to its rich biodiversity and growing tourism industry. However, while some countries exhibit high levels of academic collaboration, others, particularly in Africa and South America, appear less integrated within the global research network. This gap suggests the need for increased international partnerships and funding initiatives to support tourism research in underrepresented regions.

4. Challenges in Ecotourism and Cultural Tourism Research

Despite the progress made in ecotourism and cultural tourism studies, several challenges remain. One of the primary issues is the balance between conservation and tourism development. While ecotourism aims to promote environmental stewardship, uncontrolled tourism growth can lead to habitat degradation, biodiversity loss, and socio-cultural disruptions. Over-tourism in ecologically sensitive areas, such as national parks and heritage sites, threatens the sustainability of these destinations. Future research should explore strategies for mitigating tourism's negative impacts through improved carrying capacity assessments, regulatory frameworks, and community-driven conservation initiatives.

Another challenge lies in the economic sustainability of ecotourism and cultural tourism projects. Many community-based tourism initiatives struggle with financial viability due to inadequate market access, lack of infrastructure, and limited capacity-building programs. Ensuring equitable benefit-sharing among local communities remains a pressing concern, as external investors often dominate the tourism industry, leaving minimal economic returns for indigenous populations. Scholars must continue to investigate inclusive business models, innovative financing mechanisms, and policies that enhance local participation in tourism enterprises.

5. Policy and Managerial Implications

The findings of this study have several implications for policymakers, tourism managers, and stakeholders involved in ecotourism and cultural tourism development. First, destination management organizations (DMOs) should adopt an integrated approach that aligns environmental conservation with cultural heritage preservation. By promoting heritage-based ecotourism, policymakers can create diversified tourism experiences that appeal to a broader audience while ensuring long-term sustainability. Second, there is a need for enhanced governance frameworks that prioritize community empowerment and stakeholder engagement. Many ecotourism projects fail due to poor governance structures that exclude local communities from decision-making processes. Collaborative governance models that involve public-private partnerships, local NGOs, and indigenous groups can contribute to more inclusive and resilient tourism development strategies. Third, tourism practitioners should leverage digital technologies to improve visitor experiences and sustainable tourism practices. The adoption of smart tourism solutions, such as geospatial mapping, mobile applications, and digital interpretation tools, can enhance destination management and promote responsible tourism behaviors. Virtual reality (VR) and augmented reality (AR) technologies also offer opportunities for immersive cultural experiences while reducing physical pressure on fragile heritage sites.

6. Future Research Directions

Based on the bibliometric analysis, several future research directions can be identified. First, more studies are needed to explore the intersections between ecotourism, cultural tourism, and climate resilience. As climate change continues to impact tourism-dependent economies, researchers should investigate adaptive strategies that enhance the resilience of ecotourism destinations. Topics such as climate-smart tourism infrastructure, carbon offset programs, and nature-based solutions should be further examined. Second, the role of social innovation and entrepreneurship in sustainable tourism remains an underexplored area. Research on innovative business models that integrate ecotourism with social enterprises can provide insights into scalable and financially viable approaches to community-based tourism. Additionally, studies on indigenous entrepreneurship and cultural heritage conservation through tourism can contribute to more sustainable livelihood strategies for local populations. Third, given the increasing role of digitalization in tourism, further investigations into smart ecotourism solutions are needed. The use of artificial intelligence (AI), big data analytics, and blockchain technology in tourism management presents new opportunities for improving sustainability practices and visitor experiences. Future research could assess the effectiveness of these technologies in promoting responsible tourism behaviors and reducing tourism's ecological footprint.

CONCLUSION

This study provides a comprehensive bibliometric analysis of ecotourism and cultural tourism research, shedding light on key themes, influential scholars, and international collaborations. The findings indicate that ecotourism research has evolved from a conservation-centric focus to a more integrated approach that incorporates cultural heritage and economic development. While significant progress has been made, challenges such as over-tourism, economic sustainability, and governance issues persist. Addressing these challenges requires interdisciplinary research, enhanced policy frameworks, and the adoption of innovative tourism management solutions. By fostering global research collaborations and exploring emerging trends, scholars and practitioners can contribute to the development of more sustainable and resilient tourism models for the future.

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