Bali Journal of Hospitality, Tourism and Culture Research Volume 3 No.1 (2025)
ISSN 3031-8580 (Online)
ISSN XXXX-XXXX (Print)

BALI JOURNAL OF HOSPITALITY, TOURISM AND CULTURE RESEARCH

Journal Homepage: www.baliacademicpublishing.com

Exploring Research Trends in Sustainable Mountain and Rural Tourism (SMRT): A Bibliometric Study with Biblioshiny and VOSviewer

Vipan Kumar[1], Ashish Nag[2], Suman Sharma[3], Rohit Thakur[4], Ajay Bisht[5*]
University of Himachal Pradesh, Dharamshala, India[1,2,3,4], University of Dev Bhoomi, Uttarakhand, India[5]
vipantanti@gmail.com[1], anaag81@hpcu.ac.in[2], sumantourism@hpcu.ac.in[3], tourismteacher.rt@gmail.com[4], hm.ajay@dbuu.ac.in[5]

Corresponding Author: hm.ajay@dbuu.ac.in

ABSTRACT
Mountain and rural tourism constitute significant segments of the global tourism industry, offering unique natural, cultural, and recreational experiences. This study presents a bibliometric analysis of sustainable mountain and rural tourism literature from 1990 to 2025, drawing on Scopus-indexed articles and utilising tools such as VOSviewer and Biblioshiny to identify key research themes, influential authors, and geographic trends. Major contributor countries include China, Spain, the United Kingdom, and Italy. Emerging topics cover socioeconomic empowerment, gender dynamics, rural population changes, and tourism development, with an emphasis on balancing economic growth and environmental conservation. The rise in demand, partly fuelled by increased health awareness and urban stress, underscores the importance of sustainable approaches that integrate community participation, policy innovation, and environmental stewardship. This synthesis highlights the critical role of mountain and rural tourism in fostering resilient economies and ecosystems while preserving cultural heritage, offering a roadmap for future research and sustainable development strategies.

ARTICLE HISTORY
Sent 24-August-2025
Accepted 26-August-2025
Approved 20-November-2025
Published 01-December-2025

KEYWORDS
Sustainable Mountain Tourism, Rural Tourism, Bibliometric Analysis, Vosviewer, Biblioshiny

1. Introduction

Sustainable Mountain and Rural Tourism (SMRT) has emerged as a critical area of tourism research due to its capacity to stimulate local economic development while preserving environmentally fragile ecosystems and culturally distinctive communities (Lane, 1994; Dobre et al., 2024). Mountain regions represent one of the most significant tourism destination types worldwide, attracting visitors through natural landscapes, recreational opportunities, and cultural heritage resources (Dhungana, 2024; Ng, 2022). In parallel, rural tourism has been recognised as a complementary development strategy that emphasises authentic experiences, local participation, and close interaction with natural and agricultural environments (Dax & Tamme, 2023; Lun et al., 2016).

Despite their development potential, mountain and rural destinations face structural constraints and environmental vulnerabilities that complicate tourism growth. These

CONTACT Language Assistance tcr@balilanguageassistance.com

regions are commonly characterised by ecological sensitivity, limited infrastructure, pronounced seasonality in tourism demand, and heightened exposure to climate change impacts, including extreme weather events and changing snow regimes (Nag et al., 2024; Mitra & Paul, 2025). When tourism development is inadequately managed, these conditions can intensify environmental degradation and socio-cultural pressures, undermining destination sustainability (Higham & Miller, 2018).

To address these challenges, the literature increasingly advocates low-impact and sustainability-oriented tourism models, such as ecotourism, agritourism, wellness tourism, and cultural heritage tourism (Sanagustín Fons et al., 2011; Kumar et al., 2025). These approaches aim to minimise environmental stress, reduce seasonal dependency, and enhance equitable benefit distribution among host communities. Community-based tourism frameworks are particularly emphasised in mountain and rural contexts, as they strengthen local participation, support livelihood diversification, and contribute to conservation outcomes through inclusive governance mechanisms (Okazaki, 2008; Sharma et al., 2025).

Effective implementation of SMRT further depends on supportive policy frameworks and coordinated stakeholder engagement across governance levels, particularly in relation to organisational and economic dimensions of mountain tourism management (Almasov & Orujov, 2025). Balancing economic development with environmental stewardship and cultural preservation remains a persistent challenge, especially as demand for nature-based and rural tourism continues to grow globally (Wijijayanti et al., 2023).

The rapid expansion of academic literature in this field has generated the need for systematic evaluation of research trends, intellectual structures, and thematic evolution. Bibliometric analysis offers an objective and replicable methodological approach for assessing scientific production, identifying influential authors and journals, and mapping collaboration networks and emerging research themes (Aria & Cuccurullo, 2017; Montalvo-Falcón et al., 2023). Accordingly, this study conducts a comprehensive bibliometric analysis of SMRT literature indexed in the Scopus database from 1990 to 2025. Guided by six specific research questions and employing Biblioshiny and VOSviewer, the study examines publication growth patterns, core journals, leading authors and institutions, country-level contributions, citation structures, and keyword co-occurrence networks, thereby providing a robust quantitative foundation for advancing future research and informing sustainable tourism policy and management.

The purpose of this study was to use bibliometric analysis to examine the publications on Sustainable Mountain and Rural Tourism (SMRT) in the Scopus database. This approach allows us to identify the trends in SMRT research and provide recommendations for future studies. Our research aims to address the following topics:

1. How does Bradford's Law help identify the most important journal sources in Sustainable Mountain and Rural Tourism (SMRT)? What is the general growth trend in scholarly publications on SMRT from 1990 to 2025?
2. How does Lotka's Law explain the distribution of authorship and contributions in this field? Who are the most prolific and significant authors in SMRT research?
3. Which universities and countries produce the most SMRT research? What trends emerge in contributions globally and across different regions?
4. How does international collaboration show up in SMRT research? Which countries and groups have the strongest global research partnerships and co-authorship networks?
5. How can citation and co-citation studies reveal the intellectual framework and key works in SMRT? Which publications and authors are cited the most in this area?

6. Which keywords are most common and relevant in the SMRT literature? What new research trends and theme clusters emerge from keyword co-occurrence analysis? How does Zipf's Law explain their distribution?

2. Literature Reviews

Existing bibliometric studies on tourism sustainability have primarily examined broad domains such as sustainable tourism (Bhatt et al., 2022), rural tourism (Bozok et al., 2017; Rosalina et al., 2021), mountain tourism (Ng, 2022), and specific thematic areas including wetland tourism and gastronomy tourism (Choudhary et al., 2024; Kumar et al., 2025). While these studies provide valuable insights into publication trends, influential authors, and dominant themes, most are limited by shorter temporal scopes, narrower thematic focus, or the application of a single bibliometric tool. In particular, prior research often treats mountain tourism and rural tourism as separate analytical domains, despite their conceptual and spatial interdependence in sustainability discourse. Moreover, many existing bibliometric analyses rely exclusively on either Biblioshiny or VOSviewer, restricting the depth of performance evaluation and science-mapping capabilities. To address these limitations, the present study offers a comprehensive bibliometric analysis of Sustainable Mountain and Rural Tourism (SMRT) literature over a 35-year period (1990–2025) using Scopus-indexed publications and integrates both Biblioshiny and VOSviewer to enable a multidimensional assessment of research productivity, intellectual structure, collaboration networks, and thematic evolution. By combining an extended temporal coverage with dual analytical tools and a unified SMRT framework, this study fills a critical gap in the literature and provides a robust quantitative baseline for advancing future research and policy-oriented scholarship in sustainable mountain and rural tourism.

3. Research Methods

The Scopus database was used as the primary data source for this study and was accessed on 07 July 2025. Scopus is widely recognised as a comprehensive and reliable bibliographic database due to its extensive coverage of peer-reviewed journals, low document duplication rate, and robust indexing across multidisciplinary research domains. To ensure a comprehensive retrieval of relevant literature, the following search string was applied:

TS = (“Mountain tourism” OR “Rural tourism”) AND “Sustainab*”

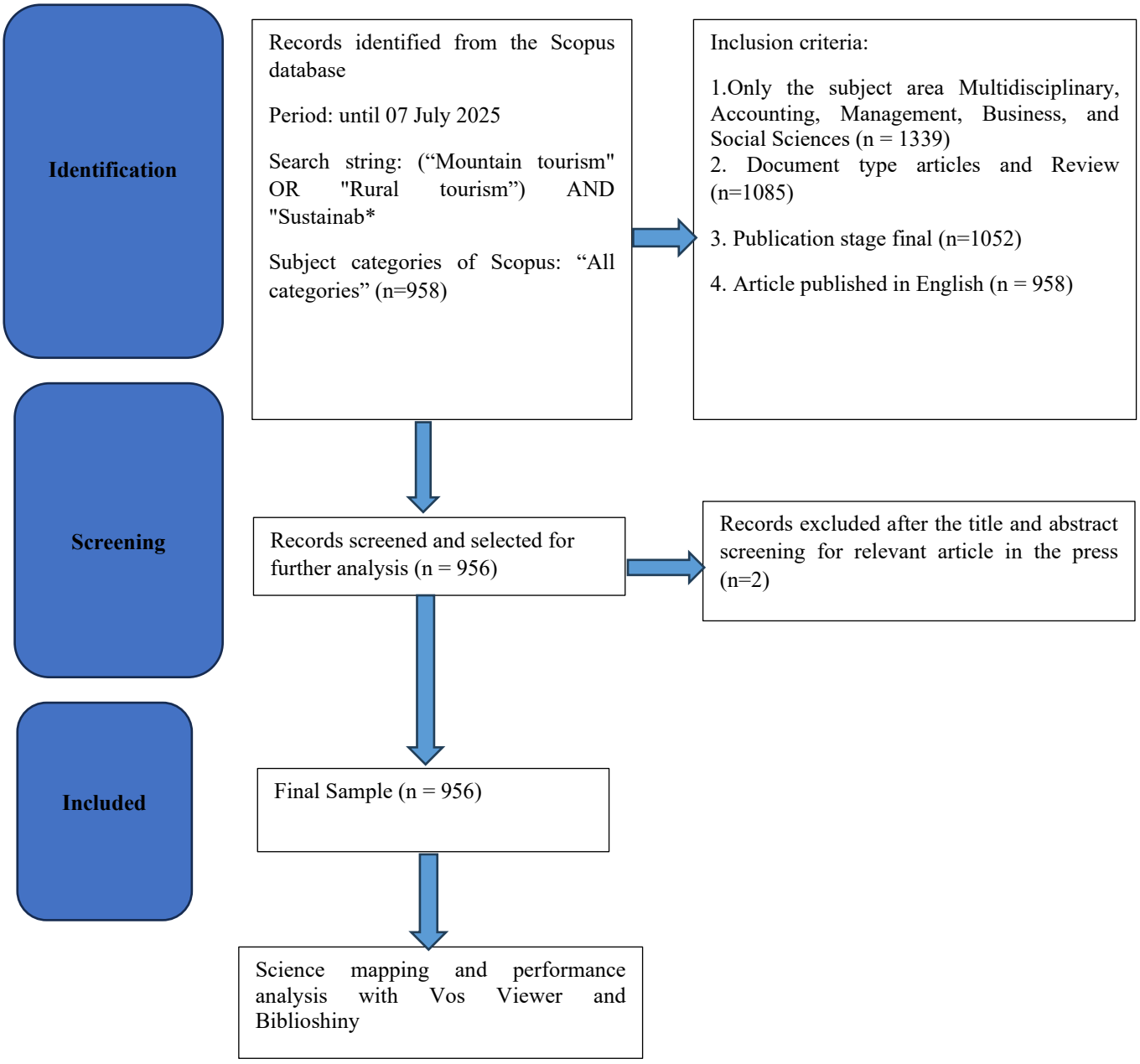
The initial search yielded 1,190 documents published between 1990 and 2025. A systematic screening and selection process was then conducted in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. The identification, screening, eligibility, and inclusion stages of the selection process are illustrated in Figure 1.

During the screening process, documents were filtered based on predefined inclusion criteria: 1. Subject areas limited to Multidisciplinary, Business, Management, Accounting, and Social Sciences; 2. Document types restricted to research articles and review papers; 3. Final publication stage; and 4. English-language publications only. Following the removal of duplicates and irrelevant records, a final sample of 956 documents was retained for bibliometric analysis.

The selected dataset was analysed using Biblioshiny, the web-based interface of the Bibliometrix R-package, and VOSviewer. These tools enabled the examination of publication performance indicators, citation structures, authorship patterns, collaboration networks, and keyword co-occurrence relationships. The combined application of Biblioshiny and VOSviewer ensured both descriptive performance analysis and advanced science-mapping visualisation, thereby strengthening the methodological robustness of the

study. The application of classical bibliometric laws, including Bradford's Law and Lotka's Law, enables a structured interpretation of source concentration and author productivity patterns within the SMRT literature (Kalipçi, 2024).

Figure 1. Screening by using the PRISMA methodology



4. Result and Discussion

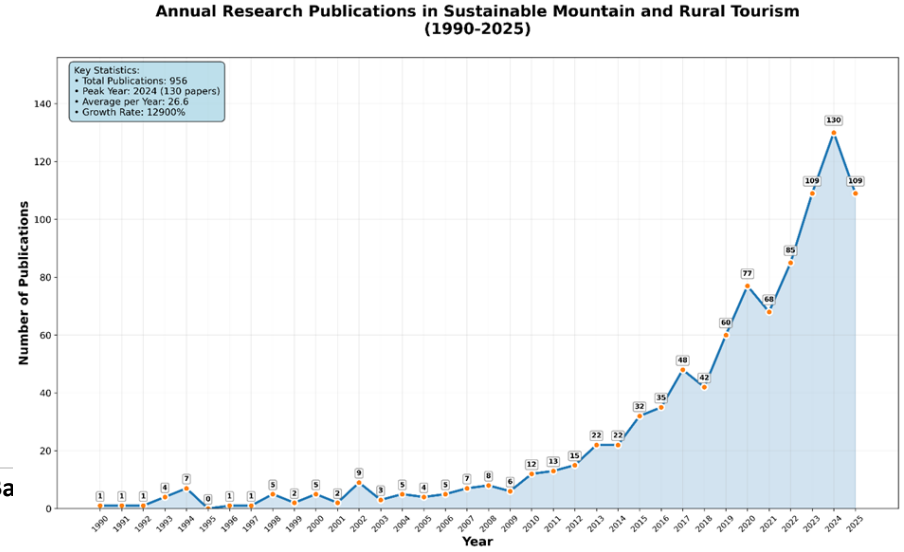
Figure 2. An overview of the key data extracted from RStudio (Biblioshiny)

With 956 publications from 273 sources, this bibliometric study covers a significant amount of work from 35 years (1990–2025) and boasts a healthy 14.34% per annum growth. With a total of 52,179 references and an average of 26.89 citations per document, the 6.04-year-old study corpus, on average, has a significant intellectual impact. A 2,518-author collective research community, 87% of whom contribute to multi-authored work (an average of 3.3 co-authors per document), support the field's 2,629 author keywords and 1,396 Keywords Plus terms rich keyword diversity. There is significant global research participation in international collaborations, 24.16% contribution to all collaborations. With a higher proportion of research papers (921) than review papers (35), the document collection shows an active field with ongoing empirical research and frequent synthesis attempts.

A rich and well-developed research area with a strong development path and global cooperation is disclosed by this bibliometric overview. Strong scholarly significance is signalled by the high citation rate and large reference base, and an ever-evolving subject with constant new findings is implied by the dominance of research papers over reviews.

4.1. Number of Documents Published:

Figure 3. Development Path of Scholarly Works in Sustainable Mountain and Rural Tourism Studies, 1990-2025

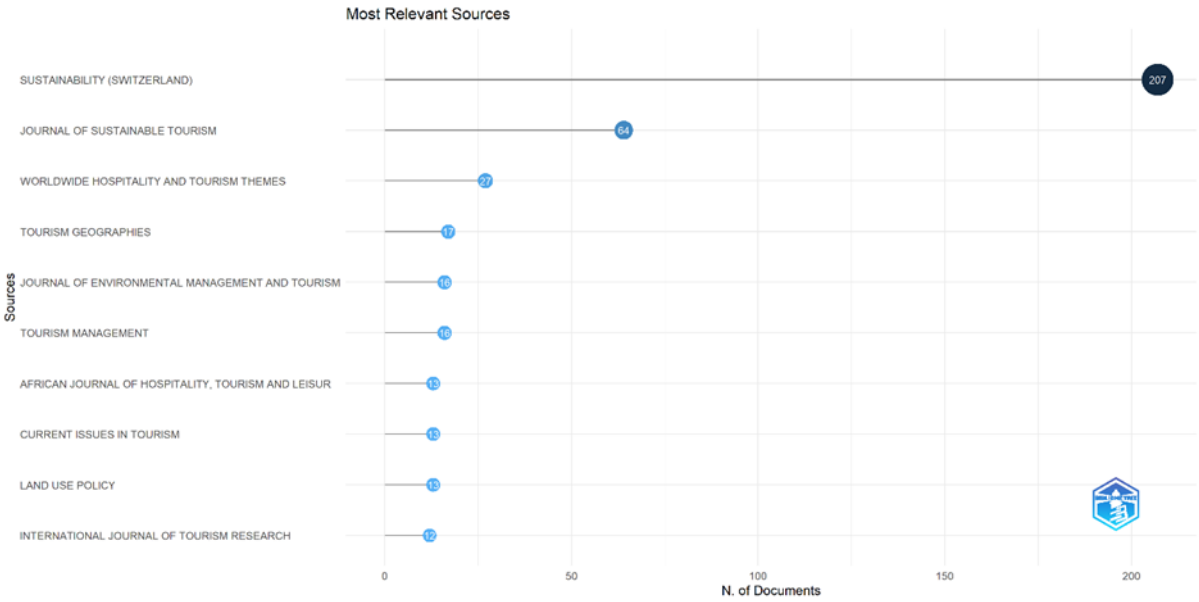


The selected dataset was analysed using Biblioshiny, the web-based interface of the Bibliometrix R-package, and VOSviewer. These tools enabled the examination of publication performance indicators, citation structures, authorship patterns, collaboration networks, and keyword co-occurrence relationships. The combined application of Biblioshiny and VOSviewer ensured both descriptive performance analysis and advanced science-mapping visualisation, thereby strengthening the methodological robustness of the study.

This chart shows the dramatic growth in sustainable mountain and rural tourism (SMRT) research from 1990-2025. Publications remained minimal (under 10 annually) through the early 2000s, then began steady growth starting around 2010. The field experienced exponential expansion from 2015 onward, with publications jumping from 35 in 2016 to 130 in 2024, the peak year. The 12,900% growth rate reflects the transformation from a niche research area to a major academic field. Research output appears to level off slightly in 2025 at 109 publications. The total of 956 publications demonstrates how this field has evolved from occasional studies to a robust research domain, likely driven by increasing awareness of sustainable tourism practices and environmental concerns in mountain regions.

4.2. Most Relevant Journal Sources:

Figure 4. Leading Journals in Sustainable Mountain and Rural Tourism Research Publications

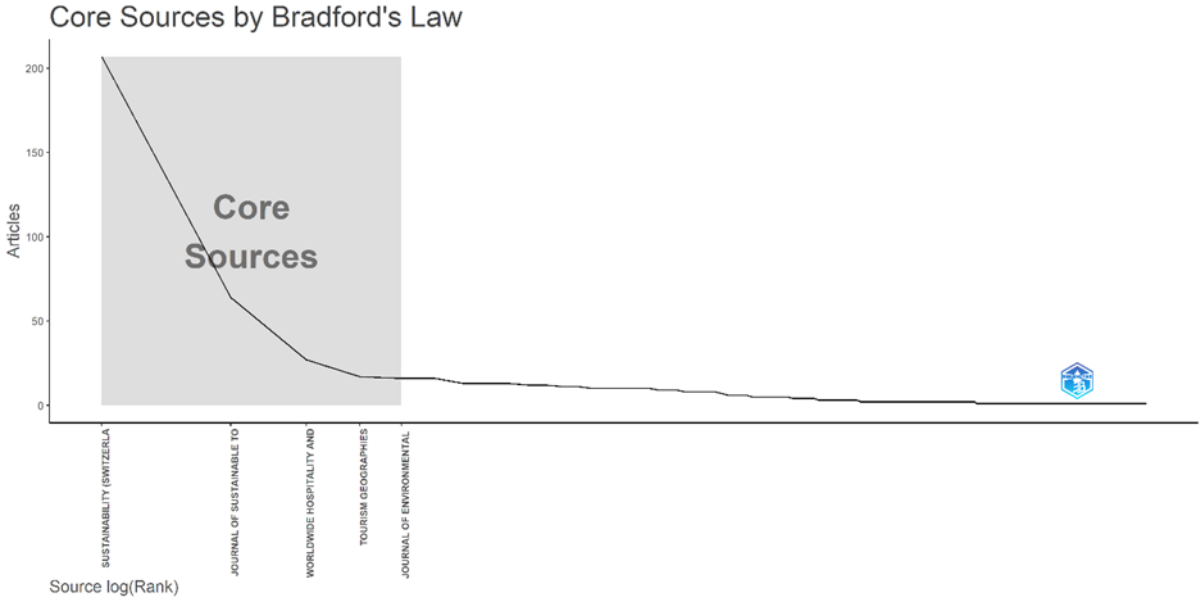


The top ten journals publishing research on rural tourism and sustainable mountain tourism are represented in this data. With 207 publications, sustainability (Switzerland) is the field leader and publishes over 20% of all research output. With 64 publications, the Journal of Sustainable Tourism is in second position, followed by Worldwide Hospitality and Tourism Themes with 27. Most of the leading publishers are tourism-oriented journals, such as Tourism Geographies (17), Tourism Management (16), and Current Issues in Tourism (13). Land Use Policy (13), Journal of Environmental Management and Tourism (16), and other policy and environmental journals are also well represented. The dominance of sustainability as the main outlet for this study theme is reflected in the distribution, which has a high cluster in the leading journal with a sharp drop-off to other journals.

4.3. Sustainable Mountain and Rural Tourism Research: An Examination of the Distribution of Fundamental Sources Using Bradford's Law:

Bradford's Law illustrates that scientific paper distribution is in a regular pattern where journals fall into zones with an identical number of papers, each next zone geometrically requiring more journals. As Bradford proposed in the 1930s, not everything published in a scientific area is published at the same level, and so it is not necessary to read everything (KALIPÇI, 2024). This graph clearly shows Bradford's principle applied to literature on sustainable mountain and rural tourism. Sustainability (Switzerland) is the central source with more than 200 papers, a high-productivity zone that scientists would search first. The exponential decay curve shows the typical Bradford distribution, where a few central journals hold most relevant papers and many peripheral journals add little. According to Bradford's guidelines on journal selection by the quality of information, scientists can target Sustainability and the few other central sources in the shaded area for full coverage of this specialist area.

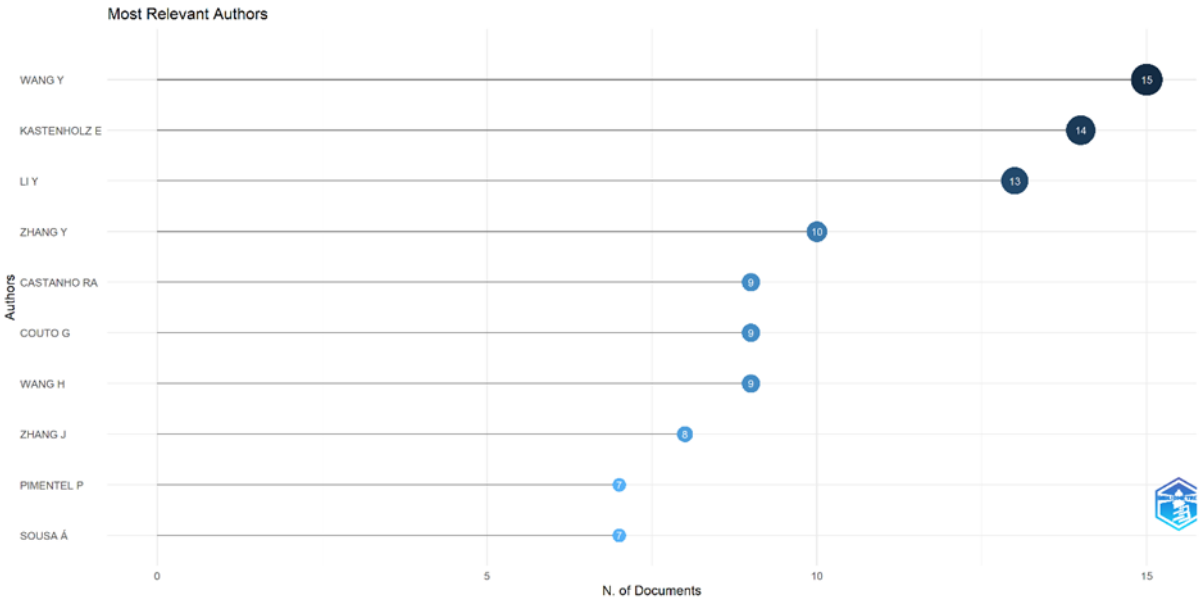
Figure 5. Showing The Segregation of The Core, Intermediate, And Peripheral Journal Zones on The Basis Of Publishing Productivity in Sustainable Mountain And Rural Tourism Research, Clearly Demonstrates How Bradford's Law Is Applied.



4.4. Most relevant authors in Sustainable Mountain and Rural Tourism by number of articles published and fractionalized are:

This chart lists the most productive authors of sustainable mountain and rural tourism research by frequency of publication. Wang Y stands alone with 15 publications, followed by Kastenholz E with 14 and Li Y with 13. Distribution is apparent, with a top tier of highly productive authors, with several Chinese experts (Wang Y, Li Y, Zhang Y, Wang H, Zhang J) in leadership positions alongside European researchers such as Kastenholz E. The remaining authors (Zhang Y, Castanho RA, Couto G, Wang H, Zhang J, Pimentel P, and Sousa A) each had 7-10 publications, which is a relatively high concentration of authors within this niche research area.

Figure 6. Leading Writers in Research on Sustainable Mountain and Rural Tourism



4.5. Lodka's Law Distribution in Research Authorship for Sustainable Mountain and Rural Tourism:

A key bibliometrics principle, Lotka's Law, examines the scholarly work of authors in an area. It claims that a few numbers of extremely productive authors are in charge of a significant portion of the total publications, whilst the majority of authors only contribute one publication (KALIPÇI, 2024).

Figure 7. Frequency Distribution of Scientific Productivity of Authors.

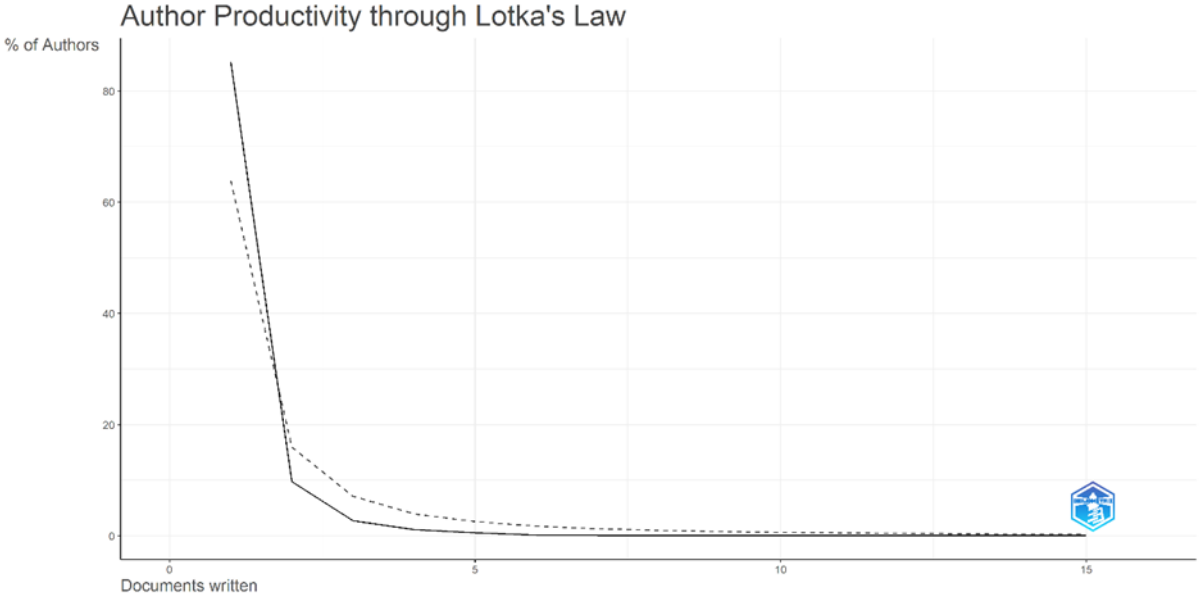


Table 1. Lodka's Law

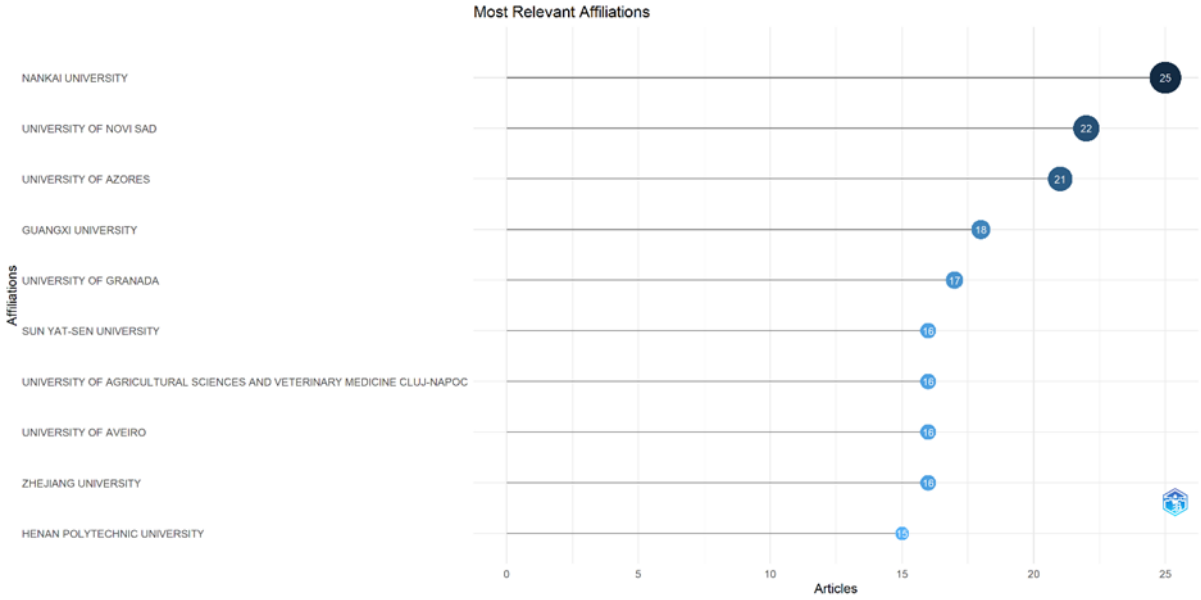
Written documents	Total number of authors	Proportion of Authors
1	2147	0.853
2	246	0.098
3	69	0.027
4	28	0.011
5	14	0.006
6	4	0.002
7	2	0.001
8	1	0.000
9	3	0.001
10	1	0.000

This study verifies Lodka's Law in studies of sustainable mountain and rural tourism, where the overall trend is that the majority of authors are low-productive, with few high-productive authors. Of the overall number of authors, 771 authors (70.85%) had only a single publication, reflecting the overall clustering of sporadic authors in scholarly studies. The trend follows as expected, with the reverse ratio of 69 authors (6.09%) with 2 publications, 12 authors (0.027%) with 3 publications, and a few authors with successively higher productivity levels. Only 4 authors reached the highest productivity level with 15 publications each, fewer than 0.001% of all contributors, but contributing disproportionately to the overall output. The trend precisely captures Lodka's principle that scholarly production is controlled by a small elite of high-productive researchers, and the remainder are sporadic contributors to the field.

4.6. Performing Universities for Research on Sustainable Mountain and Rural Tourism

This data ranks the top 10 most productive academic institutions publishing in sustainable mountain and rural tourism studies. The highest is Nankai University, China, with 25 publications, followed by the University of Novi Sad, Serbia (22) and the University of Azores, Portugal (21). Chinese universities are also well represented, with four universities in the top rankings: Nankai University, Guangxi University (18), Sun Yat-Sen University (16), Zhejiang University (16) and Henan Polytechnic University (15). European universities are also well represented, with Serbia, Portugal, Spain, Romania, and Hungary having universities in the top rankings. The distribution is extremely evenly spread among top institutions, with publication numbers ranging from 15-25, indicating an evenly spread global effort and not one institution dominating the activity.

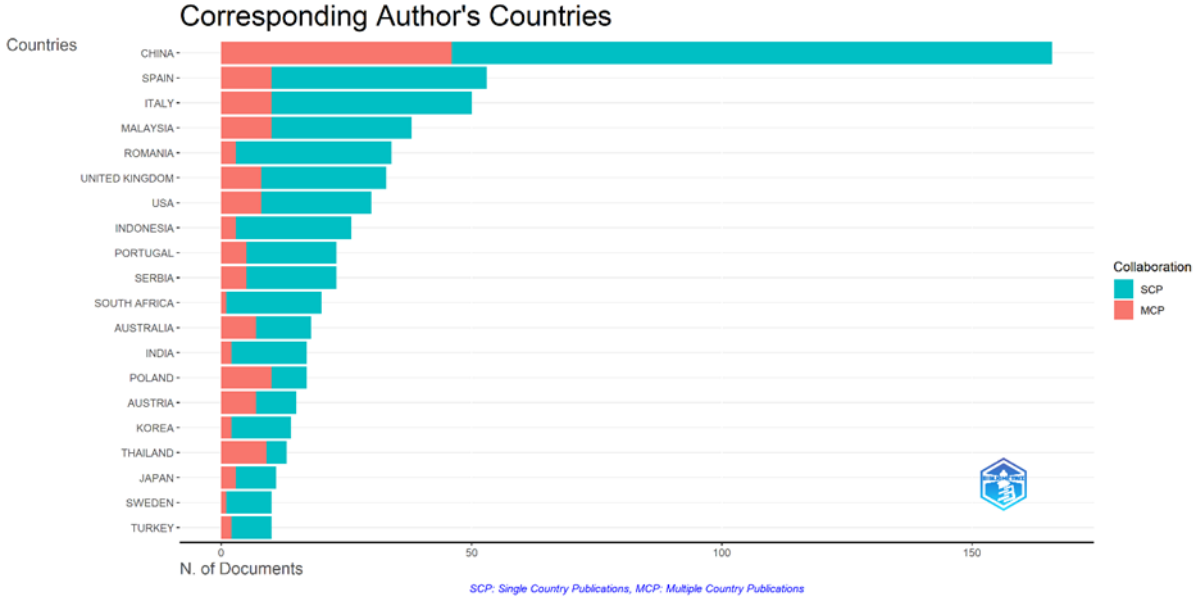
Figure 8. Top 10 Most Productive Institutions in Sustainable Mountain and Rural Tourism Research



4.7. By Country:

China leads sustainable mountain and countryside tourism studies with 166 papers, the highest number of papers from any nation. European nations are also well represented with Spain (53), Italy (50), Romania (34), the UK (33), Portugal (23), Serbia (23), Poland (17), Austria (15), Sweden (10), and Turkey (10). Asian nations also contribute significantly with Malaysia (38), Indonesia (26), Korea (14), Thailand (13), Japan (11), and India (17). Other contributors include South Africa (20), Australia (18), and the USA (30). The distribution indicates China's dominance in research but also extensive international contributions from across Europe, Asia, and other parts of the world, an indicator of global intellectual interest in sustainable mountain and countryside tourism issues.

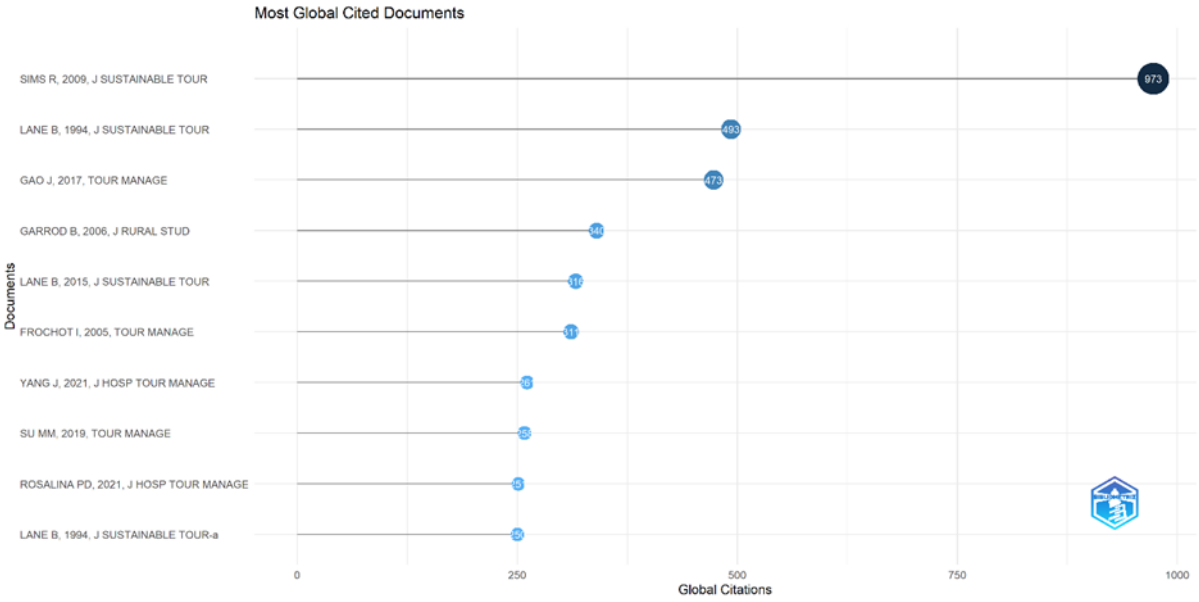
Figure 9. Top 10 Most Productive Institutions in Sustainable Mountain and Rural Tourism Research



4.8. Most Cited Publications in Sustainable Mountain and Rural Tourism Research:

This table displays the top 10 most cited research papers in sustainable rural and mountain tourism literature, illustrating the field's recent classic contributions. Sims (2009), Journal of Sustainable Tourism article tops the list with 973 citations, being the most cited paper in the field. Lane appears twice in the top list with papers published in 1994 (493 citations) and with (Lane & Kastenholz) in 2015 (316 citations), illustrating continued contribution to the field. Tourism Management and Journal of Sustainable Tourism are the two top journals with highly cited research, with several articles in each journal. The range of citations is between 250-973, illustrating high scholarly influence and impact. More recent papers, such as (Yang et al., 2021) and (Rosalina et al., 2021), illustrates the field's continued development with high early citation performance. The range of 1994-2021 illustrates the history of development in the field and consistent scholarly interest in sustainable tourism practices.

Figure 10. Most Cited Publications in Sustainable Mountain and Rural Tourism Research (Top 10 by Citation Count)



4.9. Keywords Most Applicable to Sustainable Mountain and Rural Tourism Research:

This keyword examination identifies the most prevalent themes in sustainable mountain and rural tourism studies in Figure 11. "Tourism development" tops at 244 references, followed by "sustainable development", 215, and "rural area", 195, indicating developmental orientation in the field. "Ecotourism", 194, and "sustainability", 175, indicate environmental orientation, while "China", 144, indicates research prominence in the country. Other top words are "tourism", 130, "rural development", 121, "tourist destination", 107, and "tourism management", 72, indicating the field's multidisciplinary orientation in development, management, and sustainability directions.

Figure 11. Most Frequent Keywords in Sustainable Mountain and Rural Tourism Research Literature

4.10. Utilising Zipf's Law to Determine the Distribution of Keyword Frequencies in Bibliographic Documents:

Table 2. Authors' Keywords and Keywords Plus Frequency Distributions

Authors keywords				Keywords plus			
Keyword	Rank(r)	Frequency(f)	Product(r*f)	Keyword	Rank(r)	Frequency(f)	Product(r*f)
Rural Tourism	1	467	467	Tourism Development	1	244	244
Sustainable Development	2	140	280	Sustainable Development	2	215	430
Sustainability	3	89	267	Rural Area	3	195	585
Sustainable Tourism	4	89	356	Ecotourism	4	194	776
Tourism	5	68	340	Sustainability	5	175	875
Rural Development	6	55	312	China	6	144	864
Mountain Tourism	7	45	315	Tourism	7	130	910

Agritourism	8	28	224	Rural Development	8	121	968
China	9	27	243	Tourist Destination	9	107	963
Rural Areas	10	27	270	Tourism Management	10	72	720
Sustainable Rural Tourism	11	22	242	Perception	11	47	517
Agriculture	12	20	240	Rural Economy	12	44	528
Ecotourism	13	20	260	Tourism Economics	13	43	559
Community-Based Tourism	14	16	224	Stakeholder	14	42	588
Rural Revitalization	15	16	240	Tourism Market	15	39	585

Figure 12. World Clouds. (a) Authors' Keywords (b) Keywords Plus

(a) (b)

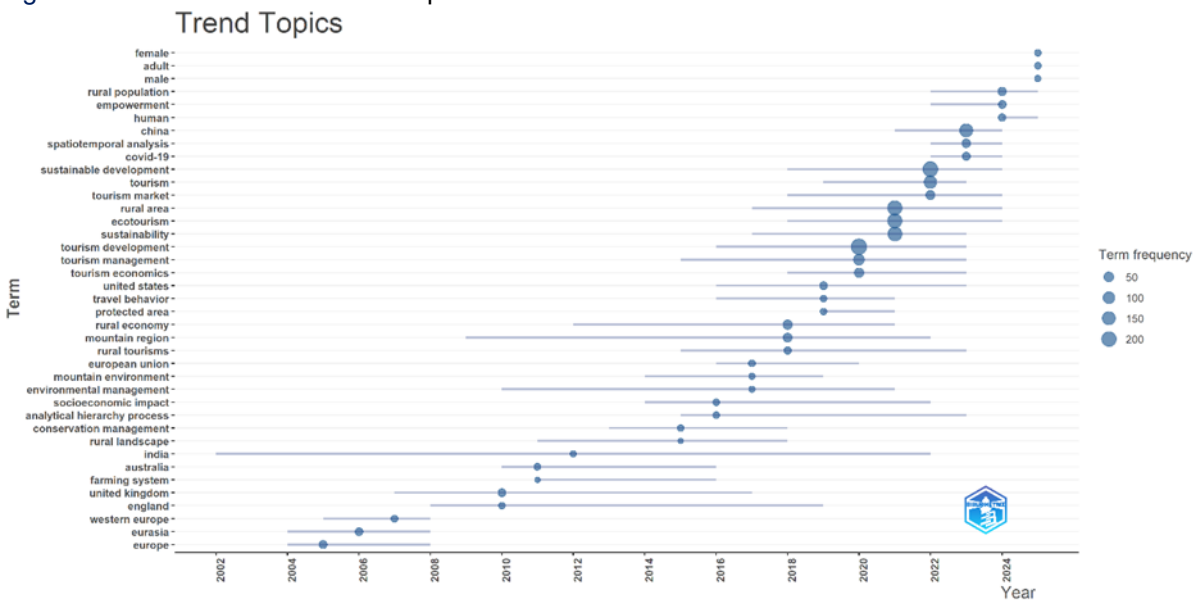
With the use of Zipf's Law of Word Occurrence, the frequency distribution of the most common terms was examined. Zipf's Law states that if keywords are arranged in decreasing order of frequency, with "r" standing for rank and "f" for frequency, the result should stay the same. However, the original formulation of Zipf's Law ($r \times f = c$) does not apply to the current bibliographic information, as shown by the frequency data for Keywords Plus and the keywords of the top 15 authors in Table 2 and Figure 12 (World Clouds) (Bhatt et al., 2022).

4.11. Emerging Research Themes and Temporal Trends in Sustainable Mountain and Rural Tourism:

This trend analysis represents the temporal evolution of research themes in sustainable mountain and rural tourism between 2002 and 2024. Early research (2002-2010) responded to initial themes like "Europe," "Western Europe," and "farming systems," establishing spatial and sectoral benchmarks. Mid-term research (2010-2018) evolved into

niche themes like "conservation management," "rural landscape," "environmental management," and "mountain environment," reflecting greater environmental issues. Recent years (2018-2024) mirror the intensification of such leading issues as "sustainable development," "tourism," "ecotourism," and "rural area," with increased bubble size indicating higher frequency of study. The temporal trend demonstrates the evolution of the field from simple geographical studies to complex models of sustainability. Contemporary studies feature demographic issues (such as "female," "male," "rural population") and analysis methods (such as "spatiotemporal analysis"), indicating methodological progress and social inclusivity of contemporary studies.

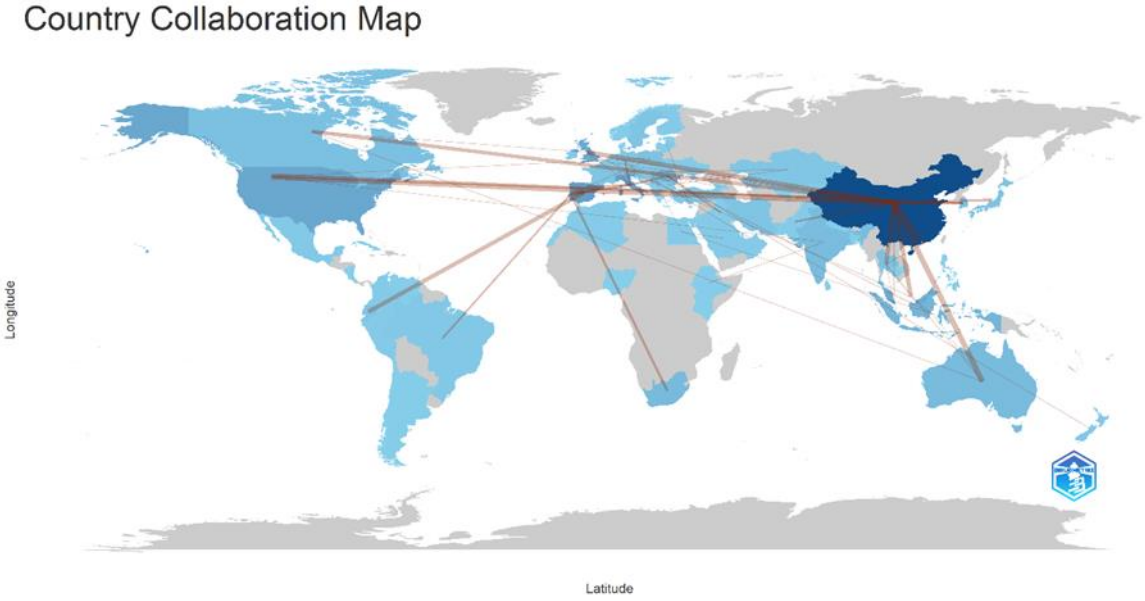
Figure 13. Evolution of Research Topics in Sustainable Mountain and Rural Tourism



4.12. Global Collaboration Patterns in Sustainable Mountain and Rural Tourism:

This collaboration map portrays international research partnerships in sustainable mountain and rural tourism, revealing significant bilateral cooperation patterns. China stands out as the leading collaborative hub, collaborating most often with the USA (15 collaborations), Australia (12), and several other nations, including Malaysia, the UK (9 each), Hong Kong, and Thailand (7 each). Spain illustrates high cross-border research activity, most notably with Ecuador (8 collaborations) and Portugal (7), signifying close Ibero-American academic connections. The evidence reveals China's wide-ranging international research network, working with varied countries on different continents, like Canada (6) and Japan (4). European collaboration is a case in point through the Spain-Portugal partnership, illustrating regional academic integration. These collaborations illustrate the truly global nature of the field, with research moving beyond geographical and cultural borders. The frequencies of collaboration indicate research networks that are well-established and enable comparative studies and exchange of knowledge in sustainable mountain and rural tourism across various geographical and cultural settings.

Figure 14. Evolution of Research Topics in Sustainable Mountain and Rural Tourism

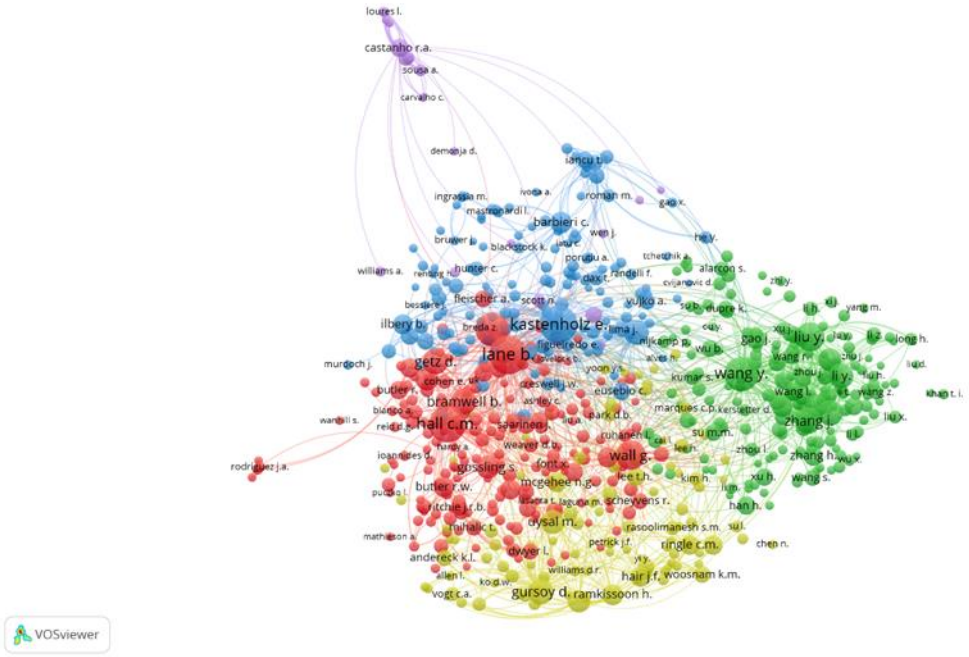


4.13. Top Citation and Co-Citation Network Analysis Authors:

Applying the full counting method, we performed an analysis with co-citation as the type and cited authors as the unit. 652 authors among 58,971, each of whom had at least 20 citations, met the condition. With 137,543 links and a total link strength of 682,134, these 652 authors were placed in five clusters to generate a fully connected set. The authors' total co-citation link strength was the criterion for selection. Cluster 1, coloured red, is the biggest with 203 items. Cluster 2, coloured green, consists of 183 items and has a link strength of 7298. Cluster 3, coloured blue, consists of 145 items, and Cluster 4, coloured yellow, consists of 102 items. Cluster 5, coloured purple, is the smallest with 19 items.

Figure 15 illustrates the co-authorship network of authors in bibliographic citations, grouped into five different clusters. In Cluster 3 (Blue), the most cited author is Kastenholz, E., with 645 links, 372 citations, and a total link strength of 19,123. In Cluster 1 (Red), the most cited one is Lane, B., with 396 citations, 646 links, and a total link strength of 17,909. Wang, Y., at the head of Cluster 2 (Green), has 319 citations, 640 links, and a total link strength of 16,775. The most prominent author in Cluster 4 (Yellow) is Uysal, M., with 153 citations, 612 links, and a total link strength of 8,780. Lastly, in Cluster 5 (Purple), Castanho, R.A. is the most prominent, with 92 citations, 219 links, and a total link strength of 4,195.

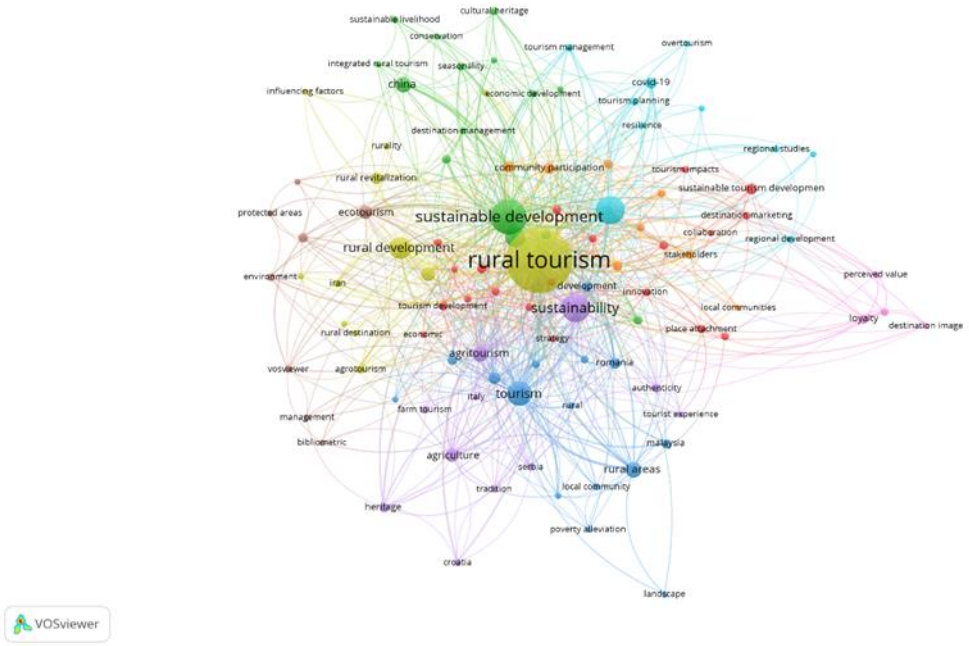
Figure 15. Co-citation network of authors.



4.14. Co-Occurrence Analysis of the Keywords Used by the Authors:

Co-occurrence refers to how often items, like keywords, happen together in a document, forming a network around their common frequency. By looking at these co-occurrences, it helps identify similar phrases and theme clusters (Ali & Gölgeci, 2019; Choudhary et al., 2024). The factors considered in the analysis employed the full counting method, imposing a minimum requirement of five keyword occurrences. 103 keywords among. 2,629 met this requirement. The collective. The strength of the 103 keywords' co-occurrence linkages with other keywords was found. 103 keywords and 9 clusters made it to the final study after selecting the keywords with the strongest overall link strengths. Cluster 1 (Red) contains the highest number of 20 items, with "Social Capital" having the highest connectivity (15 links), total link strength (24), and 11 occurrences within the group. Cluster 2 (Green) comprises 15 items, with "Sustainable Development" exhibiting the highest connectivity (69 links), total link strength (258), and 140 occurrences in the group, ranking second among all 103 keywords. "Tourism" has the most connectedness (51 links), total link strength (145), and occurrences in the group, ranking 5 out of all 103 keywords. Cluster 3 (Blue) also has 15 items. Out of all 103 keywords, “Rural Tourism” ranks first in terms of connectedness (98 links), total link strength (656), and occurrences (467). There are an additional 12 items in Cluster 4 (Yellow).

Figure 16. Co-occurrence of authors' keywords



Out of the 11 items in Cluster 5 (Purple), "Sustainability" has the maximum connectivity (56 links), total link strength (175), and 89 occurrences. "Sustainable tourism" has the highest connectivity (54 links), total link strength (149), and 89 occurrences among the ten items in Cluster 6 (Teal). Out of the eight elements in Cluster 7 (Amber), "community participation" has the maximum connectedness (16 links), total link strength (28), and 14 occurrences. Out of the eight items in Cluster 8 (Mauve), "Ecotourism" has the highest connectivity (26 links), total link strength (43), and 20 occurrences. Out of the four items in Cluster 9 (Violet), "Loyalty" has the maximum connectivity (11 links), total link strength (26), and 10 occurrences.

4.15. Country Clusters and Key Collaborators in the Global Co-Authorship Network:

The co-authorship analysis was based on countries as the unit of analysis and involved complete counting. 55 out of 95 countries had more than the inclusion threshold, but only 53 of them formed one connected network. Once the choice was made to display the largest connected set, the analysis showed 53 countries grouped into 7 distinct clusters. Total co-authorship link strength to other nations was computed for all 53 countries.

Figure 17. International co-authorship network.

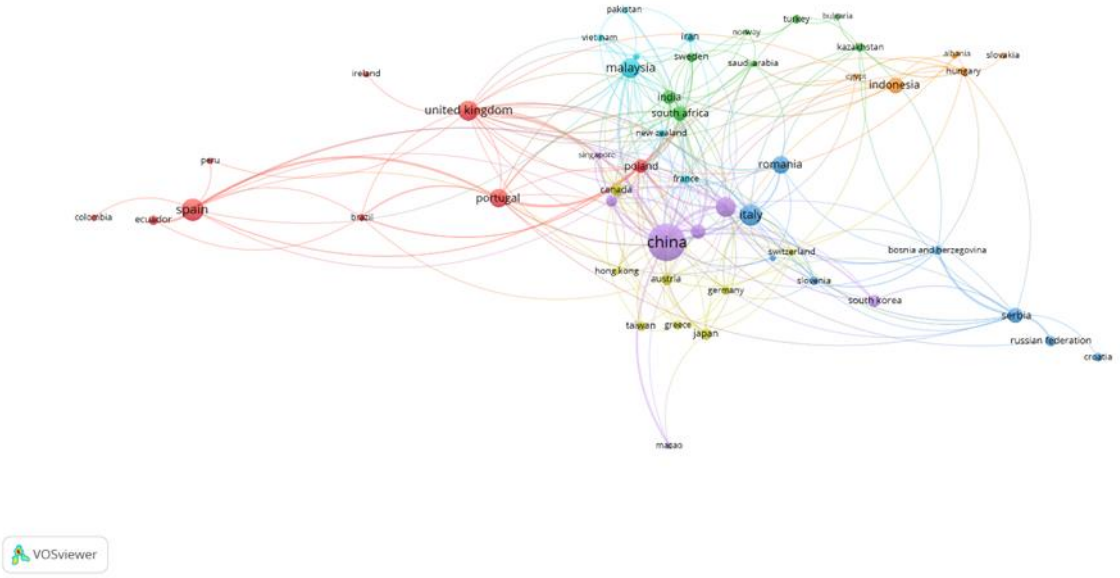


Table 3. 53 countries are shown in the table, arranged according to clusters, along with the Documents, Links, and Total Link Strength figures that go with each.

Cluster	Country (Documents, Links, Total link Strength)	Cluster total documents	Cluster total link	Cluster total link strength
1	Brazil (9,6,10), Colombia (6,1,1), Ecuador (15,2,10), Ireland (6,1,1), Peru (6,2,2), Poland (28,20,39), Portugal (52,11,33), Spain (75,12,28), United Kingdom (61,21,37)	258	76	161
2	Bulgaria (5,2,3), India (28,18,20), Kazakhstan (13,9,11), Norway (5,5,5), Saudi Arabia (6,9,11), South Africa (32,13,20), Sweden (14,9,9), Turkey (12,5,5)	115	70	84
3	Bosnia and Herzegovina (11,9,18), Croatia (11,1,1), Italy (66,17,34), Netherlands (6,6,7), Romania (45, 9, 13), Russian Federation (17,2,6), Serbia (35,3,27), Slovenia (13,9,10)	204	66	116
4	Austria (19,593,18), Canada (22,965,27), Germany (12,779,14), Greece (12,231,6), Hong Kong (9,231,13), Japan (19,428,17), Switzerland (7,224,19), Taiwan (14,521,6)	114	85	118
5	Australia (30,16,33), China (202,30,112), Macao (6,3,8), Singapore (6,9,11), South Korea (22,5,11), Thailand (20,15,29), United States (61,25,48)	346	103	252
6	Finland (7,9,10), France (13,12,16), Iran (15,8,8), Malaysia (58,16,33), New Zealand (9,15,16), Pakistan (6,4,7), Vietnam (9,8,10)	117	72	100
7	Albania (5,2,2), Egypt (5,6,9), Hungary (12,10,13), Indonesia (39,9,14), Slovakia (7,1,1), Ukraine (5,4,4)	73	32	43

A co-authorship network of 53 countries is presented in Figure 15 and Table 3. There are seven clusters of countries' collaboration: the red (cluster 1) has 9 countries, the green (cluster 2), blue (cluster 3), and yellow (cluster 4) each has 8 countries, the purple (cluster 5) and teal clusters (cluster 6) has equal 7 countries, and the Amber (cluster 7) has only 6 countries. The leading countries in cluster 5 (green)—Australia, China, Macao, Singapore, South Korea, Thailand, and the United States —stand out in the co-authorship network due to their exceptional scholarly output, linkages, and overall collaborative strength. These countries exhibit the highest values, with 346 documents, 103 co-authorship links, and a cumulative link strength of 252, underscoring their central role in international scientific collaboration. Brazil, Colombia, Ecuador, Ireland, Peru, Poland, Portugal, Spain, and the United Kingdom are the most significant nations in the red cluster 1. Bulgaria, India, Kazakhstan, Norway, Saudi Arabia, South Africa, Sweden, and Turkey are in the green cluster. 2. Bosnia and Herzegovina, Croatia, Italy, the Netherlands, Romania, the Russian Federation, Serbia, and Slovenia are in the blue cluster. 3. Austria, Canada, Germany, Greece, Hong Kong, Japan, Switzerland, and Taiwan are in the yellow cluster 4. Finland, France, Iran, Malaysia, New Zealand, Pakistan, Vietnam are in the teal cluster 5. Albania, Egypt, Hungary, Indonesia, Slovakia, Ukraine are in the Amber cluster.

Figure 18. The strongest collaboration between countries

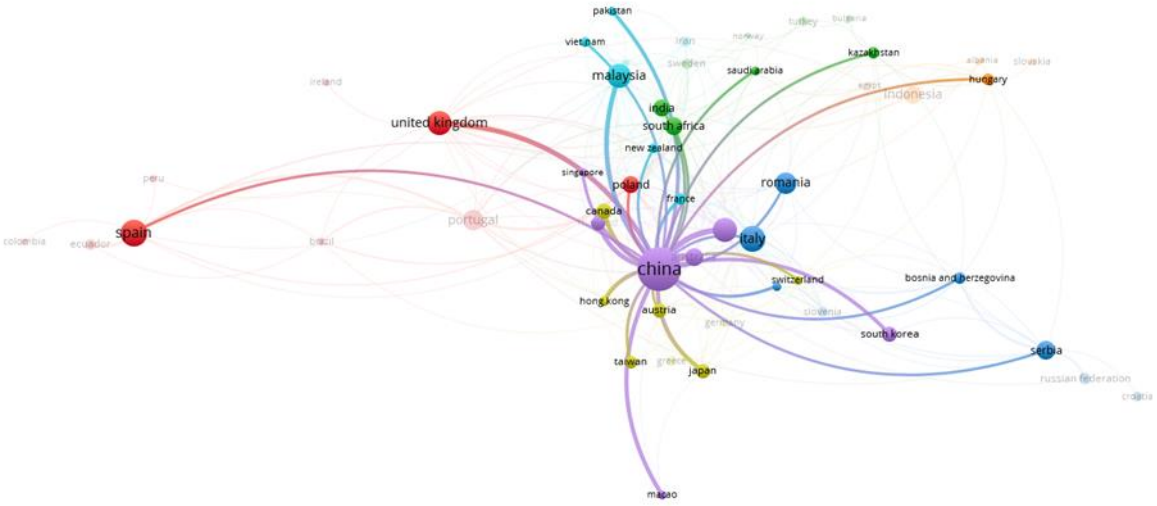


Figure 18 shows that the strongest cooperative ties in the network are grouped around China, Spain, the United Kingdom, Malaysia, Romania, Hungary, India, Thailand, Serbia, Kazakhstan, Saudi Arabia, South Koria, Bosnia and Herzegovina, Switzerland, Japan, Taiwan, Macao, Hong Kong, Austria, Canada, France, Poland, Singapore, New Zealand, South Africa, Pakistan, Vietnam marks these nations as central hubs of international scientific cooperation in Sustainable Mountain and Rural Tourism.

5. Conclusion

This study advances the Sustainable Mountain and Rural Tourism (SMRT) literature by offering a comprehensive bibliometric synthesis of Scopus-indexed research published

between 1990 and 2025. Beyonddocumnetby integrating an extended temporal scope with dual analytical tools—Biblioshiny and VOSviewer—the study moves beyond fragmented or theme-specific bibliometric assessments and establishes a robust quantitative baseline for understanding the intellectual structure and evolution of SMRT research.

From a theoretical perspective, the findings demonstrate that SMRT research is grounded in an interdisciplinary knowledge base that integrates sustainability theory, rural development frameworks, community-based tourism models, and destination management scholarship. The dominance of themes related to sustainable development, rural tourism, ecotourism, and community participation indicates a conceptual convergence around sustainability-oriented development paradigms. At the same time, the emergence of newer themes—such as demographic dimensions, spatial analysis, and governance—reflects a gradual theoretical expansion toward more inclusive and systems-based approaches. These patterns suggest that SMRT has transitioned from descriptive and location-focused inquiry to a more analytically mature research domain concerned with resilience, equity, and long-term sustainability.

From a managerial and policy perspective, the study provides evidence-based insights that are relevant for destination planners, policymakers, and tourism managers operating in mountain and rural contexts, particularly in addressing sustainability challenges and strategic destination governance (Bisht et al., 2025). The concentration of influential research within a limited number of core journals and the prominence of specific thematic clusters highlight the importance of adopting integrated planning approaches that balance environmental conservation with socio-economic development. The strong emphasis on community-based and low-impact tourism models underscores the need for participatory governance mechanisms, local capacity building, and stakeholder collaboration to enhance destination resilience and ensure equitable benefit distribution. Furthermore, the identified patterns of international collaboration suggest opportunities for cross-regional knowledge transfer and comparative policy learning, particularly among destinations facing similar environmental and developmental constraints.

Despite its contributions, this study is not without limitations. The analysis is restricted to Scopus-indexed publications and English-language documents, which may exclude relevant regional or non-indexed scholarship. Future research could address these limitations by incorporating additional databases, expanding linguistic coverage, and applying mixed-method approaches that combine bibliometric analysis with qualitative content analysis. Further studies may also focus on comparative regional analyses or examine the alignment between academic research trends and on-the-ground policy implementation in mountain and rural destinations.

Overall, this study strengthens the empirical and conceptual foundations of SMRT research by mapping its knowledge structure, thematic priorities, and collaborative dynamics. By shifting the focus from descriptive growth patterns to theoretical integration and managerial relevance, the findings contribute to the advancement of sustainable tourism scholarship and provide actionable insights for guiding policy and practice in environmentally and socially sensitive destination contexts.

References

Ali, I., & Gölgeci, I. (2019). Where is supply chain resilience research heading? A systematic and co-occurrence analysis. *International Journal of Physical Distribution & Logistics Management, 49*(8), 793–815. https://doi.org/10.1108/IJPDLM-02-2019-0038

Almasov, N., & Orujov, E. (2025). Organizational and economic aspects of mountain tourism management. *BIO Web of Conferences, 151*, 03015. https://doi.org/10.1051/bioconf/202515103015

Aria, M., & Cuccurullo, C. (2017). Bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics, 11*(4), 959–975. https://doi.org/10.1016/j.joi.2017.08.007

Bhatt, K., Seabra, C., Kabia, S. K., Ashutosh, K., & Gangotia, A. (2022). COVID-19 crisis and tourism sustainability: A bibliometric analysis. *Sustainability, 14*(19), 12151. https://doi.org/10.3390/su141912151

Bisht, A., Kumar, V., Thakur, V., & Rana, R. (2025). Sustainable tourism management: Challenges and strategic solutions for a resilient industry. *International Journal of Tourism and Hotel Management, 7*(1), 48–55. https://doi.org/10.22271/27069583.2025.v7.i1a.124

Bozok, D., Kılıç, S. N., & Özdemir, S. S. (2017). Bibliometric analysis of rural tourism in tourism literature. *Journal of Human Sciences, 14*(1), 187–202. https://doi.org/10.14687/jhs.v14i1.4274

Choudhary, V., Nag, A., Kumar, A., & Kumar, V. (2024). Wetland tourism: A bibliometric analysis (1985–2022). *Journal of Tourismology, 10*(2), 1–18. https://doi.org/10.26650/jot.2024.1444196

Dax, T., & Tamme, O. (2023). Attractive landscape features as drivers for sustainable mountain tourism experiences. *Tourism and Hospitality, 4*(3), 374–389. https://doi.org/10.3390/tourhosp4030023

Dhungana, B. R. (2024). Tourism policy for sustainable mountain tourism: A systematic literature review. *Journal of Tourism and Himalayan Adventures, 6*(1), 45–57. https://doi.org/10.3126/jtha.v6i1.67390

Dobre, C., Linca, A. C., Toma, E., & Iorga, A. (2024). Sustainable development of rural mountain tourism: Insights from consumer behavior and profiles. *Sustainability, 16*(21), 9449. https://doi.org/10.3390/su16219449

Higham, J., & Miller, G. (2018). Transforming societies and transforming tourism: Sustainable tourism in times of change. *Journal of Sustainable Tourism, 26*(1), 1–8. https://doi.org/10.1080/09669582.2018.1407519

Kalipçi, M. B. (2024). Exploring the nexus of tourism and technology acceptance: A bibliometric analysis. *Journal of Tourism and Gastronomy Studies, 12*(1), 29–41. https://doi.org/10.21325/jotags.2024.1367

Kumar, A., Nag, A., Kumar, V., & Sharma, P. (2025). Gastronomy tourism in Himachal Pradesh: A sustainable approach to community empowerment and cultural preservation. In *Global sustainable practices in gastronomic tourism* (pp. 1–16). IGI Global. https://doi.org/10.4018/979-8-3693-7096-4.ch020

Lane, B. (1994). What is rural tourism? *Journal of Sustainable Tourism, 2*(1–2), 7–21. https://doi.org/10.1080/09669589409510680

Lane, B. (1994). Sustainable rural tourism strategies: A tool for development and conservation. *Journal of Sustainable Tourism, 2*(1–2), 102–111. https://doi.org/10.1080/09669589409510687

Lane, B., & Kastenholz, E. (2015). Rural tourism: The evolution of practice and research approaches. *Journal of Sustainable Tourism, 23*(8–9), 1133–1156. https://doi.org/10.1080/09669582.2015.1083997

Lun, L. M., Pechlaner, H., & Volgger, M. (2016). Rural tourism development in mountain regions. *Journal of Quality Assurance in Hospitality & Tourism, 17*(4), 389–411. https://doi.org/10.1080/1528008X.2015.1096754

Mitra, A., & Paul, S. (2025). Balancing mountain tourism, cultural heritage, and environmental stability. In *Sustainable tourism perspectives* (pp. 31–54). IGI Global. https://doi.org/10.4018/979-8-3693-8764-1.ch003

Nag, A., Kumar, V., Choudhary, V., Kumar, A., & Sharma, R. (2024). Nurturing nature and local well-being in the hills of Himachal Pradesh. In *Managing tourism and hospitality sectors for sustainable global transformation* (pp. 1–12). IGI Global. https://doi.org/10.4018/979-8-3693-6260-0.ch011

Ng, S. L. (2022). Bibliometric analysis of literature on mountain tourism in Scopus. *Journal of Outdoor Recreation and Tourism, 40*, 100587. https://doi.org/10.1016/j.jort.2022.100587

Okazaki, E. (2008). A community-based tourism model: Its conception and use. *Journal of Sustainable Tourism, 16*(5), 511–529. https://doi.org/10.1080/09669580802159594

Rosalina, P. D., Dupre, K., & Wang, Y. (2021). Rural tourism: A systematic literature review on definitions and challenges. *Journal of Hospitality and Tourism Management, 47*, 134–149. https://doi.org/10.1016/j.jhtm.2021.03.001

Sanagustín Fons, M. V., Fierro, J. A. M., & Patiño, M. G. (2011). Rural tourism: A sustainable alternative. *Applied Energy, 88*(2), 551–557. https://doi.org/10.1016/j.apenergy.2010.08.031

Sims, R. (2009). Food, place and authenticity: Local food and the sustainable tourism experience. *Journal of Sustainable Tourism, 17*(3), 321–336. https://doi.org/10.1080/09669580802359293

Wijijayanti, T., Salleh, N. H. M., Hashim, N. A., Mohd Saukani, M. N., & Abu Bakar, N. (2023). The feasibility of rural tourism in fostering real sustainable development. *GeoJournal of Tourism and Geosites, 46*(1), 336–345. https://doi.org/10.30892/gtg.46137-1031

Yang, J., Yang, R., Chen, M. H., Su, C. H., Zhi, Y., & Xi, J. (2021). Effects of rural revitalization on rural tourism. *Journal of Hospitality and Tourism Management, 47*, 35–45. https://doi.org/10.1016/j.jhtm.2021.02.008