Sustainable tourism and its future research directions: a bibliometric analysis of twenty-five years of research

Prerana, Deepa Kapoor and Abhay Jain

Abstract
Purpose – This study aims to conduct a bibliometric analysis of sustainable tourism research published in Scopus-indexed journals covering the period from 1997 to 2021. Articles published during these 25 years were subjected to science mapping and performance analysis to propose potential areas for future research.

Design/methodology/approach – A bibliometric analysis using performance analysis and science mapping was conducted on 1,754 research papers retrieved from the Scopus database using the keyword “sustainable tourism.” Biblioshiny and VOSviewer are commonly used bibliometric tools. Science mapping techniques use coauthorship, keyword co-occurrence and co-citation analyses.

Findings – This study revealed the sustainable tourism publications’ spatial and temporal patterns, indicating a yearly growth rate of 19.9% during a 25-year period. The study identified Stefan Gossling as the most influential author, the “Journal of Sustainable Tourism” as the leading journal and Australia as the most productive country in sustainable tourism literature. The study used co-citation analysis to identify five thematic clusters, namely, reconceptualization and criticism, the role of residents, eco-labeling and the role of stakeholders, community-based tourism and the shift toward establishing sustainability indicators and effective governance and policymaking. The coauthorship analysis identifies the most influential author in collaborative efforts, and the most common pattern of collaboration is between researchers from different institutions in the same country, such as China and the Philippines, followed by collaborations between authors from other countries. The keyword co-occurrence analysis uncovered keywords that aligned with theme clusters generated from the co-citation analysis.

Originality/value – This study comprehensively uncovers five thematic clusters that have never been extracted so far in the literature. Also, it attempts to fill the gaps related to sustainable tourism by suggesting directions for future research.

Keywords Sustainable tourism, Scopus, Science mapping, Bibliometric analysis, Performance analysis

Paper type Literature review

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TOURISM REVIEW
El turismo sostenible y sus futuras líneas de investigación: Un análisis bibliométrico de veinticinco años de investigación

Resumen

Propósito: Este estudio tiene como objetivo realizar un análisis bibliométrico de la investigación sobre turismo sostenible publicada en revistas indexadas en Scopus abarcando el periodo comprendido entre 1997 y 2021. Los artículos publicados durante estos 25 años fueron analizados mediante “science mapping” y estadísticas de las publicaciones para proponer áreas potenciales de investigación futura.

Diseño/metodología/enfoque: Se realizó un análisis bibliométrico utilizando análisis de rendimiento y mapas científicos de 1.754 artículos de investigación extraídos de la base de datos Scopus a partir de la palabra clave “turismo sostenible”. Biblioshiny y VOSviewer son herramientas bibliométricas utilizadas habitualmente. Las técnicas de análisis de rendimiento y de co-ocurrencia de palabras clave y co-citación.

Conclusiones: Este estudio reveló los patrones espaciales y temporales de las publicaciones sobre turismo sostenible, indicando una tasa de crecimiento anual del 19.9% durante un periodo de 25 años. El estudio empleó el análisis de co-citación para identificar cinco grupos temáticos, a saber: conceptualización y crítica; el papel de los residentes; ecoetiquetado y el papel de los grupos de interés; turismo basado en la comunidad, y gobernanza y formulación de políticas eficaces. El análisis de co-ocurrencia de palabras clave identificó palabras clave que se alineaban con los grupos temáticos generados a partir del análisis de co-citación.

Originalidad: Este estudio identifica cinco grupos temáticos que nunca se habían extraído hasta ahora en la bibliografía y sugiere orientaciones para futuras investigaciones.

Palabras clave Turismo sostenible, Scopus, Science mapping, Análisis bibliométrico, Análisis de rendimiento

Tipo de papel Revisión de literatura

1. Introduction

Sustainable tourism emerged as a distinct academic discipline in the early 1990s, becoming a regular phenomenon for researchers to investigate (Bramwell, 2007, 2010, 2015; Bramwell and Lane, 2011; Bramwell et al., 2017). Sustainable tourism considers environmental, economic, cultural, social and political factors and adapts to changing situations (Moyle et al., 2020). Several researchers have conducted prominent studies on different aspects of sustainable tourism, such as the environment (Gössling, 2002; Garvey and Bolton, 2017; Lenzen et al., 2018; Wang and Wang, 2018; Dolnicar, 2020; Han, 2021); community (Andereck et al., 2005; Blackstock, 2005; Jurowski et al., 1997; Manyara and Jones, 2007; McCool and Martin, 1994; Tosun, 2000; Okazaki, 2008; Choi and Murray, 2010; Lapeyre, 2010; Zapata et al., 2011; Salazar, 2012; Wani et al., 2022); and economic (Kitamura et al., 2020). Many researchers have presented revised conceptions of sustainable tourism as well as criticisms of the notion (Sharpley, 2000; Gössling, 2002; Liu, 2003).

Bibliometrics is a commonly used statistical approach for organizing research fields (Van Eck and Waltman, 2010). The current state, scope of the field, latest developments and future research directions can be investigated using bibliometric analysis (Eck and Waltman, 2010; Castriotta et al., 2019). Bibliometric analysis has been used in some sustainable tourism studies. Lu and Nepal (2009) conducted a content analysis of documents published in the “Journal of Sustainable Tourism” over the past 15 years. Ruhenan et al. (2015) analyzed 492 papers from the top four tourism journals over 25 years using bibliometrics. Ruhenan et al. (2019) updated their 25-year bibliometric analysis of sustainable tourism research after five years. Bramwell et al. (2017) provided an editorial review of the evolution of sustainable tourism research in the past 25 years as well as its coverage in the “Journal of Sustainable Tourism.” Studies conducted in this field have made significant contributions, but it is important to synchronize the literature to determine its scope, trends and unexplored themes.

This study examines sustainable tourism articles published over the past 25 years to identify significant contributions, themes, concepts and future research. It used two bibliometric...
analysis techniques, namely, performance analysis and science mapping (Donthu et al., 2021). These techniques reveal influential authors, publications, journals and countries, as well as collaboration status, relevant research trends and future research scope.

This study addresses the research questions listed below:

RQ1. How is the literature on sustainable tourism distributed over time through publications and citations?

RQ2. Which articles, countries, authors and journals have had the greatest impact on research on sustainable tourism over the past 25 years?

RQ3. What is the social structure of the countries and authors who have collaborated to investigate sustainable tourism?

RQ4. What are the distinct thematic clusters that have emerged in our area of research?

RQ5. Which distinct concepts and subjects are becoming more prominent in our field?

RQ6. What are the potential future contributions that could be addressed?

To address RQ1 and RQ2, performance analysis was used as a measure of productivity and impact. The coauthorship analysis technique addressed RQ3 by identifying the leading authors in collaborative efforts and their respective groups. To address RQ4, a co-citation analysis was used to identify the main thematic clusters. For RQ5, co-occurrence analysis was used to identify prominent concepts in sustainable tourism. In response to RQ6, research gaps have been discovered, and potential directions for future research have been suggested.

2. Literature review

2.1 A brief overview of “sustainable tourism”

Tourism contributes to global economic growth (Lenzen et al., 2018) and supports the 2030 Agenda for Sustainable Development through its impact on transportation, job opportunities, infrastructure, energy and sanitation (Buhalis et al., 2023; Pololikashvili, 2018). Tourism is required to adhere to environmental sustainability as well as providing economic and social benefits (Macleod and Todnem By, 2007). Sustainable tourism is a response to the real-world issues and opportunities that the tourism sector faces (Jones and Walmsley, 2022).

“Sustainable tourism” is defined as tourism that “takes full account of its current and future environmental, economic, and social implications, serving the interests of host communities, the environment, visitors, and the industry” (UNEP, 2005). Sustainable tourism is associated with the conservation of biodiversity and ecosystems, improving cultural equity and human well-being, providing sociocultural tourism benefits to all stakeholders and involving the public in tourism-related decision-making. Sustainability is a policy goal across various tourism activities and settings (UNEP, 2005; Bramwell, 2015). Sustainable tourism has become a normative approach that aims to reorient societal processes and conduct toward sustainable development through a comprehensive and integrated approach. A holistic perspective includes environmental, political, cultural, social and economic dimensions (Bramwell et al., 2017). Effective regulation is crucial for sustainable tourism, but poor implementation poses a significant obstacle to success in both developed and developing nations globally (Hunter and Shaw, 2007; Hall, 2010; Buckley, 2012). Sustainability in the tourism industry necessitates the continuous evaluation of impacts and the implementation of corrective actions (Alhasni, 2021). The well-being of individuals, economies, society and our planet is achieved through the United Nations sustainable development goals (SDGs) (United Nations, 2021; Buhalis et al., 2023). Scientific research has addressed the growing awareness of the interrelated concerns of tourism and sustainability (Jiménez-García et al., 2020). A bibliometric examination is necessary to identify the unexplored domains.
2.2 A brief overview of bibliometric analysis

Bibliometric analysis is a valuable tool for quantitatively managing large amounts of data and identifying trends in a particular field over time (Xu et al., 2018). The bibliometric analysis comprises performance analysis and science mapping techniques (Donthu et al., 2021). Performance analysis assesses how research components (such as journals, countries, authors, articles and institutions) contribute to a selected subject. It uses several metrics to assess the impact of research components (Cobo et al., 2011; Zupic and Cater, 2015; Donthu et al., 2021) and rank them based on their performance in the field (Donthu et al., 2021). Science mapping aims to show how scientific fields are structured and dynamic (Zupic and Cater, 2015). Science mapping analyzes the connections (Cobo et al., 2011) and structural and intellectual relationships among research components. Science mapping encompasses bibliographic coupling, coauthorship, co-word, co-citation and citation analyses. These techniques, paired with network analysis, can characterize the intellectual and bibliographic structure of a field. The influence of a publication in citation analysis is based on its citation count (Donthu et al., 2021). Coauthorship analysis can demonstrate collaborative efforts and generate the field’s social structure (Zupic and Cater, 2015). Keyword co-occurrence analysis assumes that frequently co-occurring terms in an article share a conceptual relationship, exhibit temporal trends and form clusters of the related theme (Kumar et al., 2021). Co-citation analysis links two publications based on their shared appearance in the bibliographies of other published works (Zupic and Cater, 2015; Donthu et al., 2021). Co-citation analysis can reveal the conceptual structure of a particular field of study (Rossetto et al., 2018). It supports researchers in identifying the most influential research papers, academic foundations and original publications. Bibliographic coupling can cluster articles with similar citation patterns. This facilitates an understanding of the recurrent themes addressed in the publication (Donthu et al., 2020).

3. Methodology

To structure the existing literature on different dimensions, bibliometric analysis has extensively been used (Glanzel and Schoepflin, 1999; Nederhof, 2006; Shanmugam, 2018). Scopus was chosen over Web of Science and PubMed for its wider journal coverage (Mongeon and Paul-Hus, 2016; Mishra et al., 2021). Scopus surpasses the Web of Science by 20% in citation analysis, while the reliability of Google Scholar’s results is sometimes questionable (Falagas et al., 2008). Many bibliometric studies on tourism used the Scopus database (Mauleon-Mendez et al., 2018; Herrera-Franco et al., 2020; Sharma et al., 2021b).

Table 1 illustrates the search strategy used to refine the documents for analysis. The search aimed to extract document types, authors, years, languages, countries, sources, popular articles and institutions. The articles were extracted from the Scopus database on September 6, 2022. The process includes five stages. In the first stage, the term “sustainable tourism” was selected based on a theme (Garrigos-Simon et al., 2018; Alonso-Muñoz et al., 2023) in the Scopus database to obtain relevant articles. This term is used significantly more frequently than other related terms such as “responsible tourism,” “nature-based tourism” and “wildlife tourism” (Khanra et al., 2021). The search was conducted for “sustainable tourism” in titles, abstracts and keywords. A total of 6,093 items were initially extracted. The database had a minimal number of articles on “sustainable tourism” until 1997, with only two articles published in 1990, two in 1991 and so on (refer to Table 2). Before 1997, less than 100 articles in English had used the term “sustainable tourism.” In the second stage, 1997–2021 was chosen to provide a comprehensive, rich and precise trend in sustainable tourism development. A total of 5,422 articles were published between 1997 and 2021. The third stage involved extracting journal articles while excluding conference papers and book chapters (Saha et al., 2020). The outcome was 4,322 articles. In the fourth stage, the article was filtered solely for the term “sustainable tourism.” Authors’ keyword selection is influenced by the topic background and paper
content (Lu et al., 2020). English-language articles were exclusively examined in the fifth stage of this study, owing to the authors’ language proficiency. After reviewing the abstracts for duplication and unsuitability, 1,754 articles were chosen for the study.

Bibliometric graphs, tables and maps were constructed and analyzed using this data set in VOSviewer (Van Eck and Waltman, 2010) and Biblioshiny (Aria and Cuccurullo, 2017). The selection of these two programs was based on VOSviewer’s capacity to generate high-definition images and the R program’s strong statistical reliability (Mishra et al., 2022). This study uses two programs, namely, performance analysis and science mapping. Three techniques of science mapping – coauthorship analysis, keyword co-occurrence analysis and co-citation analysis – that are commonly used in the bibliometrics literature have been applied (Garrigos-Simon et al., 2018).

4. Results

Table 3 presents the bibliometric data frames for 1,754 documents obtained from a comprehensive analysis of the Scopus database. The documents were published in 421 sources and had an average reference score of 25.32, indicating significant research conducted in the past. Of the authors, 92.46% collaborated on multiauthored documents.
whereas 7.5% contributed to single-authored documents. A total of 1,644 journal articles represent the maximum number of valid documents. In contrast, 61 book reviews have been published. The Scopus database has identified 4,087 authors. Of the writers, 79% exhibited their research contributions through involvement in collaborative practices. The 2.72 theme collaboration score is indeed low for this topic. Additional documents could be produced if the authors choose to collaborate on this issue.

4.1 Performance analysis
Annual publication and citation counts are widely used for performance analysis. The former reflects productivity, while the latter indicates influence and impact (Donthu et al., 2021).

4.1.1 Productivity and impact. Figure 1 displays the distribution of publications over a 25-year period, indicating an upward trend. The literature on sustainable tourism has shown a steady rise, with the majority of relevant articles published from 2017 to 2021. These articles focused on understanding the role of stakeholders, particularly the tourists’ perceptions, attitudes, decision-making and behavior. Spain produced the highest number of publications (298), followed by Italy (260), China (242), the USA (182), Indonesia (165), Australia (136), Portugal (128), the UK (127), Malaysia (89) and Romania (71). Some developing countries, such as Romania and Indonesia, have also made it into the top 10 countries.
The data presented in Figure 2 indicates that the highest number of cited articles was observed in 2009 ($n = 3,312$), followed by the second-highest number in 2019 ($n = 3,260$). The expansion rate was low before 2007. Citation patterns exhibited uncertainty from 1997 to 2006, spanning 13 years. The citation count has consistently exceeded 1,500 per year from 2007 to 2021, with the highest peak occurring in 2009.

4.1.2 Influential and productive author. Table 4 displays a ranking of the most influential authors in sustainable tourism based on their citation count, ranging from 1 to 20. The publication includes the H-index, a metric for evaluating an author’s productivity (Pandey and Joshi, 2021). Citation count is a metric used to assess an author’s level of influence (Tiberius et al., 2020; Sardana and Singhania, 2022). Gossling has the highest number of citations, followed by Boley and Hall. Several writers hold the same position due to their equivalent average citations per document (ACPD) and citation counts. Sims R.’s work has the highest ACPD, followed by Butler R.W.’s.

Based on the H-index, Figure 3 displays the authors’ productivity. Gossling has an H-index of 18, indicating that each of their 18 published articles has received at least 18 citations. His studies mainly concentrated on tourists’ perceptions of climate change as well as its effects on the environment and the practices of carbon offsetting and sustainable tourism. Boley with an H-index of 16 is among the most-cited researchers in ecotourism, tourists’
Table 4 Top influential author

<table>
<thead>
<tr>
<th>Rank</th>
<th>Author</th>
<th>Author affiliation</th>
<th>TC</th>
<th>NOD</th>
<th>ACPD</th>
<th>h_index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gössling S.</td>
<td>Linnaeus University, Sweden</td>
<td>3,214</td>
<td>20</td>
<td>160.7</td>
<td>18</td>
</tr>
<tr>
<td>2</td>
<td>Boley B.B.</td>
<td>University of Georgia, United States</td>
<td>1,115</td>
<td>18</td>
<td>61.94</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>Hall C.M.</td>
<td>University of Canterbury, New Zealand</td>
<td>933</td>
<td>11</td>
<td>84.82</td>
<td>11</td>
</tr>
<tr>
<td>4</td>
<td>Peeters P.</td>
<td>NHTV Breda University of Applied Sciences, Netherlands</td>
<td>848</td>
<td>4</td>
<td>212</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Weaver D.B.</td>
<td>Griffith University, Australia</td>
<td>846</td>
<td>14</td>
<td>60.43</td>
<td>13</td>
</tr>
<tr>
<td>6</td>
<td>Lee T.H.</td>
<td>National Yunlin University of Science and Technology, Taiwan</td>
<td>771</td>
<td>4</td>
<td>192.8</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>Dolnicar S.</td>
<td>University of Canterbury, New Zealand</td>
<td>713</td>
<td>10</td>
<td>71.3</td>
<td>9</td>
</tr>
<tr>
<td>8</td>
<td>Scott D.</td>
<td>University of Waterloo, Canada</td>
<td>713</td>
<td>8</td>
<td>89.13</td>
<td>7</td>
</tr>
<tr>
<td>9</td>
<td>Butler R.W.</td>
<td>University of Strathclyde, United Kingdom</td>
<td>667</td>
<td>2</td>
<td>333.5</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>Sims R.</td>
<td>University of Canterbury, New Zealand</td>
<td>654</td>
<td>1</td>
<td>654</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Blancas F.J.</td>
<td>Pablo de Olavide University, Spain</td>
<td>607</td>
<td>7</td>
<td>86.71</td>
<td>7</td>
</tr>
<tr>
<td>12</td>
<td>González M.</td>
<td>Pablo de Olavide University, Spain</td>
<td>607</td>
<td>7</td>
<td>86.71</td>
<td>7</td>
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<td>607</td>
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<td>86.71</td>
<td>7</td>
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<tr>
<td>14</td>
<td>Dodds R.</td>
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<td>556</td>
<td>10</td>
<td>55.6</td>
<td>9</td>
</tr>
<tr>
<td>15</td>
<td>Ceron J.P.</td>
<td>Université de Limoges, France</td>
<td>554</td>
<td>2</td>
<td>277</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>Dubois G.</td>
<td>Tourisme Environnement Consultants (TEC), France</td>
<td>554</td>
<td>2</td>
<td>277</td>
<td>2</td>
</tr>
<tr>
<td>17</td>
<td>Weaver D.</td>
<td>Griffith University, Australia</td>
<td>492</td>
<td>11</td>
<td>44.73</td>
<td>9</td>
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<td>18</td>
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<td>University of Aberdeen, United Kingdom</td>
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<td>5</td>
<td>97.4</td>
<td>5</td>
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<tr>
<td>19</td>
<td>Lane B.</td>
<td>EURAC Research, Italy</td>
<td>476</td>
<td>4</td>
<td>119</td>
<td>4</td>
</tr>
<tr>
<td>20</td>
<td>Nepal S.K.</td>
<td>University of Waterloo, Canada</td>
<td>475</td>
<td>4</td>
<td>118.8</td>
<td>4</td>
</tr>
<tr>
<td>21</td>
<td>Budeanu A.</td>
<td>Copenhagen Business School, Denmark</td>
<td>470</td>
<td>3</td>
<td>156.7</td>
<td>3</td>
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<tr>
<td>22</td>
<td>Mcgehee N.G.</td>
<td>Virginia Tech, United States</td>
<td>461</td>
<td>3</td>
<td>153.7</td>
<td>3</td>
</tr>
<tr>
<td>23</td>
<td>Caballero R.</td>
<td>Malaga University, Spain</td>
<td>456</td>
<td>6</td>
<td>76</td>
<td>6</td>
</tr>
</tbody>
</table>

Notes: TC = total citations; NOD = number of documents; ACPD = average citations per document; H-index compilation (using Biblioshiny)
Source: Authors’ analysis (based on Scopus database)

Figure 3 Authors’ productivity

Source: Authors’ compilation using Biblioshiny
proenvironmental behavior, resident perception, support and empowerment through tourism. Weaver stands out for his high H-index of 13 and conducted research on sustainable tourism quality control tools, environmental aspects, resident perceptions of tourism, sustainable destination management, contemporary tourism heritage, sustainable mass tourism, the geopolitical dimension of sustainable tourism and more. Table 5 presents the ranking of the top 20 most-cited articles, ranging from 1 to 20.

4.1.3 Most influential journals and countries’ wise contribution (productivity and citations). Figure 4 displays the top 20 journals in the sustainable tourism field based on their H-index. The H-index ranks journals according to their citation productivity and impact (Ingale and Paluri, 2022). The “Journal of Sustainable Tourism” has the highest H-index, indicating 56 articles published with a minimum of 56 citations each, followed by the “Tourism Management” and “Sustainability (Switzerland)” journals.

Table 6 shows a comparison of the contributions of different countries to the literature in this field. Australia, the UK and the USA are significantly ahead of other countries, regardless of research quantity, while the USA, Spain and Italy all have relatively higher total publication counts. The top 10 countries hold a dominant position in the field of sustainable tourism, contributing 67.3% of all citations among the 94 countries. Australia received about 13.85% of all citations, indicating that much of the research attention has been focused there. Sweden, Canada, Germany and New Zealand are leading in influential publications as assessed by total citations, which hold greater significance than research quantity. This is in contrast to countries like Indonesia, Malaysia, Romania and Portugal, which have a significantly larger number of publications.

The USA ranks first in global scientific production, as per bibliometric data, with Spain, Italy and Australia following suit. Romania, Indonesia and Malaysia are positioned in the bottom half of the ranking due to insufficient scores in relevant productions. In Malaysia and Indonesia, researchers have mostly looked at the issue of sustainability from an environmental perspective, with an eye on understanding the behavior of tourists. This could be interpreted as a sign that developing countries are making slow but steady progress toward conducting quality research in the field.

4.2 Science mapping

Three techniques are used for science mapping: keyword co-occurrence analysis, co-citation analysis and coauthorship analysis.

4.2.1 Coauthorship analysis. Out of 4,005 authors, 89 were involved in coauthorship with one or more authors. Figure 5 depicts a network visualization that highlights the influential authors and their groups based on coauthorship relationships. Several clusters represent collaborative groups, with authors primarily from the same or neighboring countries. This geographic concentration of authors restricts the exchange of information among them. Figure 6 depicts international collaboration among academicians. The darkness of a country’s color represents the frequency of collaborations among academics from different nations, while the thickness of the lines indicates the number of collaborations. Out of 121 countries, 110 have engaged in collaborations with at least one other country. The data indicates that the USA leads in both volume of publications (240) and the advancement of intellectual knowledge and social structure through international collaborations. The USA has significantly contributed to international scholarly collaboration, with 143 articles involving authors from 47 other countries, both developing and developed. The highest number of collaborative documents (17) have been produced between the USA and Australia. From 2007 to 2018, there was a rise in international collaboration among researchers from Indonesia, Brazil, Iran and Egypt. This indicates that the scope of intellectual development, collaborative research efforts and attention paid to sustainable tourism have grown across countries.
<table>
<thead>
<tr>
<th>Rank</th>
<th>Document title</th>
<th>Author</th>
<th>Journal</th>
<th>Year</th>
<th>DOI</th>
<th>Total citation</th>
<th>TC per year</th>
</tr>
</thead>
<tbody>
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<td>1</td>
<td>Global environmental consequences of tourism</td>
<td>Gössling S.</td>
<td>Global Environmental Change</td>
<td>2002</td>
<td>10.1016/50959-3780(02)0044-4</td>
<td>676</td>
<td>32.19</td>
</tr>
<tr>
<td>2</td>
<td>Sustainable tourism: A state-of-the-art review</td>
<td>Richard W. Butler</td>
<td>Tourism Geographies</td>
<td>1999</td>
<td>10.1080/1461669908721291</td>
<td>659</td>
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<tr>
<td>3</td>
<td>Food, place, and authenticity: local food and the sustainable tourism experience</td>
<td>Rebecca Sims</td>
<td>Journal of Sustainable Tourism</td>
<td>2009</td>
<td>10.1080/09669580802359293</td>
<td>654</td>
<td>46.71</td>
</tr>
<tr>
<td>4</td>
<td>Influence analysis of community resident support for sustainable tourism development</td>
<td>Tsung Hung Lee</td>
<td>Tourism Management</td>
<td>2013</td>
<td>10.1016/j.tourman.2012.03.007</td>
<td>476</td>
<td>47.60</td>
</tr>
<tr>
<td>5</td>
<td>Pandemics, transformations, and tourism be careful what you wish for</td>
<td>C. Michael Hall, Daniel Scott &amp; Stefan Gössling</td>
<td>Tourism Geographies</td>
<td>2020</td>
<td>10.1080/14616688.2020.1759131</td>
<td>417</td>
<td>139.00</td>
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<tr>
<td>6</td>
<td>Ecological footprint analysis as a tool to assess tourism sustainability</td>
<td>Stefan Gössling, Carina Borgström Hansson, Oliver Hörstmeier, Stefan Saggel</td>
<td>Ecological Economics</td>
<td>2002</td>
<td>10.1016/50921-8009(02)00211-2</td>
<td>377</td>
<td>17.95</td>
</tr>
<tr>
<td>7</td>
<td>The eco-efficiency of tourism</td>
<td>Stefan Gössling, Paul Peeters, Jean-Paul Ceron, Ghislain Dubois, Trista Patterson, Robert B. Richardson</td>
<td>Ecological Economics</td>
<td>2005</td>
<td>10.1016/j.ecolecon.2004.10.006</td>
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<td>8</td>
<td>Stakeholders in sustainable tourism development and their roles: applying stakeholder theory to sustainable tourism development</td>
<td>Erick T. Byrd</td>
<td>Tourism Review</td>
<td>2007</td>
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<td>341</td>
<td>21.31</td>
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<tr>
<td>9</td>
<td>Towards a conceptual framework for wildlife tourism</td>
<td>Paul Creynolds, Dick Braithwaite</td>
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<td>2001</td>
<td>10.1016/50261-5177(00)00018-2</td>
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<td>10</td>
<td>Residents’ perspectives of a world heritage site: The Pitons Management Area, St. Lucia</td>
<td>Lorraine Nadia Nicholas Brijesh</td>
<td>Annals of Tourism Research</td>
<td>2009</td>
<td>10.1016/j.annals.2009.03.005</td>
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<td>A Community-Based Tourism Model: Its Conception and Use</td>
<td>Etsuko Okazaki</td>
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<td>2008</td>
<td>10.2167/jost782.0</td>
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<td>13</td>
<td>Is Overtourism Overused? Understanding the Impact of Tourism in a City Context</td>
<td>Ko Koen, Albert Postma and Bernadett Papp</td>
<td>Sustainability</td>
<td>2018</td>
<td>10.3390/su10124384</td>
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Source: Authors’ analysis (based on Scopus database)
4.2.2 Co-citation analysis. Figure 7 depicts a network map in which each node represents a cited reference, and their sizes indicate the number of documents in which they have been co-cited. With at least five citations each, 109 references out of 89,569 meet the threshold for co-cited references. The connecting lines between nodes represent co-citations, while the nodes are color-coded based on their clusters. The size of each node indicates the number of documents in which it has been co-cited. The co-citation map generated by VOSviewer reveals five distinct clusters. The analysis of the documents in each cluster has identified the following themes:

4.2.2.1 Cluster 1: sustainable tourism conceptualization and criticism. The largest cluster, depicted in red, primarily focuses on the reconceptualization and criticism of sustainable
Figure 5  Co-authorship network among the authors publishing on sustainable tourism

Source: Authors’ compilation using VOSviewer 1.6.18

Figure 6  Co-authorship network among the countries publishing on sustainable tourism

Source: Authors’ compilation using Biblioshiny
Several scholars in the 2000s have offered revised definitions and critical assessments of sustainable tourism (Gössling et al., 2002; Liu, 2003; Saarinen, 2006). Gössling et al. (2002) propose a framework for measuring ecological footprints in the context of tourism, focusing on sustainability issues. Liu (2003) highlights six commonly overlooked concerns in the field of tourism: sustainability and its measurement, types of sustainable development, tourist demand, tourism resources, intragenerational equity and the impact of tourism on sociocultural progress. Community, activity and resource-based sustainability traditions are used to assess the limits on tourism growth (Saarinen, 2006). Sustainable tourism has been criticized in academics for its ambiguous definition, inconsistent implementation and inadequate attention to significant sub-issues (Butler, 1999). The literature has extensively examined tourism and sustainable development from both theoretical and practical perspectives (Hunter, 1997; Choi and Sirakaya, 2006; Saarinen, 2006), and the concern pertains to the practical and effective implementation of sustainable tourism (Sharples, 2000; Liu, 2003; Saarinen, 2006). Tourism should prioritize cultural and traditional sensitivity in its execution (Lu and Nepal, 2009; Buckley, 2012). Indicators were developed to monitor the progress of community tourism (Miller, 2001; Choi and Sirakaya, 2006).

4.2.2.2 Cluster 2: role of residents. The second-largest cluster, identified by its green, comprises articles focused on the role of residents in sustainability. Since the 1970s, there has been a significant increase in residents’ interest, leading to extensive research on their perceptions (Jurowski et al., 1997; Brunt and Courtney, 1999; Anderack et al., 2005; Byrd, 2007; Anderack and Nyaupane, 2011; Sharples, 2014; Muler Gonzalez et al., 2018) and attitudes (McCool and Martin, 1994; Gursoy and Rutherford, 2004; Byrd, 2007; Choi and Murray, 2010; Boley et al., 2014; Obrodović et al., 2021). Choi and Murray (2010) emphasized the importance of resident involvement in all stages of tourism development. Studies highlighted the significance of empowering residents in promoting sustainable
tourism development (Boley et al., 2014). For example, a framework is proposed to analyze the political, psychological, economic and social impacts of ecotourism on local communities, serving as a valuable tool for empowering them (Scheyvens, 1999). The Resident Empowerment Tourism Scale assesses the impact of tourism on residents’ perceptions (Boley et al., 2014). Community participation is a crucial determinant of support for sustainable tourism (Gursoy and Rutherford, 2004; Tosun, 2006; Okazaki, 2008; Lee, 2013; Pololikashvili, 2018). The articles in this cluster examined the crucial role of residents in the development of sustainable tourism, particularly focusing on the community-based model.

4.2.2.3 Cluster 3: eco-labeling and the role of stakeholders. Cluster 3, depicted in blue, investigates the growth of eco-labels and the role of tourists. Gössling (2002) identified the main domains of global environmental change impacted by tourism. Eco-labels are increasingly used in the tourism industry for environmental management. It is important to establish a link between these initiatives and public policy instruments, such as environmental legislation and standards (Buckley, 2002). Informant behavior regarding eco-labeled products is acknowledged as a well-established practice with the objective of maximizing environmental efficiency (Font, 2002). Studies have extensively examined the benefits of incorporating certification systems into corporate social responsibility implementation programs (Buckley, 2002; Ayuso, 2007). To achieve a broader impact, certification must be repositioned as a widely adopted business practice (Spenceley, 2019). Juvan and Dolnicar (2014) suggest that tourists are the most promising target for improving the environmental sustainability. Tourists often lack awareness of the social and environmental consequences, yet they recognize the potential for their actions to contribute to positive change (Miller et al., 2010). Clarke’s (1997) research played a crucial role in the development of Cluster 5, “composite indicators.” This cluster demonstrates the involvement of various stakeholders, with a particular focus on the environmental aspect of tourism.

4.2.2.4 Cluster 4: community-based tourism. Cluster 4, represented in yellow, focused on community-based tourism and the development of sustainability indicators. Developing nations would require comprehensive reforms in economic, administrative, legal and sociopolitical systems to execute a participatory tourism development model (Tosun, 2000). The goals of different interest groups were often incompatible, leading them to seek community involvement through various means (Tosun, 2006). Numerous studies within this cluster have examined community-based tourism in diverse countries, including the Gambia (Jones, 2005), North Queensland tourism destinations (Blackstock, 2005), Kenya (Manyara and Jones, 2007), Namibia (Lapeyre, 2010), Nicaragua (Zapata et al., 2011) and Tanzania (Salazar, 2012). Academic studies since the 1990s have emphasized the importance of producing consistent results and a transition toward the practical implementation of sustainability measures (Butler, 1999; Choi and Sirakaya, 2006). The research indicated that community involvement in tourism initiatives is essential for tourism sustainability and community livelihoods.

4.2.2.5 Cluster 5: effective governance and policymaking. Cluster 5 is the smallest cluster, in purple, which illustrates that effective governance and policymaking through indicators for measuring the sustainability of tourism is crucial (Bramwell and Lane, 2011; Hall, 2011). Governments at various levels are increasingly involved in the development and planning of tourist destinations (Ruhanen, 2013). Effective regulation leads to sustainable tourism production and consumption (Sharpley, 2021). Recent research has shifted focus from government-centric approaches to tourism-related decision-making toward governance models that prioritize the active participation of diverse social groups (Hall, 1999; Beaumont and Dredge, 2010). Collaborative governance in tourism will facilitate cooperation and consensus among various stakeholders by creating a shared platform for decision-making (Barandiarán et al., 2019). Project’s planning, implementation and control processes involve
the input of local stakeholders as a starting point. The systemic indicator system is a scientific framework designed to select and evaluate sustainability indicators for tourism destinations, considering the interconnectedness of sociocultural, economic and environmental challenges (Schianetz and Kavanagh, 2008). Indicators were established to measure community tourism development within a sustainable framework (Ko, 2005; Castellani and Sala, 2010). Choi and Sirakaya (2006) compiled 125 indicators to assess different dimensions of community tourism development, encompassing cultural (13), technological (3), economic (24), ecological (25), social (28) and political (32) aspects. However, ambiguity and limited data availability pose challenges to effectively using indicators (Torres-Delgado and Saarinen, 2014).

4.2.3 Keyword co-occurrence analysis. A keyword co-occurrence bibliometric map was created using a minimum keyword frequency of 15. This threshold was met by 133 out of a total of 6,577 keywords. In Figure 8, the keyword co-occurrence network map illustrates that the keyword “sustainable tourism” has the highest frequency of 1,754 among our documents. The term “ecotourism” appeared 766 times, with 727 in the year 2017. The terms “nature conservation,” “environmental education,” “environmental impact,” “natural resource,” “conservation of natural resources,” “policymaking,” “environmental policy” and “quality of life” were commonly used from 2010 to 2017 (see Figure 9).

Until 2017, researchers primarily focused on the environmental dimensions of sustainability. The terms “sustainability,” “sustainable development,” “tourism destination,” “tourism management” and “tourism development” have all become integral elements of sustainable tourism. These trends suggest a shift in research focus toward the creation and application of sustainable tourism indicators. These indicators are used in destination management for
various purposes, such as evaluating the overall quality of tourist destinations (Ko, 2005), implementing sustainable tourism policies (Yuksel et al., 2012), assessing resident attitudes (Yu et al., 2011), measuring tourist perception and behavioral intention (Wu and Geng, 2020) and evaluating proenvironmental behavior (Warren and Coghlan, 2016). Figure 9 illustrates progress in the fields, concepts and subjects. The terms “spatiotemporal analysis” and “COVID-19” are increasingly prominent in this domain. Since 2020, 35 research papers have been published examining the effects of COVID-19 on sustainable tourism, for example, changing tourism trends and reviving the tourism industry in the (post-) COVID world (Kitamura et al., 2020; Sharma et al., 2021a; Sulc and Fuerst-Bjelis, 2021); the impact of COVID-19 on consumers’ behavior toward sustainable consumption (Brzustewicz and Singh, 2021); and the impact of the global crisis on tourism research (Persson-Fischer and Liu, 2021). During the past 25 years, keywords such as Tanzania, Africa, Europe, Kenya, Australia, Malaysia, Italy and Indonesia have indicated that sustainable tourism has gained prominence in many countries, and the trend is moving toward the coverage of developing nations.

5. Discussion and future research direction

This research examines the progression of studies on sustainable tourism from 1997 to 2021. The field of sustainable tourism is gaining popularity, as indicated by the rising number of publications and citations (RQ1). Developing countries have initiated studies on sustainable tourism, indicating a significant potential for further research in these regions. The COVID-19 pandemic has significantly impacted the tourism industry and generated
new research prospects. Regarding the research with the most significant influence on sustainable tourism (RQ2), the top 20 cited publications encompass foundational studies and conceptual frameworks. The top 20 influential authors (see Table 4) have contributed to various ideas and facilitated robust cross-country research on sustainable tourism. Australia, the UK and the USA have a significant lead in the impact of their publications, despite extensive research efforts. Most of the scholarly articles on sustainable tourism are produced by scholars from developed nations. Romania and Indonesia, as developing nations, have emerged as influential countries, ranking among the top 10 globally. This finding is consistent with the results of Ruhanen et al. (2015) study, which demonstrated the correlation between sustainable tourism in developing countries and research focused on planning. Regarding the social structure of authors (RQ3), it is evident that authors tend to collaborate more frequently with other authors from their own country. The predominant form of collaboration occurs among researchers from different institutions within the same country. Authors from emerging economies such as Indonesia, Brazil, Iran and Egypt collaborate extensively with authors from other emerging economies. Authors often form alliances with others who share similar theoretical perspectives, collaborating closely within these groups. Ulker et al. (2022) indicate a strong collaborative network between the USA and China, as demonstrated by the coauthorship analysis.

The co-citation analysis (RQ4) reveals five thematic clusters that have shaped the sustainable tourism literature. These clusters include conceptualization and criticism, the role of residents, eco-labeling and the role of stakeholders, community-based tourism and effective governance and policymaking. The keyword co-occurrence analysis reveals the frequently used keywords that correspond to the thematic clusters obtained from the co-citation analysis (RQ5). Key terms like “sustainable tourism,” “ecotourism,” “sustainable development,” “tourism destination” and “tourism management” have evolved, as shown by the temporal trend. From 2010 to 2017, there was a shift in emerging nomenclature toward a stronger emphasis on the environmental dimension of sustainability and policymaking. In addition, there has been an increase in the coverage given to stakeholders, including residents, service providers and the government. The finding is consistent with the results of research conducted by Cavalcante et al. (2021), which also revealed a significant increase in scholarly works on local actors and provides an alternative perspective to the field of research, highlighting the significant role played by the local community. During the period from 2020 to 2021, the impacts that COVID-19 had on the tourism sustainability emerged. Yang et al. (2022) revealed that there was a significant increase in academic interest and collaboration on the subject of tourism and COVID-19, particularly in China, the USA and European nations.

The bibliometric analysis uncovered the potential for future contributions that might be addressed by scholars. This study has identified gaps as the basis for future research direction.

Indicators for measuring sustainable tourism goals within the context of sustainable development need to be developed.

5.1 Need for a scientifically advanced system of indicators for sustainable tourism

It is necessary to establish composite indicators to carry out practical assessments (Torres-Delgado and Saarinen, 2014; Blancas et al., 2016). Community tourism development is assessed using indicators derived from the sustainable model proposed by the World Tourism Organization (Miller, 2001). Destination growth is influenced by several interconnected social, economic and political factors. Comprehensive approaches are essential for the effectiveness of sustainability assessments. Composite sustainability indicators are valuable in this context, as they offer a comprehensive representation of sustainability, surpassing the limited scope of individual indicators (Schianetz and Kavanagh, 2008). The procedure of selecting and putting into practice sustainability indicators for tourism is complex (Blancas et al., 2016;
Asmelash and Kumar, 2019). The discussion has centered on categorizing variables to include economic, environmental, social or other components (Choi and Sirakaya, 2006), as well as identifying the procedure to aggregate and weight the variables chosen for the indicators (Lozano-Oyola et al., 2012). The challenge is to construct a scientifically advanced and methodologically sound system of sustainable tourism indicators that can be effectively used for decision-making purposes (Blancas et al., 2016).

5.2 Need for indicators that focus on small tourism enterprises or microorganizational level

According to Byrd (2007), the participation of all stakeholders is required to ensure sustainable tourism development. The host community benefits from the contributions of small business owners, residents and government officials, and it is important to recognize their role alongside larger corporations. Understanding the motivations and work patterns of entrepreneurs is critical, as their priorities are often individual well-being and quality of life related (Peters et al., 2019). A comprehensive set of indicators was developed to assess community tourism development across various dimensions, including cultural, technological, economic, political, ecological and social aspects (Choi and Sirakaya, 2006). Local and small businesses contribute to SDGs by generating social and economic benefits. Hence, there is a need to develop indicators that specifically focus on small tourism enterprises at the microorganizational level (Zapata et al., 2011).

5.3 Taking into account sustainable development goals

The SDGs address multidimensional issues at the intersection of socioeconomic and environmental systems (Diéguez-Castrillón et al., 2021). Given the interdependence of the goals and the impact of tourism on each of them, it is pertinent to consider and address all of these goals (Bejaković, 2019). There is a scarcity of appropriate indicators and metrics for SDGs and tourism. Most of the indicators that are now in use function on a national level, and certain SDGs do not have any indicators at all. The existing indicators need to be evaluated in terms of their alignment with the 17 SDGs (Diéguez-Castrillón et al., 2021).

5.4 Studies that investigate environmentally sustainable tourist behavior

Tourism research has not yet developed a comprehensive and generalized understanding of how to encourage environmentally sustainable behavior among tourists (Juvan and Dolnicar, 2016). The ongoing debate on environmental sustainability in the tourism industry has generated substantial empirical evidence, highlighting the environmental damage caused by human activities associated with tourism (Dolnicar, 2020; Viglia and Acuri, 2023). Consumers’ focus on immediate benefits is a major obstacle to the attainment of the long-term objectives of the sustainability paradigm (Tasci, 2017; Tasci et al., 2022). A brighter, more sustainable future for all humans is mapped out in the SDGs. Active participation from every individual is essential for the SDGs achievement (Han, 2021). Environmentally sustainable consumer behavior justifies the purchase of environmentally friendly items (Singh and Verma, 2017), recycling, reusability (Dong et al., 2020) and reduction, i.e. energy conservation (Garvey and Bolton, 2017; Geng et al., 2017; Wang and Wang, 2018). Environmental protection needs to be a deliberate choice made by visitors, and it is crucial to analyze the factors that affect their environmentally sustainable behavior (Sahabuddin et al., 2021; Kiatkawsin and Han, 2017).

5.5 Studies inculcating the role of technology in promoting sustainable tourism

Smart tourism brings a range of technological innovations to support sustainability and competitiveness (Buhalis, 2020). Research should explore the emerging technology potential in promoting tourism sustainability (Bastidas-Manzano et al., 2021; Loureiro and Nascimento, 2021), including the role of information and communications technologies.
(Valčić and Domšić, 2012; Ali and Frew, 2014), virtual reality reconstruction system link QuickTime virtual reality technology (Zhang and Zhu, 2012) and blockchain technology (Joo et al., 2021). Research is necessary to assess the potential of emerging technologies in promoting sustainability within the tourism sector (Loureiro and Nascimento, 2021).

6. Conclusion and limitations

Studies on sustainable tourism have increased significantly over the years. This study makes several significant contributions by tracing the development of academic research into environmentally sustainable tourism over the course of 25 years. It highlights the most prominent sources, research articles, countries and academicians, as well as the important works on this topic. The study provides aspiring academicians and researchers with an understanding of the many themes and concepts, as well as the opportunities for exploration presented by emerging areas. Sustainability is an ongoing process that requires monitoring to ensure positive outcomes in all relevant areas. Strong political leadership and informed participation are necessary (Dembovska and Zvaigzne, 2021). This study highlights the need for more research into sustainable tourism, suggesting that there are still areas that require exploration.

The current study has certain limitations. First, only the Scopus database was used for the bibliometric analysis. Future research could use the Web of Science and other databases for a more comprehensive analysis. Second, the retrieval of documents has been limited to the use of a single keyword. Future research in this field can explore alternative terminologies and additional related keywords. Further research could be conducted on the countrywide and regional contributions. From revising the definition and scope to emphasizing the involvement of residents in the development of sustainable tourism, adopting the community-based model, the role that tourists play in promoting environmental sustainability, establishing sustainability indicators and effective governance, there are many aspects of sustainable tourism that need to be improved. These emerging trends can serve as a valuable starting point for scholars to investigate previously unexplored aspects of sustainable tourism. Practitioners can acquire knowledge of current theoretical issues relevant to the tourism industry. Practitioners should take into consideration, comprehend and incorporate different aspects of sustainable tourism into their decision-making. Residents’ attitudes and perceptions are critical for the promotion of sustainability. Sustainable tourism indicators should therefore be used as tools for destination management to transform the dynamics of the tourism industry.

References


Further reading


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