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The Intersection of Civil Aviation and the Tourism Industry: A Bibliometric Analysis

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Abstract

This study provides a comprehensive bibliometric map of the research at the intersection of civil aviation and tourism. A corpus of 477 records from the Web of Science (1985-2025) was analyzed using performance analysis and science mapping techniques. The analysis reveals a rapidly consolidating field built upon four core thematic pillars: (1) connectivity and market structure, (2) tourism demand and performance, (3) passenger experience, and (4) sustainability and resilience. A decisive thematic shift towards sustainability and resilience is evident in recent years, driven by climate pressures and systemic shocks like the COVID-19 pandemic. The findings also confirm a core-periphery structure in author and institutional collaboration networks. The resulting map provides a crucial baseline for future research and informs policy coordination for a more resilient and sustainable aviation-tourism system.

1. Introduction

Civil aviation and tourism are deeply interdependent systems. Air transport is fundamental to tourism, as it enhances destination accessibility, shapes the spatial distribution of tourist flows, and facilitates international mobility. Conversely, tourism demand directly influences airline network design, airport investments, and regulatory decisions (Papatheodorou, 2021; Spasojević, Lohmann, & Scott, 2018). Improvements in connectivity, driven by direct routes, increased flight frequencies, and the expansion of low-cost carriers (LCCs), are consistently linked to measurable gains in tourist arrivals. However, the causal relationship is often bidirectional, with tourism demand also stimulating the supply of air services (Koo, Lim, & Dobruszkes, 2017; Vergori & Arima, 2022). Furthermore, service quality at airports and on board affects passenger satisfaction, destination choice, and the competitiveness of tourism markets (Bakır, Özdemir, Akan, & Atalık, 2022). These factors collectively underline the strong economic, social, and policy interdependence of the aviation-tourism nexus.

The vulnerability of this nexus becomes evident during global shocks, a reality starkly demonstrated by the COVID-19 pandemic. The pandemic triggered the steepest contraction in modern aviation history, as international tourist arrivals fell by approximately 74% in 2020 and global passenger traffic declined by around 60% (ICAO, 2021; UNWTO, 2021). The resulting crisis, marked by significant regional variations in exposure and recovery, consequently accelerated scholarly interest in resilience, risk management, and crisis preparedness (Gössling, Scott, & Hall, 2020). Simultaneously, the sector faces mounting sustainability pressures. Aviation contributes about 2.5% of global CO_2 emissions, with additional non-CO_2 effects amplifying its climate impact (Ritchie, 2024). In response, international governance is increasingly integrating carbon reduction targets into aviation operations. Key policy examples include ICAO's CORSIA framework and the European Union's ReFuelEU Aviation regulation (European Commission, 2025; ICAO, 2024). These shifts are redirecting scholarly attention from traditional themes of connectivity and service quality toward decarbonization pathways, environmental accountability, and greener operational models.

Although prior reviews have addressed specific aspects of aviation and tourism—such as connectivity and route development (Koo et al., 2017), passenger experience and Prior reviews have addressed specific aspects of the aviation-tourism nexus—including connectivity and route development (Koo et al., 2017), passenger experience and service quality (Bakır et al., 2022), and sustainability challenges (Su, Lin, & Zhu, 2022). Despite these contributions, a comprehensive, data-driven mapping of the entire field is still lacking. Existing studies remain fragmented, often limited by narrow scopes, single-case approaches, or incomplete bibliometric coverage (Spasojević et al., 2018; Papatheodorou, 2021). To address this

critical gap, the present study employs a systematic and reproducible bibliometric analysis to provide the first comprehensive map of the aviation-tourism research nexus over a 40-year period. This study makes several distinct contributions to the literature. First, it moves beyond fragmented reviews by quantitatively identifying the four core thematic pillars that form the field's intellectual backbone: (i) connectivity and market structure, (ii) tourism demand and destination performance, (iii) passenger experience, and (iv) the rapidly emerging focus on sustainability and resilience. Second, the analysis provides empirical evidence of the field's recent and decisive thematic shift towards decarbonization and crisis response, a trend that has accelerated since the late 2010s in response to global policy shifts and systemic shocks like the COVID-19 pandemic. Finally, by mapping the field's social and intellectual structures, the study reveals the key authors, institutions, and collaboration networks driving the discourse. In doing so, it offers a holistic and dynamic baseline that consolidates decades of scholarship and charts a clear path for future research.

The article is structured as follows. Section 2 reviews key literature on the aviation–tourism interface. Section 3 presents the data and methodological framework. Section 4 reports findings from performance and science-mapping analyses, while Section 5 concludes with theoretical and practical implications, limitations, and future research directions.

2. Literature Review

Aviation and tourism form an intrinsically coupled system in which air transport expands destination accessibility and reshapes the spatial economics of travel, while tourism demand feeds back into airline network design, airport investment, and regulatory agendas grounded in microeconomics and economic geography (Wild, 2024; Dileep & Pagliara, 2023).

2.1. The Foundational Role of Air Connectivity in Tourism

Foundational reviews argue that shifts in the aeropolitical environment, such as liberalization and open-skies agreements, directly impact tourism flows through changes in connectivity and airfares. These studies highlight the central role of access costs and network structure in destination development (Duval, 2013; Papatheodorou, 2021). The expansion of low-cost carriers (LCCs) is a prime example, with their evolving spatial strategies in Europe shown to reconfigure market access and reshape regional tourist mobility (Dobruszkes, 2013; Kınıklı, 2025). However, while systematic evidence corroborates this interdependence, it also shows that knowledge remains fragmented across transport and tourism journals, with varied definitions of "connectivity" that complicate the comparison of findings (Spasojević, Lohmann, & Scott, 2018).

A substantial body of empirical work confirms this link, demonstrating how policy and business model shifts directly stimulate tourism. Liberalization episodes, for instance, have proven effective; the EU-Morocco "open skies" agreement spurred tourism via LCC competition (Dobruszkes & Mondou, 2013), while similar transatlantic scenarios were predicted to significantly increase arrivals (Mayor & Tol, 2007). The network reconfiguration by LCCs has been particularly influential in shifting the geography of access (Dobruszkes, 2013). European LCC strategies have expanded tourist opportunities beyond primary hubs, with evidence from Italy showing how improved air access helps regions capture larger shares of tourists (Vergori & Arima, 2022), and other studies indicating durable advantages for secondary airports with a sustained LCC presence (Jiménez et al., 2020).

However, the research also highlights significant complexities in measuring this relationship. The causality between air service and tourism demand is often bidirectional, and studies must account for this endogeneity to produce credible estimates (Koo et al., 2017). Furthermore, the magnitude of these effects is highly context-dependent, varying with factors such as market distance (Tang, 2023) and the availability of competing transport modes. This underscores that while route entry and network design can create new demand, rigorous methodology is central to credible inference (Koo et al., 2017).

2.2. Service Quality and the Passenger Experience

Research on the passenger interface situates the airport as a strategic touchpoint in the tourism value chain. Studies consistently show that airport service quality (ASQ)—a multidimensional construct including factors from efficiency to ambience—is a strong predictor of passenger satisfaction and behavioral intentions, such as airport reuse and even destination choice (Bezerra & Gomes, 2015; Bezerra & Gomes, 2016; Prentice & Kadan, 2019). This link is managerially significant, with standardized survey programs now widely used to guide airport investments (ACI World, 2025a; 2025b). Further research clarifies that subjective perceptions of quality do not always align with objective operational metrics, and that even in price-sensitive low-cost carrier markets, service quality remains a key driver of loyalty (Tiernan, Rhoades, & Waguespack, 2008; Saha & Theingi, 2009; Kızılgeçi, 2024).

2.3. Systemic Shocks and the Emergence of Resilience Research

The literature confirms that the aviation-tourism system is highly sensitive to shocks, a vulnerability starkly exposed by the COVID-19 pandemic, which triggered a historic collapse in travel and exposed tightly coupled vulnerabilities (Gössling, Scott, & Hall, 2020; ICAO, 2021; UNWTO, 2021). Studies documented the immediate impacts, including a temporary "re-wiring" of the global air transport network with reduced connectivity (Sun, Wandelt, & Zhang, 2020). Research on the recovery phase highlighted significant heterogeneity, noting that domestic markets and low-cost carriers generally rebounded faster than long-haul and network carriers (Gudmundsson, Cattaneo, & Redondi, 2021; Suau-Sanchez, Voltes-Dorta, & Cugueró-Escofet, 2020). Crucially, this body of work shows how the experience of the pandemic, along with policy responses like fiscal support and slot waivers (Abate, Christidis, & Purwanto, 2020; OECD, 2021), shifted the research focus. The literature now increasingly reframes resilience not merely as a return to pre-crisis traffic levels, but as a more complex adaptive capacity—the ability to reconfigure networks and processes to manage future crises (Gössling et al., 2020; Hall, Scott, & Gössling, 2020).

2.4. The Growing Imperative of Sustainability and Decarbonization

Finally, the literature shows a strong pivot towards environmental pressures and sustainability. Research in this area investigates aviation's climate impact, which includes not only its ~2.5% share of global CO_2 emissions but also significant non-CO_2 effects like contrail warming (Ritchie, 2024; Teoh, 2024). Studies also explore the feedback loop where poor environmental conditions and air quality can negatively impact international tourist arrivals (Su, Lin, & Zhu, 2022). This growing body of work is increasingly shaped by major policy responses, such as the EU's ReFuelEU

Aviation mandates for Sustainable Aviation Fuel (SAF) and ICAO's global CORSIA framework for emissions offsetting (European Commission, 2023/2025; ICAO, 2024). Consequently, a significant research front has emerged to analyze the viability and life-cycle emissions of different SAF pathways, highlighting the need for rigorous sustainability criteria (D'Ascenzo et al., 2024; Yang et al., 2025; Köksal, 2024). Together, this theme represents a critical shift in the literature, moving beyond connectivity to focus on decarbonization and environmental accountability.

3. Materials and Methods

3.1. Data collection and processing

Recent work at the aviation–tourism interface increasingly applies bibliometric performance analysis together with science mapping to produce a reproducible, field-wide view: performance indicators (outputs, sources, citations) are complemented by network techniques that uncover the field's intellectual structure via co-citation, its social structure via co-authorship, and its conceptual structure via keyword co-occurrence and longitudinal thematic evolution; toolchains commonly include Bibliometrix in R (and biblioshiny) for end-to-end workflows, VOSviewer for layout/visualization, CiteSpace for burst/turning-point detection, and SciMAT for strategic diagrams (Aria & Cuccurullo, 2017; van Eck & Waltman, 2010; Chen, 2006; Cobo, López-Herrera, Herrera-Viedma, & Herrera, 2012; Boyack, Klavans, & Börner, 2005). Aviation-adjacent mappings (e.g., air-transport trends; airport service quality) show that combining performance and mapping analyses identifies leading contributors, outlets, collaboration clusters and evolving themes—an approach we adopt to capture the aviation–tourism nexus at scale (Sallan & Lordan, 2023; Bakır, Özdemir, Akan, & Atalık, 2022). Despite this progress, several methodological gaps persist that limit comparability and replication: (i) database coverage bias from single-index pulls (often WoS) and English-language dominance, with documented coverage differences between Web of Science and Scopus and quality/control issues in Google Scholar for bibliometrics (Mongeon & Paul-Hus, 2016; Halevi, Moed, & Bar-Ilan, 2017); (ii) sensitivity of network results to counting schemes (full vs. fractional) that is rarely tested or reported (Perianes-Rodríguez, Waltman, & van Eck, 2016); (iii) uneven query transparency and screening, with many studies lacking PRISMA-style flow diagrams, explicit inclusion/exclusion criteria, and shared search strings or cleaning dictionaries for author/affiliation disambiguation and keyword standardization (Page et al., 2021); and (iv) reliance on static snapshots rather than longitudinal triangulation (e.g., thematic evolution, burst detection), contrary to emerging best-practice recommendations for integrated, multi-method pipelines with parameter disclosure and robustness checks (Donthu, Kumar, Mukherjee, Pandey, & Lim, 2021). Our design responds to these issues through explicit query disclosure, a documented WoS data pull, transparent cleaning/merging rules, robustness checks with fractional counting, and a longitudinal thematic analysis using the above toolset.

This study adopts a transparent, reproducible bibliometric workflow implemented exclusively in Bibliometrix (R) and its GUI, biblioshiny. Bibliographic records were retrieved from the Web of Science Core Collection (English language) and exported with Full Record and Cited References fields. After standardized cleaning—author disambiguation, affiliation/country normalization, and keyword consolidation—we combined performance analysis (annual output; leading sources, authors, institutions, countries; citation impact) with science mapping to reveal the field's intellectual (co-citation), social (co-authorship), and conceptual (keyword co-occurrence) structures, alongside longitudinal thematic evolution. Parameter choices (e.g., thresholds, counting scheme) and reporting follow established guidance for rigorous bibliometric studies to support replicability and comparability (Aria & Cuccurullo, 2017; Donthu, Kumar, Mukherjee, Pandey, & Lim, 2021; Zupic & Čater, 2015).

This study draws on the Web of Science Core Collection to build an English-language corpus on the aviation–tourism nexus. A topic search covering 1985–2025 (last updated August 1, 2025) returned 602 records across all document types and WoS indexes, which were exported in Full Record and Cited References format for analysis. Screening proceeded in stages: all publication types and subject areas were initially included; non-English items and records outside SCI-Expanded, SSCI, and ESCI were then excluded, removing 42 and 83 items, respectively; a subsequent thematic pass identified no out-of-scope publications. The final corpus comprised 477 records (1985–2025). Table 1 summarizes corpus characteristics, reporting the distribution of publication types (articles, reviews, proceedings papers, early access, editorial material, book reviews, meeting abstracts, corrections, data papers) and shares by WoS index (SCI-Expanded, SSCI, ESCI). Prior to analysis, bibliographic fields were standardized: author names were disambiguated (including diacritics handling and initials expansion with ORCID where available), affiliations/countries were unified, and keywords were normalized via a manual dictionary (e.g., "low-cost carrier(s)," "LCC," "low-cost airline(s)" → low-cost carriers; "air transport/transportation" → air transport; "destination competitiveness/attractiveness" → destination competitiveness). All analyses were performed in R with Bibliometrix/biblioshiny for end-to-end processing, indicators, and visualizations; unless otherwise stated, full counting was used for co-authorship, co-citation, bibliographic coupling, and co-word networks, with fractional-counting robustness checks reported in the Appendix. Thresholds for network inclusion (minimum occurrences for keywords/authors/sources) and edge-weight normalization were set a priori, and all settings are disclosed for replicability. The analysis plan combines performance analysis (annual scientific production; leading sources, authors, institutions, countries; citation impact) with science mapping (co-authorship at author/institution/country levels; co-citation of authors/sources/documents; bibliographic coupling of authors/documents; keyword co-occurrence) and examines longitudinal topic dynamics via thematic evolution; full search strings, cleaning rules, and parameter choices appear in the Appendix (Aria & Cuccurullo, 2017).

Publication types. Across the corpus, nine document categories were identified. The sample is overwhelmingly composed of research articles (F = 456; P = 95.53%; see Table 1). Smaller shares are attributable to proceedings papers (F = 16; P = 3.35%) and review articles (F = 14; P = 2.93%), followed by early-access items (F = 8; P = 1.67%) and editorials (F = 4; P = 0.83%). A very limited number of book reviews, letters, and notes were also present (each F = 1; P = 0.20%).WoS index coverage. With respect to Web of Science indexing, SSCI accounts for 320 records (67.08%), ESCI for 128 (26.83%), and SCI-Expanded for 96 (20.12%). Because some journals can be co-listed across WoS indexes, index shares may not sum to 100%. The primary reason why the total findings do not add up to 100% is that some journals are simultaneously included in more than one index within the

Web of Science (WoS) database. This situation causes the sum of the index shares to be different from 100%.

3.2. Bibliometric Analysis

This study applies a comprehensive bibliometric workflow using Bibliometrix (R) and its biblioshiny interface (Aria & Cuccurullo, 2017). The design integrates performance analysis with science mapping to capture both descriptive and structural dimensions of the aviation–tourism literature.

Performance analysis profiles annual scientific production, leading sources, authors, institutions, and countries, and evaluates citation impact. Classical bibliometric regularities such as Bradford's law (journal concentration) and Lotka's law (author productivity) are also tested to highlight distribution patterns (Bradford, 1934; Lotka, 1926; Donthu et al., 2021; Zupic & Čater, 2015).

Science mapping extends the analysis by uncovering the intellectual, social, and conceptual structures of the field. Specifically, (i) co-authorship networks are examined at author, institution, and country levels to reveal collaboration structures; (ii) co-citation analysis identifies foundational works and intellectual schools (Small, 1973); (iii) bibliographic coupling highlights proximity among current publications and research fronts (Kessler, 1963); and (iv) keyword co-occurrence is used to map conceptual clusters and thematic evolution. Thematic analysis relies on Multiple Correspondence Analysis (MCA) with k-means clustering and Callon's density–centrality framework to classify themes as motor, basic, niche, or emerging/declining (Callon, Courtial, & Laville, 1991; Cobo et al., 2011).

Unless otherwise stated, full counting is applied to construct networks, while association-strength normalization and modularity optimization are used for weighting and community detection (van Eck & Waltman, 2009; Newman, 2001). Robustness checks are conducted with fractional counting (Perianes-Rodríguez, Waltman, & van Eck, 2016). All thresholds for inclusion (e.g., keyword frequency, author output, citation cutoffs) and time-slice definitions are set a priori and disclosed in the Appendix to ensure transparency and replicability. Figure 1 shows the flow diagram for the data collection steps for bibliometric analysis.

Table 1. Distribution of publication types and indexes

Publication Types	Frequency (n)	Percent (%)
Article	456	95.53
Proceeding Paper	16	3.35
Review Article	14	2.93
Early Access	8	1.67
Editorial Material	4	0.83
Book Review	1	0.2
Letter	1	0.2
Note	1	0.2
Web of Science Index		
SSCI	320	67.08
ESCI	128	26.83
SCI-Expanded	96	20.12

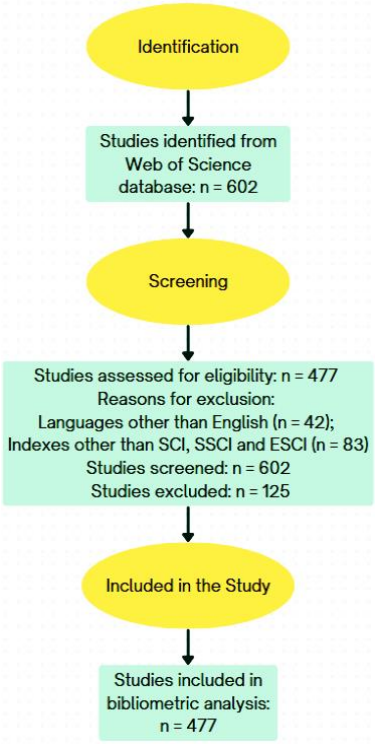


Figure 1. PRISMA flow diagram of the study selection process

4. Results

4.1. Annual Scientific Production

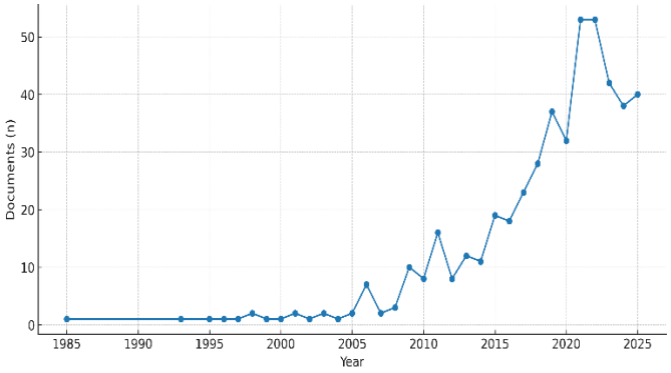


Figure 2. Identification of studies

Figure 2 presents the annual scientific production on the aviation-tourism nexus from 1985 to 2025. Scholarly output remained sparse before 2000, followed by a gradual increase in the mid-2000s and a sharp acceleration after 2010. The field reached a pre-pandemic peak in 2019 (37 publications), reflecting growing scholarly attention to connectivity and sustainability. Production briefly contracted to 32 publications in 2020 during the global pandemic but quickly rebounded to record levels in 2021 and 2022 (53 publications each). Overall, the temporal trend confirms that research at the aviation-tourism interface is a recent but rapidly consolidating field. Approximately 80% of all publications have appeared since 2015, and more than 90% since 2010, underscoring the strong momentum of scholarly interest in this domain.

4.2. Research Areas of Publications

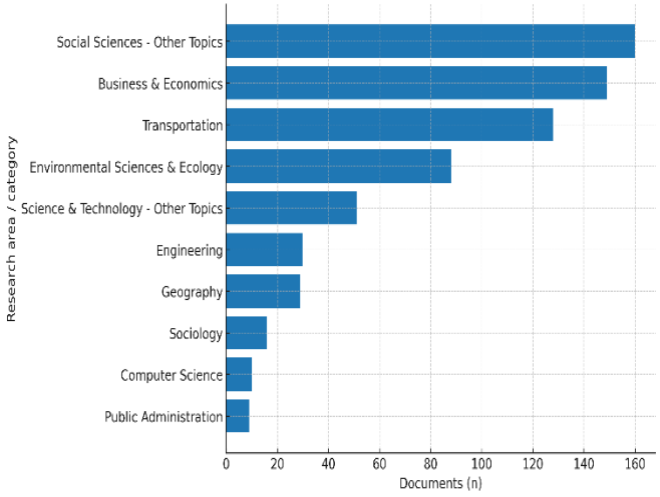


Figure 3. Research areas/categories by numbers

As illustrated in Figure 3, the research confirms the multidisciplinary profile of the aviation-tourism nexus. The scholarship is primarily anchored in the social sciences, with the largest shares of documents in Social Sciences - Other Topics (33.5%), Business & Economics (31.2%), and Transportation (26.8%). A significant and growing presence is also seen in Environmental Sciences & Ecology (18.5%), reflecting the field's increasing focus on sustainability. This distribution highlights a dual orientation toward market analysis and mobility concerns, which explains the wide range of methodological approaches found in the literature, from econometric models to sustainability assessments.

4.3. An overview of publication titles

Outputs are concentrated in a compact set of core journals, a pattern consistent with Bradford's Law. As shown in Figure 4, a small number of journals publish a large share of the articles. The six most productive journals alone account for over a third of all publications, led by the Journal of Air Transport Management and Sustainability. This distribution confirms the field's interdisciplinary nature, with publication activity clustered in three main types of outlets: air transport, tourism, and sustainability. This concentration of publications in a few key journals anticipates the similar concentration of citation impact discussed later in the analysis.

4.4. An overview of the top publishing researchers

The analysis identified 1,122 unique authors, with productivity patterns following Lotka's Law: a long tail of single-paper contributors and a small core of prolific researchers. At the top of the list is one researcher who appears under two name variants ("Tsui, Kan Wai Hong" and "Tsui, Wai Hong Kan"), with a combined total of approximately 21 publications. The other leading contributors, each with six or more publications, are detailed in Table 2. This high concentration of output among a few authors is also visualized in the Lotka plot (Figure 5).

Table 2. Top 10 publishing researchers (by number of documents)

Rank	Author	Number of documents
1	Tsui, Kan Wai Hong	11
2	Tsui, Wai Hong Kan	10
3	Fu, Xiaowen	8
4	Koo, Tay T. R	7
5	Bekun, Festus Victor	6
6	Dobruszkes, Frederic	6
7	Lohmann, Gui	6
8	O'Connell, John F.	6
9	Wu, Hanjun	6
10	Zhang, Yahua	6

Note: “Tsui, Kan Wai Hong” and “Tsui, Wai Hong Kan” appear to be the same author; counts are reported separately by WoS but sum to ≈21 items.

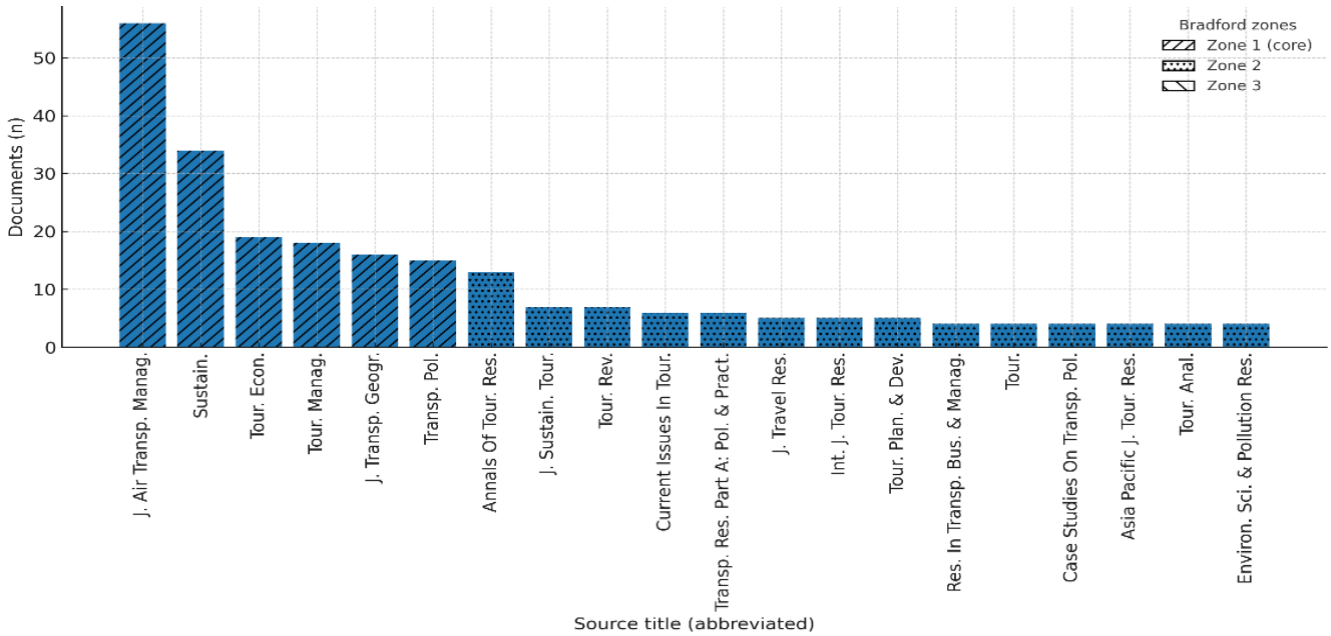


Figure 4. Top sources by output with Bradfords zones

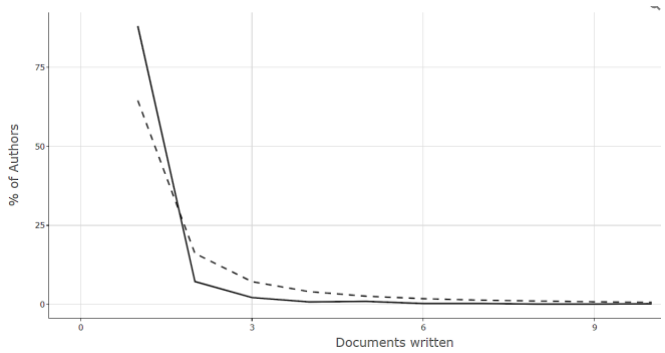


Figure 5. Lotka plot of author productivity

4.5. Co-occurrence of author keywords

Co-occurrence analysis of author keywords is used to map the conceptual structure of a research field by identifying its main themes (Callon et al., 1983, Callon, Courtial, Turner, & Bauin, 1983; Aria & Cuccurullo, 2017; Donthu, Kumar, Mukherjee, Pandey, & Lim, 2021). The network analysis reveals four distinct thematic clusters that form the core of the aviation-tourism literature.

The first and largest cluster centers on connectivity and market structure, anchored by the dominant keywords "air transport" (n=91) and "tourism" (n=80), and strongly associated with terms like "airport," "airline," and "low-cost carriers." The second cluster links tourism to destination performance and demand, including keywords such as "economic growth." The third theme revolves around service quality and the passenger experience. A fourth, increasingly prominent cluster focuses on sustainability and resilience, with keywords like "COVID-19," "emissions," and "climate change" becoming more central. The full network visualization of these themes is presented in Figure 6, and the ten most frequent keywords are listed in Table 3. Together, these visuals summarize the conceptual core of the field.

Table 3. Top 10 author keywords

Author Keyword	Occurrences (n)
Air Transport	91
Tourism	80
Airport	31
Covid-19	30
Aviation	29
Airline	29
Airline Industry	25
Low-Cost Carriers	25
Air Travel	15
Economic Growth	14

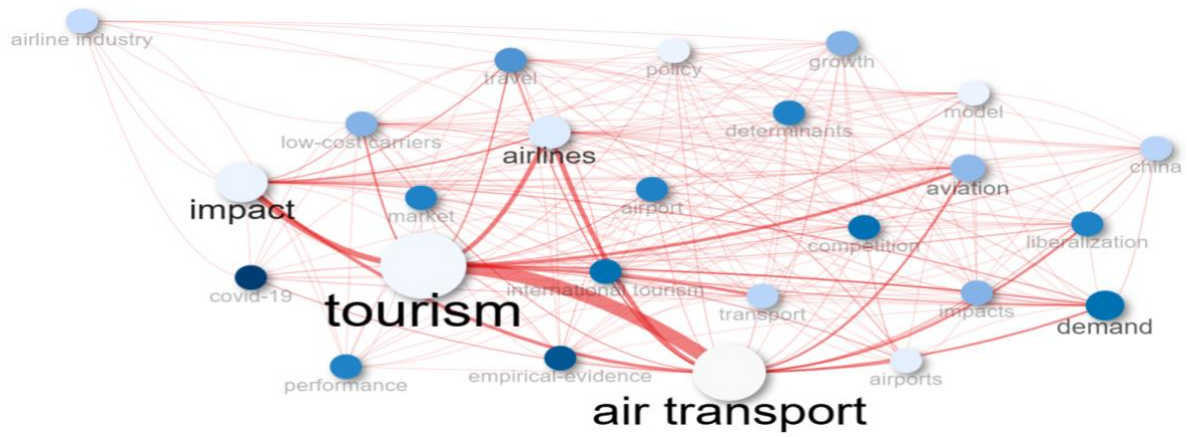


Figure 6. Co-occurrence of author keywords

4.6. Citation analysis

Influence is assessed using two primary metrics: global total citations (TC) from the Web of Science, which captures field-wide impact, and local citations (LC) from within the corpus, which identify works that are canonical to this specific research area. To mitigate age-related bias, citations per year (CPY) are also reported. The following sections present the results for the most influential documents, authors, and sources.

4.6.1. Citation analysis of authors, publications, and sources

The most influential publications in the field, measured by both total citations (TC) and citations per year (CPY), are detailed in Table 4. An analysis of these top documents reveals the key themes that have attracted significant scholarly attention. Foundational, highly-cited works tend to focus on the broad impacts of tourism, particularly its relationship with climate change and economic development. More recent, high-velocity articles with a large number of citations per year (CPY) often tackle contemporary issues, such as government support to airlines during the COVID-19 pandemic and the carbon footprint of tourism at the destination level.Citation impact is also highly concentrated among a small group of researchers. As detailed in Table 8, a core set of authors has received the majority of citations, reinforcing the finding that a compact group of contributors shapes the intellectual core of the aviation-tourism nexus. A visualization of these author citation relationships is provided in the Appendix (Figure 7). Similarly, at the source level, influence is centered on a few key journals. The Journal of Air Transport Management and Tourism Management are the most cited outlets by a significant margin, as shown in Table 5. This concentration mirrors the field's dual anchoring in air-transport and tourism scholarship, with sustainability journals also emerging as important venues for impactful research. (*Note: To enhance readability, only nodes with significant link strength are displayed.*

Table 4 Top 10 documents by citations (TC, CPY) – WoS Core

Title	Authors	Source	Year	Total Citations	Citations per Year
The impact of tourism and personal leisure transport on coastal environments: A review	Davenport, J; Davenport, JL	Estuarine Coastal and Shelf Science	2006	560	28
Tourism and economic development: A survey	Sinclair, MT	Journal Of Development Studies	1998	287	10.25
Tourism travel under climate change mitigation constraints	Peeters, Paul; Dubois, Ghislain	Journal Of Transport Geography	2010	256	16
An SEM-artificial-neural-network analysis of the relationships between SERVPERF, customer satisfaction and loyalty among low-cost and full-service airline	Leong, Lai-Ying; Hew, Teck-Soon; Lee, Voon-Hsien; Ooi, Keng-Boon	Expert Systems with Applications	2015	196	17.82
High speed rail and tourism: Empirical evidence from Spain	Albalate, Daniel; Fageda, Xavier	Transportation Research Part A-Policy and Practice	2016	185	18.5
Air transport and tourism - Perspectives and challenges for destinations, airlines and governments	Bieger, T; Wittmer, A	Journal Of Air Transport Management	2006	182	9.1
The carbon dioxide neutralizing effect of energy innovation on international tourism in EU-5 countries under the prism of the EKC hypothesis	Balsalobre-Lorente, Daniel; Driha, Oana M.; Leitao, Nuno Carlos; Murshed, Muntasir	Journal Of Environmental Management	2021	178	35.6
Carbon footprint of tourism in Barcelona	Rico, Anna; Martinez-Blanco, Julia; Montlleo, Marc; Rodriguez, Gustavo; Tavares, Nuno; Arias, Albert; Oliver-Sola, Jordi	Tourism Management	2019	172	24.57
Government support to airlines in the aftermath of the COVID-19 pandemic	Abate, Megersa; Christidis, Panayotis; Purwanto, Alloysius Joko	Journal Of Air Transport Management	2020	154	25.67
The greenhouse gas intensity of the tourism sector: The case of Switzerland	Perch-Nielsen, Sabine; Sesartic, Ana; Stucki, Matthias	Environmental Science & Policy	2010	151	9.44

4.6.2. Most cited countries and organizations

At the country level, citation impact is concentrated in a small group of high-output, highly collaborative systems. As detailed in Table 6, leading countries by total citations include Spain, the United Kingdom, and Australia. These countries consistently show high shares of multi-country publications (MCP), suggesting that cross-border collaboration attracts significant scholarly attention. The data also reveals that smaller systems, such as Ireland and Sweden, can have high citations per year (CPY), indicating recent, high-impact research. A similar concentration is found at the organizational level, where citations cluster in a compact institutional core. The most-cited institutions are led by the University of New South Wales and ETH Zurich. The full list in Table 7 shows that institutions can rank highly through either a large volume of publications or by being associated with a few seminal works, reflecting both research breadth and intensity.

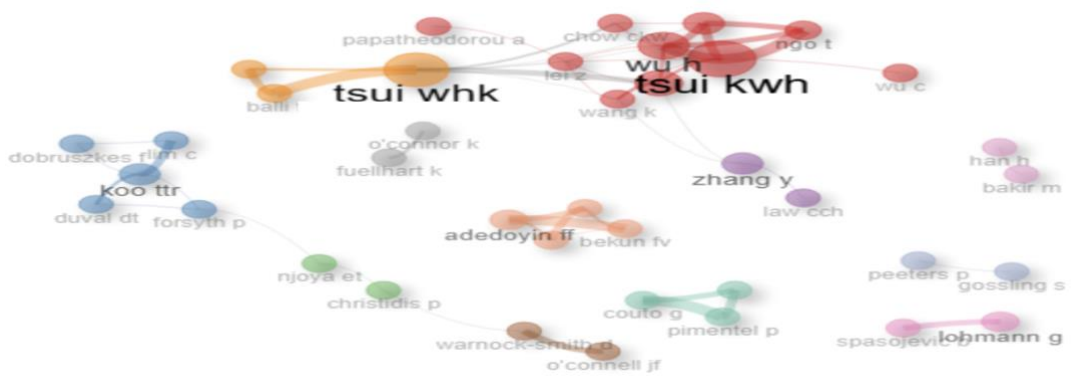


Figure 7. Network visualization of author citation relationships Note: To enhance readability, only nodes with significant link strength are displayed.

Table 5. Top 10 sources by citations (TC, h, g)

Source	Docs	TC	h	g
Journal Of Air Transport Management	56	1836	24	42
Tourism Management	18	768	14	18
Journal Of Transport Geography	16	653	11	16
Estuarine Coastal and Shelf Science	1	560	1	1
Sustainability	34	509	13	21
Tourism Economics	19	350	11	18
Annals Of Tourism Research	13	350	9	13
Journal Of Development Studies	1	287	1	1
Transportation Research Part A-Policy and Practice	6	284	4	6
Journal Of Environmental Management	2	272	2	2

Table 6. Most-cited countries (TC, CPY avg, MCP share)

Country	Docs	SCP	MCP	MCP Share (%)	TC	CPY (avg)
Spain	60	9	51	85.0	2217	5.1
UK	58	15	43	74.1	2158	4.1
Australia	63	10	53	84.1	1673	3.6
China	88	8	80	90.9	1598	3.1
New Zealand	35	2	33	94.3	883	2.9
Ireland	5	2	3	60.0	725	10.5
Turkey	18	3	15	83.3	709	7.3
Netherlands	8	1	7	87.5	479	3.7
France	12	2	10	83.3	400	2.7
Sweden	8	0	8	100.0	375	8.0
Pakistan	8	0	8	100.0	371	7.8
Portugal	12	3	9	75.0	360	5.4
Italy	17	3	14	82.4	353	3.0
Switzerland	3	3	0	0.0	334	6.2
Canada	14	4	10	71.4	324	2.7

Table 7. Most-cited organizations

Organization	Docs	TC
University of New South Wales	14	612
ETH Zurich	1	604
University College Cork	1	560
University of Alicante	8	535
University of Surrey	12	529
Breda University of Applied Sciences	5	473
Massey University	21	446
Istanbul Gelisim University	7	403
Bournemouth University	7	397
University of Castilla-La Mancha	7	350

4.7. Bibliographic coupling analysis

4.7.1 Bibliographic coupling analysis of authors

Bibliographic coupling analysis reveals current research fronts by linking authors who cite similar literature (Kessler, 1963). The analysis at the author level reinforces the conceptual structure identified previously in the keyword analysis. The author network is organized into four cohesive clusters corresponding to the same primary themes: (i) connectivity and market structure, (ii) tourism demand and performance, (iii) passenger experience, and (iv) sustainability and resilience. This consistency across different methods demonstrates that the field's main research fronts are well-defined.

Table 8. Top 10 authors by WoS citations

Author	Docs	WoS TC
Peeters, Paul	4	441
Balsalobre-Lorente, Daniel	4	424
Bekun, Festus Victor	6	383
Adedoyin, Festus Fatai	5	354
Driha, Oana M.	3	315
Dobruszkes, Frederic	6	295
Gossling, Stefan	5	283
Tsui, Wai Hong Kan	10	231
Fageda, Xavier	3	223
Zhang, Yahua	6	208

4.8. Co-authorship analysis

4.8.1 Co-authorship analysis of organizations

The analysis of organizational co-authorship reveals the collaborative structure of the field. The network of 1,058 unique institutions shows a strong collaborative orientation, with nearly 80% of all papers involving multi-organization teams.As detailed in Table 9, collaboration prominence is led by institutions such as Massey University and Hong Kong Polytechnic University. Overall, the network displays a distinct core-periphery structure. A compact core of highly collaborative institutions is surrounded by a larger periphery of organizations with fewer collaborative ties, a pattern consistent with the concentration of publications and citations reported earlier.

Table 9. Top collaborating organizations

Organization	Docs	Partners	Strength (weighted co-auth ties)
Massey University	10	20	26
Hong Kong Polytech University	10	17	20
University Castilla La Mancha	8	11	20
Istanbul Gelisim University	6	10	20
Linnaeus University	5	12	19
Western Norway Res Institute	5	12	19
Bournemouth University	6	9	19
University Alicante	6	9	17
University Surrey	9	16	16
Institute Geog Sci & Nat Resources Res	7	14	14

4.9. Co-citation analysis

4.9.1 Co-citation analysis of cited references

Co-citation analysis reveals the intellectual backbone of a field by identifying the foundational studies that are frequently cited together (Small, 1973; Marshakova, 1973). The resulting network map, shown in Figure 8, provides further strong evidence for the field's thematic structure. This final analysis once again identifies four cohesive clusters of influential research: (i) connectivity and market structure, (ii) tourism demand and destination performance, (iii) service quality and passenger experience, and (iv) sustainability and resilience.

5. Discussion

This study mapped the intellectual and social structure of the aviation-tourism research nexus, revealing a field that is both consolidating and rapidly evolving. This section discusses the broader implications of the key findings by connecting them to the existing literature and highlighting their significance for understanding the field's trajectory.

5.1. The Accelerated Growth and Consolidation of a Research Field

The analysis reveals that scholarly output in the aviation-tourism nexus remained sporadic until the mid-2000s, followed by a steep acceleration after 2010. This temporal trend is not merely a reflection of a general increase in academic publishing; rather, it mirrors significant structural shifts within the industries themselves. The proliferation of low-cost carriers (LCCs) in Europe and beyond during this period, as documented by scholars like Dobruszkes (2013), created new market dynamics and research questions concerning destination accessibility and regional development.

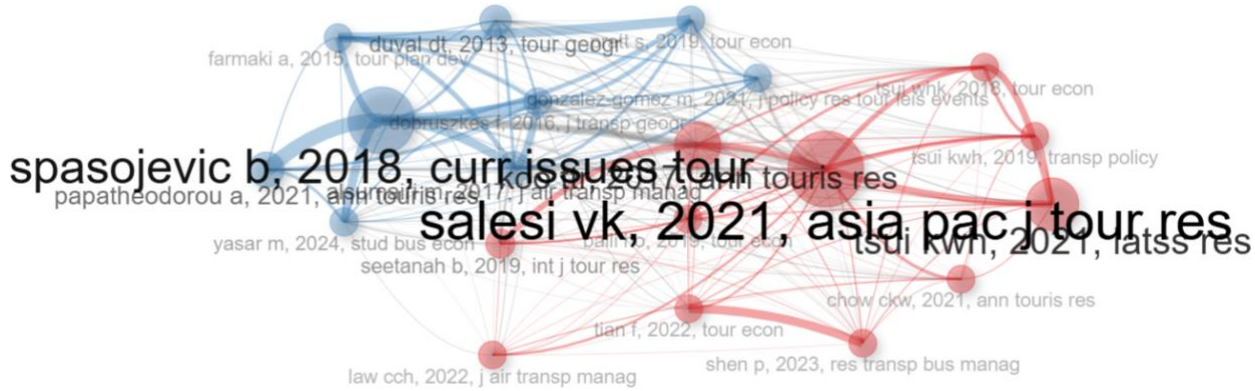


Figure 8. Network visualization of co-citation analysis of the cited references.

The subsequent surge in research confirms the field's responsiveness to real-world phenomena. Furthermore, the concentration of publications in a core set of journals, consistent with Bradford's Law, indicates that the field has matured, developing its own dedicated publication outlets and establishing a clear intellectual identity at the intersection of transport, tourism, and sustainability studies.

5.2. The Four Pillars: Deconstructing the Field's Thematic Core

The keyword co-occurrence and bibliographic coupling analyses consistently identified four central thematic clusters: (i) connectivity and market structure, (ii) tourism demand, (iii) passenger experience, and (iv) sustainability and resilience. These pillars represent the foundational research agendas of the field. The first two pillars are deeply rooted in the economic geography and transport economics literature, confirming the long-standing scholarly consensus that air transport is a critical enabler of tourism flows (Papatheodorou, 2021; Spasojević et al., 2018). The findings quantitatively affirm that concepts like "low-cost carriers," "airports," and "connectivity" form the conceptual bedrock of this domain. The third pillar, focusing on service quality and passenger satisfaction, reflects the field's engagement with management and marketing scholarship, recognizing that the airport and airline experience is an integral part of the overall tourism product (Bakır et al., 2022; Bezerra & Gomes, 2015).

5.3. The Decisive Shift Towards Sustainability and Resilience

Perhaps the most significant contribution of this study is the empirical documentation of a decisive thematic shift towards sustainability and resilience, particularly since the late 2010s. While connectivity and service quality remain core topics, the increasing prominence of keywords such as "COVID-19," "sustainability," "emissions," and "climate change" signals a profound reorientation of the research agenda. This finding provides data-driven support for the arguments made by scholars like Gössling, Scott, and Hall (2020), who highlighted how systemic shocks expose the vulnerabilities of the tightly coupled aviation-tourism system. The timing of this shift also corresponds with major policy developments, including the implementation of ICAO's CORSIA framework and the EU's ReFuelEU Aviation regulation, which have evidently catalyzed academic inquiry into decarbonization pathways. The analysis suggests that the field is moving beyond a purely growth-oriented paradigm to one that increasingly grapples with the environmental and social trade-offs of global mobility.

5.4. The Social Structure: A Core-Periphery of Knowledge Production

Finally, the co-authorship analysis reveals a distinct core-periphery structure in knowledge production, with a concentration of collaborative activity and citation impact within a specific group of institutions and countries. The

prominence of universities in Europe, Australia, and China indicates the existence of powerful research hubs that likely shape the field's dominant theories and methodologies. While this concentration can foster deep expertise, it also raises important questions about the diversity of perspectives in the literature. Future research should critically examine whether the challenges and priorities of developing nations, which are often highly dependent on tourism, are adequately represented in this global research network. This finding implies a need to foster more inclusive, global research partnerships to ensure a more equitable and comprehensive understanding of the aviation-tourism nexus.

The identification of a distinct core-periphery structure in the co-authorship network aligns with established tenets of Network Theory (Borgatti et al., 2009) and the World Systems Theory (Wallerstein, 1974) in academic production. The concentration of knowledge production within a few highly collaborative hubs in the Global North suggests a hierarchical dissemination of ideas, where peripheral actors have limited influence on the dominant discourse. Furthermore, the observed thematic shift towards sustainability reflects the Ecological Modernization Theory (Mol & Spaargaren, 2000), suggesting that the aviation sector is increasingly seeking to internalize environmental costs through technological and managerial innovation rather than purely limiting growth.

6. Conclusion and Recommendations

This study provided a comprehensive bibliometric map of the aviation-tourism research nexus, revealing a mature yet highly adaptive field. The analysis confirms the field's exponential growth and shows that its conceptual core is built upon four distinct pillars: (i) connectivity and market structure, (ii) tourism demand and performance, (iii) passenger experience, and (iv) a rapidly consolidating focus on sustainability and resilience. The research agenda has decisively shifted in recent years, moving from a primary focus on growth to grappling with the challenges of decarbonization and crisis management.

The contribution of this study is twofold. For scholars, it offers a data-driven map of the intellectual landscape, identifying the core journals, influential authors, and foundational works that define the field. This provides a crucial baseline for positioning future research. Methodologically, the study provides a transparent and reproducible workflow that addresses common gaps in prior bibliometric reviews.

The findings also hold significant implications for policy and practice. For developing countries, which are often highly dependent on air tourism, these implications are particularly acute. The transition to expensive green technologies like Sustainable Aviation Fuels (SAF) poses a significant economic challenge due to high acquisition costs and limited infrastructure. Therefore, policy frameworks in these regions should prioritize international climate finance mechanisms and technology transfer partnerships to bridge the investment gap. Additionally, rather than mimicking the massive hub strategies of developed economies, developing nations should focus on optimizing regional airport networks to enhance connectivity for secondary tourism destinations. This approach can distribute tourism benefits more equitably and reduce the reliance on congested primary hubs. Furthermore, resilience strategies must be tailored to unique vulnerabilities, such as diversifying tourism source markets to buffer against regional shocks.

Finally, while this study provides a robust overview, its limitations illuminate clear pathways for future inquiry.First, the exclusive reliance on the Web of Science (WoS) Core Collection represents a limitation. While WoS was selected for its reputation as a repository of high-impact and rigorously curated scientific literature, this choice may have excluded relevant publications indexed solely in other extensive databases such as Scopus or Google Scholar. Future studies could benefit from a merged dataset to provide a broader bibliometric coverage. Additionally, the restriction to English-language publications inevitably introduces a linguistic bias. Valuable insights from non-English scholarship, particularly from developing regions where aviation and tourism dynamics may differ significantly from the Global North, might be underrepresented. This limitation highlights the need for multilingual bibliometric analyses to capture a truly global perspective.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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Appendix

Table 10 Full parameter disclosure

Search window	1985–2023 (last update: Aug 1, 2023)
Database	Web of Science Core Collection (SCI-E, SSCI, ESCI)
Language filter	English only
Export format	Full Record & Cited References
Duplicate policy	Automatic + manual (early-access/final issue)
Document types	Articles, Reviews (others screened for relevance)
Keyword normalization	Manual dictionary: synonyms & singular/plural
Co-word threshold	Min occurrences of DE ≥ 3; unique per document
Co-word normalization	Association-strength; full counting
Thematic periods	1985–2004; 2005–2014; 2015–2025
Thematic display	Top 12 DE per period
Citation indicators	TC (WoS), CPY = TC / (2025 − year + 1); h/g/m indices
Coupling authors — inclusion	Authors with ≥ 2 publications in corpus
Coupling authors — link rule	Edge if shared references ≥ 1
Coupling authors — normalization	Association-strength; full counting
Coupling display	Top 10 by TLS (Table 8)
Co-auth orgs — edge	Edge weight = shared documents
Co-auth orgs — display	Top 15 by weighted strength (Table 9)
Co-auth countries — edge	Edge weight = shared documents
Co-auth countries — display	Top 15 by strength; top 6 edges/node (Figure 9)
Country normalization	USA/UK/China/Turkey mapping; remove digits/postcodes
Organization cleaning	Drop bracketed author lists; keep Univ/Inst/… tokens
Counting scheme (default)	Full counting; fractional used for robustness checks
Software	R 4.x; Bibliometrix/biblioshiny
Search query	TS=("civil aviation" OR "air transport" OR "airline industry" OR "aviation management") AND TS=("tourism" OR "tourism industry" OR "tourist demand" OR "hospitality and tourism")