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RESEARCH ARTICLE

Power, Prestige, and Access: Tracking 25 Years of Discourse in Academic Reform with Bibliometric Analysis

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Abstract:

Academic publishing faces persistent concerns about equity, legitimacy, and accessibility, yet few studies have systematically traced the evolution of reform discourses. Understanding these shifts is crucial for informing effective systemic changes. This study employs bibliometric analysis of Scopus-indexed literature published from 2000–2025 to map trends, key contributors, and thematic shifts in discussions concerning editorial gatekeeping, prestige-driven metrics, and access barriers in academic publishing. The analysis reveals three key shifts: Gatekeeping: Concerns about peer review bias and editorial exclusion have grown rapidly, fueled by increasing calls for epistemic justice. Metrics: Discourse surrounding prestige metrics, initially dominated by the Journal Impact Factor, has become significantly more contested and diversified. Accessibility: Following the emergence of platforms like Sci-Hub, the conversation shifted from technical concerns about infrastructure to political and ethical struggles over the right to knowledge access. Interpreted through the lens of epistemic injustice and the political economy of publishing, these discursive shifts highlight that the drive for reform represents a fundamental contest over power, legitimacy, and value in knowledge production. While the discourse has become more reflexive and ethically oriented, structural inertia and systemic inequities remain significant barriers. This study contributes to a deeper understanding of these dynamics, providing evidence-based insights to inform ongoing reform efforts across educational research communities and institutions of higher education, fostering a more inclusive, transparent, and equitable publishing landscape.

1 | Introduction

Academic publishing is the primary mechanism for validating and disseminating scholarly knowledge, yet the system faces persistent challenges regarding (1) editorial gatekeeping, (2) prestige-driven metrics, and (3) inequities in accessibility [1-4]. These three pillars represent salient, policy-relevant points that shape both the structure of the publishing ecosystem and authorial behavior, from research design to submission strategies, and career evaluation.

Reform efforts have sought to address these concerns through initiatives like the 2012 San Francisco Declaration on Research Assessment (DORA), which challenged the overreliance on the Journal Impact Factor (JIF), and the expansion of open access models [5-7]. Despite these milestones, the reform landscape remains fragmented, characterized by competing visions and uneven adoption across disciplines and regions. Furthermore, while individual aspects of reform are widely discussed, few studies have systematically traced how this discourse has evolved, particularly in response to major interventions like DORA or the disruptive emergence of Sci-Hub [4].

This study addresses this gap by conducting a longitudinal bibliometric analysis of the literature from 2000 to 2025. This 25-year window captures the transition of scholarly communication from the early digital era and the 2002 Budapest Open Access Initiative to the contemporary landscape of artificial intelligence (AI)-driven publishing and systemic critiques of metrics [8-9].

We address the central research question: *How have scholarly discourses on editorial gatekeeping, prestige-driven metrics, and accessibility barriers developed between 2000 and 2025?* By mapping these three pillars, this work contributes to a more comprehensive understanding of the dynamics shaping scholarly communication.

2 | Literature review

2.1 | Overview of academic publishing's role in scholarly communication

Academic publishing is pivotal to the validation and dissemination of scholarly knowledge [10]. In the academic community, the term "publish" refers to the formal disclosure of a manuscript's content and the broader act of making information publicly accessible [10-11]. To scholars, publishing is central to their academic identity and professional advancement through external recognition from peers [3,12]. Beyond curation, publishing track record plays a critical role in evaluations for hiring, promotion, tenure, and research funding [13]. This reward is heavily anchored by JIF, which functions as a proxy for institutional prestige and shapes global scholarly discourse by amplifying specific voices while marginalizing others [14-15].

Consequently, the perceived value of research is often tethered to the professional capital it generates rather than its intellectual contribution alone [3,13]. Within this commodified environment, university rankings and funding mandates further entrench the importance of metrics [16]. According to Bradshaw and Brook (2016) [15], citation and impact scores influence journal rankings, thereby shaping which voices are amplified in global scholarly discussions. Ensuring an equitable publishing ecosystem is therefore essential to fostering representative scholarship across diverse racial, ethnic, and institutional backgrounds, as well as across career stages. Advancing this equity requires addressing multiple dimensions: ensuring universal access, fostering inclusive editorial practices, and refining evaluation processes to reflect diverse contributions.

2.2 | Editorial Gatekeeping and Bias

Editorial gatekeeping refers to the decision-making processes through which journal editors, editorial boards, and peer reviewers determine which submissions are accepted for publication [3]. While intended for quality control, these processes often reinforce systemic biases, including institutional prestige, confirmatory bias, and positive publication bias, which marginalize contributions from under-resourced regions [17-18]. Opaque review structures and high desk-rejection rates further concentrate power, excluding novel, interdisciplinary, or regionally diverse perspectives [19-20].

Reform initiatives have emerged to challenge these power asymmetries. Open peer review seeks transparency through published reports and broader community participation [21], while post-publication peer review decentralizes evaluation by shifting it to the public domain [22]. Complementary frameworks, such as the UK Concordat to Support Research Integrity, emphasize accountability and fairness across the research lifecycle [23]. Collectively, these reforms seek to transform gatekeeping from an exclusionary barrier into a transparent mechanism for scholarly validation.

2.3 | Prestige-driven metrics and research assessment

Bibliometric indicators, notably the JIF and h-index, increasingly serve as high-stakes proxies for research quality, dictating career progression and institutional rankings [3, 24]. Intended initially to track research dissemination, these metrics now serve as high-stakes proxies for academic quality, affecting career progression and institutional rankings [14, 24-25]. This reliance on metrics often incentivizes visibility over rigor, fostering questionable practices such as citation cartels or the salami-slicing of studies [6, 26]. Consequently, researchers, particularly early-career academics, face systemic pressure to prioritize publication in high-prestige venues at the expense of teaching and mentoring [25].

In response, reform movements such as the 2012 San Francisco DORA and the Leiden Manifesto advocate assessing research on its intrinsic merit rather than journal-based metrics, and through qualitative review rather than journal-based metrics [5-6]. These frameworks emphasize transparency, contextual responsivity, disciplinary diversity, and the recognition of non-traditional outputs such as datasets and software. They also advocate for greater support of locally relevant or non-English research [6, 27-28]. Complementary to these efforts, altmetrics have emerged to capture broader dimensions of influence, including social media engagement and policy impact [29], seeking to redefine excellence through a more context-sensitive lens.

2.4 | Barriers and equity issues in research accessibility

Beyond editorial and evaluative concerns, access to scholarly knowledge remains deeply unequal due to commercial consolidation and the high Article Processing Charges (APCs) inherent to many open-access models [30-31]. These financial burdens disproportionately marginalize scholars from under-resourced regions and disciplines [32-33]. Recent legal and antitrust scrutiny has further highlighted how restrictive exclusivity policies and the lack of remuneration for peer review reinforce the dominance of a few commercial publishers [34].

Alternative models attempt to mitigate these inequities. While green open access utilizes self-archiving in repositories, diamond open access offers the most equitable approach by removing author-facing charges, though its sustainability remains a point of debate [35]. Simultaneously, the rise of shadow libraries like Sci-Hub reflects both the desperation of researchers facing paywall barriers and a growing resistance to the commercialization of publicly funded knowledge [36-37]. Structural initiatives, including Plan S and Project DEAL, continue to drive this shift toward unmediated, sustainable knowledge dissemination [38-39].

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3 | Present study

The present study adopts a bibliometric approach to systematically map the development of scholarly conversations on publishing reform from 2000 to 2025. Bibliometric analysis offers a robust method for uncovering patterns in publication activity, thematic evolution, and the structural relationships within the literature. Therefore, this study aims to answer the research question: *How have scholarly discourses on editorial gatekeeping, prestige-driven metrics, and accessibility barriers developed between 2000 and 2025*?

The analytical framework is tailored to the distinct characteristics of each theme. Topic 1 (Editorial Gatekeeping) is examined through descriptive landscape mapping to highlight its overarching conceptual structure, as it lacks distinct temporal disruptions. In contrast, Topics 2 (Prestige-Driven Metrics) and 3 (Accessibility) are analyzed through time-sliced comparisons centered on key transformative events: the 2012 San Francisco DORA and the 2011 emergence of Sci-Hub. This differentiated approach captures the discursive evolution before and after these specific inflection points.

4 | Method

4.1 | Document search and collection

Bibliometric metadata of scholarly work regarding the three topics was collected from the database. Scopus was selected as the sole data source over other prominent databases, such as Web of Science (WoS), due to its more comprehensive and detailed metadata offerings. While WoS also provides extensive metadata, prior comparisons have shown that Scopus indexes a larger proportion of journals relevant to publishing studies and bibliometric research [40-42]. Scopus also integrates with tools such as Bibliometrix, thereby facilitating the study process [41-42].

Although it is technically possible to merge datasets from Scopus, WoS, and other databases such as PubMed and Dimensions, doing so introduces complications due to incompatible structures and differing metadata standards across platforms. For example, discrepancies in total citation counts and variations in keyword indexing methods, such as Scopus using "Author Keywords" versus WoS using "Keyword Plus", can undermine the consistency and reliability of merged data. Moreover, the absence of many metadata fields in WoS affects the completeness of the dataset and can potentially distort analysis results and their interpretations.

4.2 | Retrieval strategy and dataset construction

To ensure replicability, the metadata were retrieved directly from Scopus (June 9th to 19th, 2025) using the export function. Searches were limited to English-language records and conducted across the article title, abstract, and keywords fields. Only peer-reviewed literature types of articles, editorials, reviews, book chapters, conference papers, and books were included. Preprints were excluded. The search was conducted separately for each of the three core research topics, with subtopics broken down to ensure thorough coverage of the database. Each theme was operationalized through structured search blocks, refined to capture relevant literature while minimizing irrelevant results. Bibliographic identifiers, including ISSN (for journals and serial publications) and ISBN (for book-length contributions), were exported to CSV for deduplication via DOI matching. Other extracted variables include author information, title, citation metrics, keywords, and reference list.

For the second and third research topics, the datasets were further segmented into two time periods, corresponding to the major interventions for each topic. For the second research topic, this study sets 2013 as the dividing point to balance the proposal of DORA (2012) [5] and the subsequent publication of the Leiden Manifesto (2015), effectively marking the shift toward institutionalized metric reform. The third research topic uses 2011 as the dividing point, as it marks the period of Sci-Hub's emergence.

The inclusion of pre-key event data in these two topics is not intended to evaluate the current citation impact of these publications, which naturally declines over time due to the citation half-life. Instead, these earlier articles are analyzed to establish a historical baseline of discourse. By mapping this pre-reform literature, we can systematically track the evolution of terminology and thematic shifts, thereby providing a complete longitudinal view of the 25 years under study. Table 1 presents the complete search strings for each topic and subtopic, along with the specific time slices used to analyze the evolution of scholarly discourse before and after key events. The complete list of exported metadata is available in Appendix A.

TABLE 1 | Search strings and time slice period of the study

No	Aspect	Key concept	Search string	Time slicing
1	Gatekeeping and editorial bias	Editorial gatekeeping. Editorial subjectivity/bias. Biased desk rejection. Biased, peer review process	Block A: Gatekeeping & Editorial Control Scopus: ("editorial gatekeeping" OR "editorial bias" OR "editorial subjectivity" OR "editorial decision*" OR "insider bias" OR ("desk reject*" AND (bias OR subjectivity OR favoritism OR transparency))) 731 documents found on Scopus	No time slicing

(Continued)

No	Aspect	Key concept	Search string	Time slicing
			Block B: Bias in peer review/inclusion ("peer review bias" OR "publication bias" OR "positive results bias" OR "positive publication bias" OR "null results exclusion" OR "negative results exclusion" OR "negative findings exclusion" OR "null findings exclusion" OR "file drawer problem") AND ("peer review" OR "academic publishing" OR "scientific communication" OR "research dissemination") 516 documents found on Scopus Block C: Journal prestige barriers "prestige journals" OR "hierarchical publishing" OR "publishing hierarchy" OR "publication hierarchy" OR "journal prestige" OR "publication bottleneck" 191 documents found on Scopus	
2	Prestige-driven metrics and research evaluation	Confirmation bias in peer review. Positive publication bias. Inclusion/exclusion of replication or negative results. Hierarchical publishing/prestige bottlenecks Overemphasis of publication metrics (e.g., impact factor, citation counts, journal quartiles. Distorted research evaluation. Hypercompetition in publishing, "Natural selection of bad science", distorted publication practice (e.g., p-hacking, selective reporting).	Block A: Metrics overreliance. ("impact factor" OR "journal impact factor" OR "journal quartile" OR "journal rankings" OR "citation-based metric*" OR "research metric*") AND ("overreliance" OR "misuse" OR "abuse" OR "limitations" OR "criticism" OR "flaws" OR "problem*" OR "bias*" OR "gaming" OR "inappropriate") 3571 documents found on Scopus Block B: Research assessment & evaluation "research assessment fairness" OR "research evaluation" OR "faculty evaluation fairness" OR "academic evaluation fairness" OR "promotion and tenure" OR "RPT" OR "review promotion tenure" 1704 documents found on Scopus Block C: Problems/distortions caused by metrics "natural selection of bad science" OR "p-hacking" OR "selective reporting" OR "salami slicing" OR "research malpractice" OR "reductionist evaluation" OR "metrics distortion" OR "prestige-driven publishing" 1812 documents found on Scopus Block D: Broader discourse documents "DORA declaration" OR "San Francisco Declaration on Research Assessment" OR "Leiden Manifesto" OR "responsible metrics" OR "responsible research assessment" OR "responsible evaluation" 130 documents found on Scopus	**2000–2013** = pre-DORA/ Leiden **2014-2025** = post-DORA/ Leiden adoption

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(Continued)

No	Aspect	Key concept	Search string	Time slicing
3	Barrier and equity issues in research accessibility	Commercialization of publishing and academic publication oligopoly. Paywalls from subscription-based models. Accessibility problem from APCs. Open access as an inequitable partial solution. Regional and institutional inequities in access. Sci-Hub is a symptom of access issues. Global disparities in scholarly publishing participation	Block A: Publishing Commercialization & Oligopoly. "commercial publishing" OR "academic publishing oligopoly" OR "publishing oligopoly" OR "commercial publishers" OR "academic publishing industry" OR "publishing market concentration" 536 documents found on Scopus Block B: Barriers to access "academic journals paywall*" OR "subscription-based journal*" OR "subscription cost*" OR "restricted research access" OR "barriers to research access" OR "access to research" OR "research access" AND ("inequit*" OR "disparity" OR "librar*") 318 documents found on Scopus Block C: Open access challenges & APCs "article processing charges" OR "cost of open access" OR "open access inequity" OR "APC waiver" OR "affordability of open access" OR "predatory open access" 553 documents found on Scopus Block D: Global equity & participation "equity in scholarly publishing" OR "global inequities in publishing" OR "research accessibility" OR "knowledge equity" OR "research participation barriers" OR "low-income country publishing" OR "underfunded institutions" OR "Global South research access" 143 documents found on Scopus Block E: Sci-Hub and shadow libraries “Sci-Hub” OR "shadow library" OR "pirate library" OR "illegal access to research" OR "circumventing paywalls" OR "Sci-Hub citation impact" OR "Sci-Hub and research access" OR “black open access” OR “shadow libraries” 155 documents found on Scopus	**2000-2011** = pre-Sci-Hub **2012-2025** = post-Sci-Hub

4.3 | Bibliometric analysis

We conducted a bibliometric analysis using the Bibliometrix package in R [43], employing two primary approaches: performance analysis and conceptual analysis. Performance analysis examined productivity and influence across countries, institutions, and sources. We excluded individual author analysis to focus on the field’s structural and thematic landscape rather than personal productivity. To quantitatively characterize the temporal evolution and citation impact of the scientific literature, two complementary statistical indicators were used.

First, the compound annual growth rate summarized the long-term growth trend in publication output by comparing the number of documents published in the first and last years of the observation period. It is robust to short-term fluctuations and provides an intuitive measure of sustained expansion. Second, average citations per year per document were computed to assess citation impact while accounting for differences in publication age. This approach allows fair comparison between older and more recent publications and provides a time-adjusted measure of scholarly influence.

Conceptual analysis utilized keyword co-occurrence networks (author keywords) to identify latent thematic relationships [44]. These networks were generated using matrix algebra, specifically by calculating the cross product of a sparse term-document matrix to produce a symmetric co-occurrence matrix [43-44].

We further examined the developmental trajectory of these themes

using thematic mapping [45], which plots keyword clusters based on *Callon's centrality* (degree of interaction with other themes) and *Callon's density* (internal cohesion of the cluster). Furthermore, community detection was performed using the Louvain algorithm, a hierarchical clustering method that maximizes network modularity, ensuring that the identified themes are statistically distinct. Based on these metrics, clusters are classified into four quadrants:

- Motor Themes: High centrality/density; well-developed and integral to the field.
- Basic Themes: High centrality/low density; foundational but less developed.
- Niche Themes: Low centrality/high density; specialized and isolated.
- Emerging or Declining Themes: Low centrality/density; weakly integrated or marginal.

We employed the *thematicEvolution* function to visualize temporal shifts [45]. We interpreted evolution through keyword continuity: connecting arrows indicated thematic stability, while their absence suggests the emergence of new topics, topic merging, or obsolescence. Parameters for both the thematic map and evolution analysis were selected after iterative testing to balance coverage and interpretability (see Appendix B for full technical specifications).

To ensure thematic precision, we implemented a rigorous four-step data cleaning protocol guided by Donthu et al. (2021) [9]:

- Extraction: Preliminary analysis of author and indexed keywords.
- Noise Removal: Exclusion of terms irrelevant to the core subject (e.g., "machine learning," "COVID-19").
- Synonym Consolidation: Merging semantically equivalent terms (e.g., "publishing" and "publication").
- Standardization: Unifying spelling and capitalization variations.

This process was performed manually by the first author and cross-validated by the second author(see Appendix C for the complete list of removed and consolidated words). While some domain-specific noise might persist, we mitigated this by triangulating results across multiple methods (e.g., network analysis and thematic mapping) to ensure interpretations relied on converging patterns rather than isolated artifacts. We interpreted findings through two complementary lenses: epistemic injustice [46-47], which highlights how structural hierarchies marginalize contributions; and the political economy of publishing [48], which examines how market power and metric-driven evaluation shape systemic inequities.

5 | Results

5.1 | Performance analysis

To ensure transparency and reproducibility of the literature selection process, a systematic screening protocol was followed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Figure 1 illustrates the flow of information through the phases of data retrieval, screening, and inclusion.

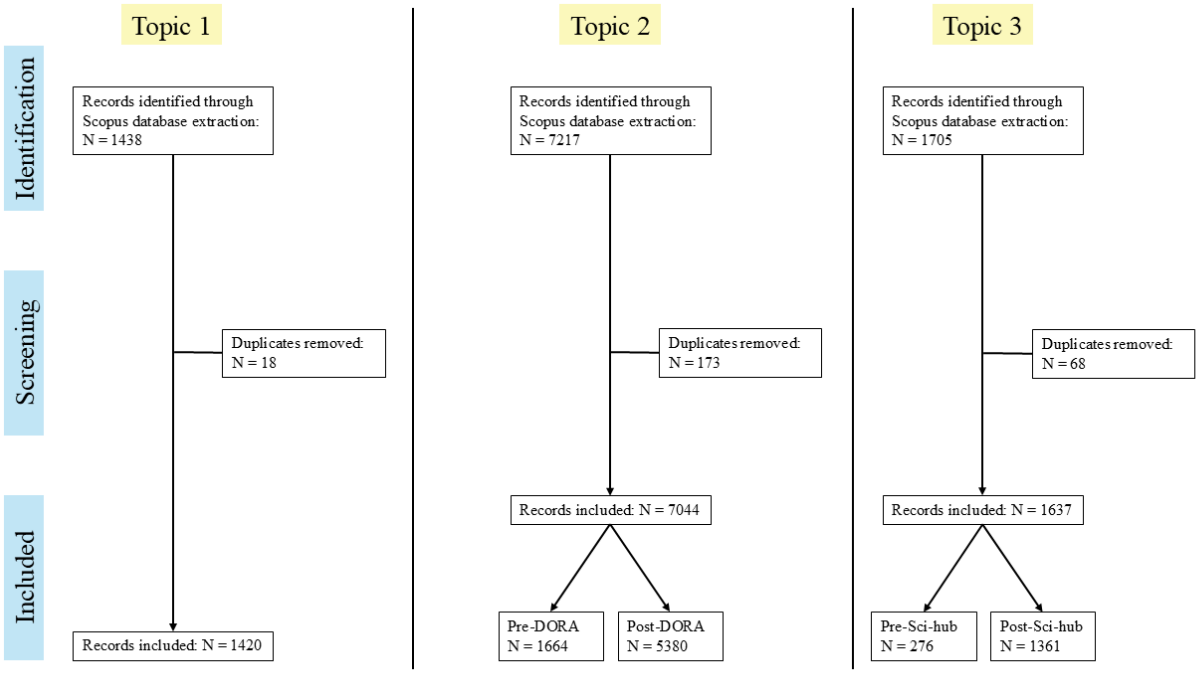

FIGURE 1 | PRISMA Diagram of the Literature Search, Retrieval, and Inclusion.

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Gatekeeping and editorial bias: Table 2 summarizes the performance analysis of the editorial gatekeeping topic, highlighting key metrics including publication output, growth rate, source distribution, and top keywords. The dataset comprised 1420 documents published between 2000 and 2025. Articles were the dominant document type across all themes, supplemented by reviews, editorials, and a smaller number of books and conference papers. Although representing the smallest dataset, bias-related research grew most rapidly, reflecting intensifying concern with fairness and transparency in peer review. The prominence of review articles and editorials indicates that the discourse is both empirical and reflective, often tied to normative debates on legitimacy in editorial practices. The United States dominates authorship, underscoring its strong role in shaping journal policy. Leading venues such as *PLOS ONE* and *Scientometrics* reflect both applied and meta-level engagement. Recurring keywords, including peer review, publication bias, and prestige bias, highlight persistent critiques of credibility and inclusivity in editorial systems. This trend could be linked to the increasing awareness of epistemic injustice in peer review and growing calls for diversity and transparency within academic governance [47]. As institutions and funders demanded greater accountability, concerns about exclusionary practices grew, driving the rapid rise in publications on bias.

TABLE 2 | Performance analysis results for Topic 1: Gatekeeping and editorial bias

Results	Topic 1: Gatekeeping and editorial bias
N of analyzed documents (total document - duplicates)	1420 (1438/18)
Annual growth rate %	10.7
Average citations per year per document	2.955
Document types (*N*)	Article (880) Book (16) Book chapter (61) Conference paper (47) Editorial (157) Review (259)
Maximally and minimally productive year (*N* of publications)	2019 (158) 2000 (5)
Top corresponding author's country (*N* of documents)	USA (365)
Top 5 sources	1. *Review of Financial Studies* 2. *PLOS ONE* 3. *Scientometrics* 4. *BMJ Open* 5. *Review of Corporate Finance Studies*
Top 5 keywords	1. Peer review 2. Publication bias 3. Bias 4. Prestige bias 5. Publication

Prestige-driven Metrics and Research Evaluation Before and After DORA: Research on metrics and assessment constituted the largest body of literature, expanding significantly after 2010 in parallel with growing scrutiny of JIF, rankings, and research evaluation frameworks. Table 3 compares performance indicators before (2000–2013) and after (2014–2025) the launch of the San Francisco DORA.

TABLE 3 | Performance analysis results of the second topic: Prestige-driven metrics and research evaluation before and after the emergence of San-Francisco DORA

Results	2000-2013 pre-DORA and Leiden Manifesto	2014-2025 post-DORA and Leiden Manifesto
N of analyzed documents	1664	5380
Annual growth rate %	18.35	-1.26
Average citations per year per document	3.572	3.593
Document types (*N*)	Article (1004) Book (1) Book chapter (30) Conference paper (300) Editorial (52) Review (277)	Article (3554) Book (23) Book chapter (167) Conference Paper (548) Editorial (113) Review (975)
Maximally and minimally productive year (*N* of publications)	2013 (286) 2000 (32)	2022 (600) 2025 (281)
Top corresponding author's country (*N* of documents)	USA (296)	China (825)
Top 5 sources	1. *PLOS ONE* 2. *Scientometric* 3. *Cochrane Database of Systematic Reviews* 4. *Journal of Clinical* Epidemiology 5. Lecture Notes in Computer Science	1. *Cochrane Database of Systematic Reviews* 2. *PLOS ONE* 3. *Scientometrics* 4. *Journal of Clinical* Epidemiology 5. BMJ Open
Top 5 keywords	1. Impact factor 2. Bibliometrics 3. Research evaluation 4. Bias 5. Citation analysis	1. Research evaluation 2. Impact factor 3. Bibliometrics 4. P-hacking 5. Publication bias

Note. 173 documents were removed for deduplication before the split. For the top 5 keyword components, keywords with synonymous meanings, as explained above, were merged. Keywords that are not relevant to the subject matter were also excluded as mentioned above.

The pre-DORA period was characterized by rapid growth and strong early engagement, with keywords such as impact factor, bibliometrics, and research evaluation reflecting discourses over citation-based indicators. After DORA, publication volume expanded significantly, and growth stabilized as the field matured. Within this evolving landscape, although CiteScore offers a representative inclusive metric within the Scopus ecosystem, our analysis prioritizes JIF as a discursive object because it is more frequently cited in policy interventions like DORA and embodies the symbolic prestige that reform movements seek to deconstruct. Citation activity remained relatively high, while the scope of outputs diversified to include more conceptual pieces such as book chapters and editorials. A notable geographic shift occurred as China overtook the United States in authorship of leading papers, indicating new centers of influence in research evaluation discourse. Thematic patterns also evolved: While traditional indicators remained prominent, terms like p-hacking and publication bias emerged, suggesting heightened concern with research integrity and reproducibility. Overall, the time-sliced comparison suggests that the discourse shifted from critiquing traditional metrics toward developing more responsible and reflexive approaches to research assessment. This transition reflects both the effects of policy interventions and institutional drivers, such as institutional initiatives (e.g., holistic faculty evaluation), which intensified scrutiny of metric misuse. The rise of terms like p-hacking illustrates how the reproducibility crisis has amplified pressure for reform, shifting discourse from descriptive critiques of JIF toward systemic actions to promote integrity and equity.

Barrier and equity issues in research accessibility before and after Sci-Hub: Equity and access research grew more slowly but reflects rising concern about structural inequalities in publishing, particularly after the spread of open-access mandates and Sci-Hub [36]. Table 4 compares performance indicators before (2000–2011) and after (2012–2025) the emergence of Sci-Hub shadow library. Prior to 2012, accessibility research was modest in scale, primarily situated within library and information science, and framed around digital transition and institutional infrastructure. Post-Sci-Hub, output expanded more than fourfold, citation rates nearly doubled, and the thematic scope broadened considerably. While open access and publishing remained central, new keywords such as APCs, predatory journals, and Sci-Hub itself signaled a shift toward more politicized and economically charged debates. Publication venues also diversified beyond library science, reflecting the integration of access concerns into wider conversations on scholarly communication.

Overall, this evolution indicates that Sci-Hub acted as a catalyst, drawing sustained scholarly attention to equity and access issues and reframing them from a technical concern into a contested global policy challenge. This expansion could be attributed to the political economy of publishing, in which escalating APCs and oligopolistic control created systemic inequities. At the same time, Sci-Hub functioned as a disruptive equalizer, reframing debates over access as ethical and political struggles. The doubling of citation rates reflects how these drivers drew interdisciplinary attention and embedded equity issues into mainstream scholarly communication.

TABLE 4 | Performance analysis results of the second topic: Prestige-driven metrics and research evaluation before and after the emergence of San-Francisco DORA

Results	2000-2011 Pre Sci-Hub	2012-2025 Post Sci-Hub
Number of analyzed documents	276	1361
Annual growth rate %	10.19	5.8
Average citations per year per document	0.8838	1.725
Document types (*N*)	Article (160) Book (3) Book chapter (16) Conference Paper (38) Editorial (16) Review (43)	Article (978) Book (14) Book chapter (86) Conference Paper (91) Editorial (33) Review (159)
Maximum and minimum productive year (*N* of publications)	2011 (32) 2003 (10)	2024 (171) 2012 (37)
Top corresponding author's country (*N* of documents)	USA (81)	USA (258)
Top 5 sources	1. *Serials Librarian* 2. *Information Services and Use* 3. *D-Lib Magazine* 4. *College and Research Libraries* 5. *First Monday*	*1. Learned Publishing* *2. Insights: the UKSG Journal* *3. Scientometrics* *4. Publications* *5. Publishing Research Quarterly*
Top 5 keywords	1. Publishing 2. Open access 3. Electronic publishing 4. Libraries 5. Internet	1. Open access 2. Article processing charge 3. Publishing 4. Sci-Hub 5. Predatory journals

Note. 68 documents were removed for deduplication before the split. For the top 5 keyword components, keywords with synonymous meanings, as explained above, were merged. Keywords that are not relevant to the subject matter were also excluded as mentioned above.

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5.2 | Conceptual analysis

Gatekeeping and editorial bias: Figures 2(a) and (b) display the keyword co-occurrence networks and thematic map of this topic. Keyword co-occurrence reflects concerns about accountability, transparency, and equity in editorial processes, as shown in the following results: Cluster 1 (Blue, 10 keywords) centers on peer review, publication bias, and related concepts such as impact factor, transparency, and open science, highlighting procedural and normative dimensions of publishing.

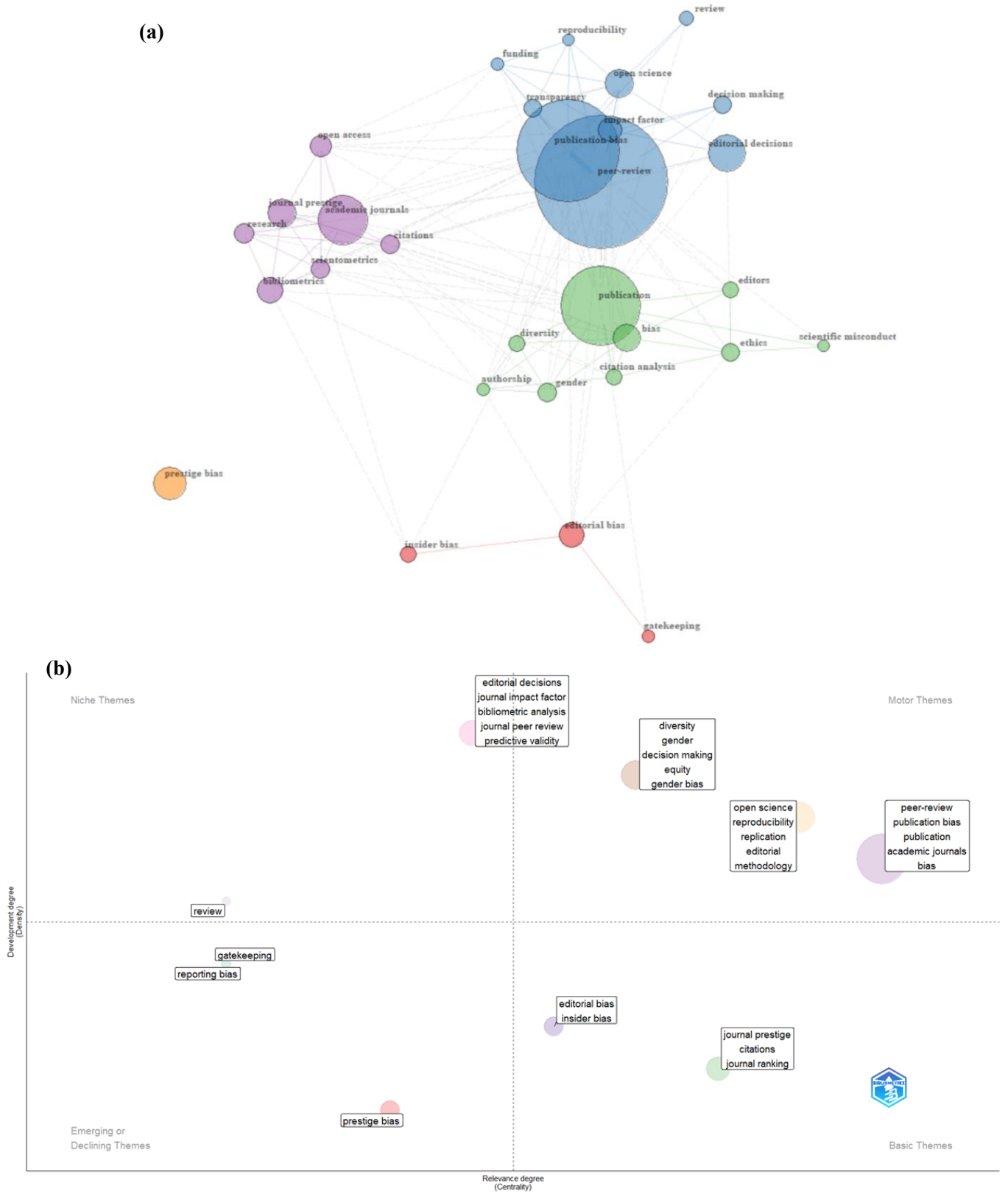

FIGURE 2 | Keyword Co-occurrence Networks (a) and Thematic Map (b) of the Gatekeeping and Editorial Bias Topic.

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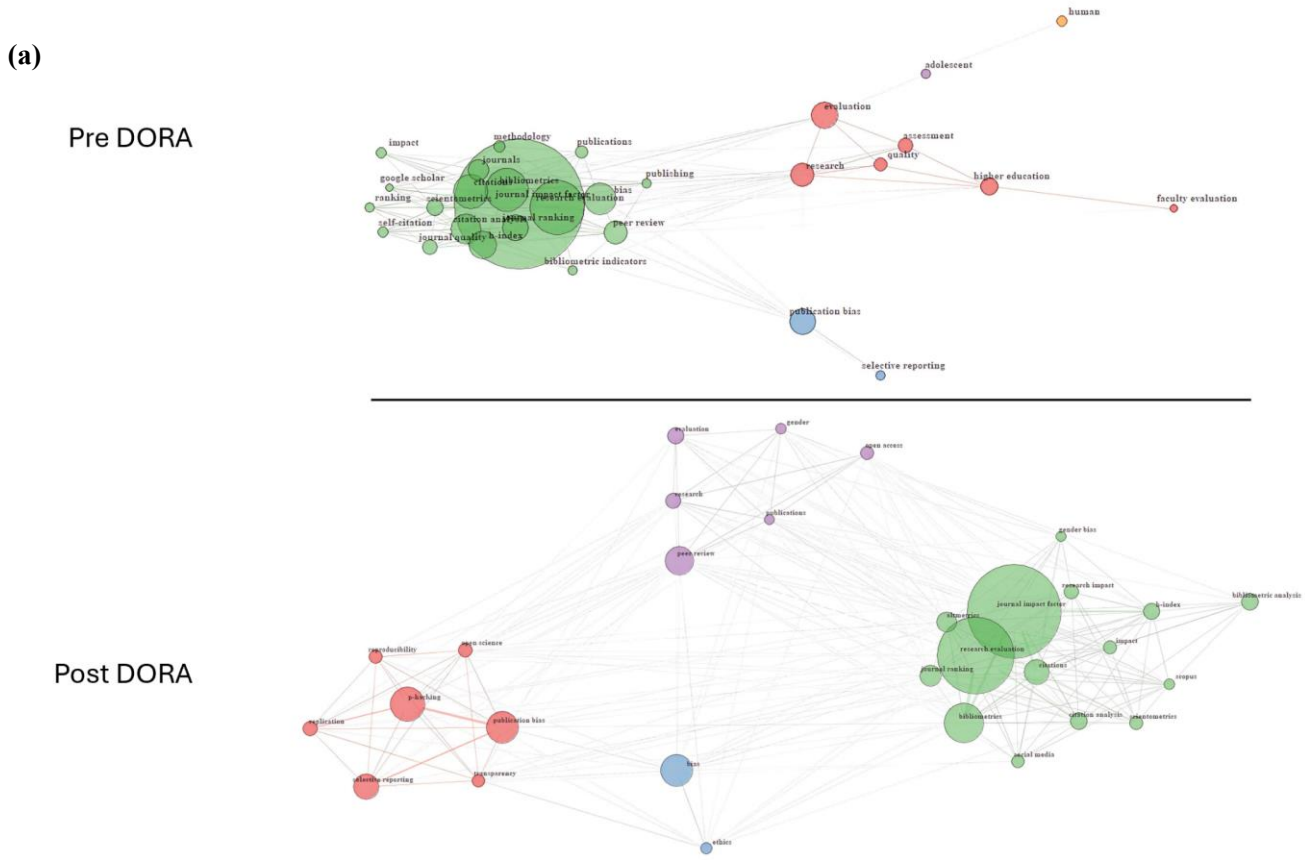
Cluster 2 (green, 9 keywords) focuses on socio-ethical concerns, including diversity, authorship, gender, bias, ethics, and scientific misconduct, as well as on citation analysis that reflects attempts to track disparities empirically. Cluster 3 (Purple, 7 keywords) revolves around academic journals, open access, journal prestige, and scientometrics, linking structural aspects of scholarly communication to editorial bias and prestige-driven gatekeeping. Cluster 4 (Red, 3 keywords) directly addresses editorial and insider bias, emphasizing consolidation of editorial power; prestige bias forms an isolated peripheral cluster, suggesting under-exploration or independent framing. Thematic map results are as follows: The Motor theme quadrant highlights three clusters: (1) peer review, publication bias, and academic journals, reflecting critiques of traditional publishing; (2) open science, reproducibility, and editorial methodology, emphasizing transparency and accountability; and (3) diversity, gender, and equity, linking editorial practices to fairness and representation. The Niche theme includes a cluster on editorial decisions, journal impact factor, bibliometric analysis, and peer review reliability, alongside the isolated keyword “review,” representing empirical quantification of editorial practices. The Emerging/Declining theme consists of isolated keywords (e.g., gatekeeping, reporting bias, and prestige bias) that indicate recognized but fragmented topics. The Basic theme comprises two clusters: editorial bias and insider bias, reflecting foundational power dynamics, and journal prestige, citations, and ranking, representing the prestige economy of academic publishing.

Prestige-driven Metrics and Research Evaluation Before and After DORA: Figure 3(a) presents the keyword co-occurrence networks of the research evaluation discourse before and after the inception of DORA. The pre-DORA network was dominated by a large cluster centered on JIF, citations, and related metrics, highlighting the traditional, metric-driven nature of evaluation and its link to institutional concerns (e.g., faculty evaluation, and promotion). Early awareness of issues like publication bias and selective reporting was present but peripheral. In the post-DORA network, while JIF and bibliometrics remain central, the discourse expands to integrate altmetrics, social media, and equity concerns (gender bias), reflecting a diversification of indicators. Furthermore, the post-DORA network shows a maturing focus on research integrity and transparency, moving these critiques toward a central thematic area. Figure 3(b) displays the thematic map of this topic before and after DORA. Pre-DORA, the Motor theme was represented by JIF, research evaluation, and citations, underscoring the uncritical reliance on citation-based metrics as proxies for research quality. The Niche theme included the isolated keyword "faculty evaluation," indicating limited attention to individual assessment. Post-DORA, the map highlights a more complex structure: foundational assessment practices (peer review, publications) and quantitative metrics (JIF, altmetrics) coexist in the Basic theme. Critiques are more specific, with clusters dedicated to methodological scrutiny (bias, risk of bias) and institutional equity (tenure, promotion, diversity) appearing in the Niche theme.



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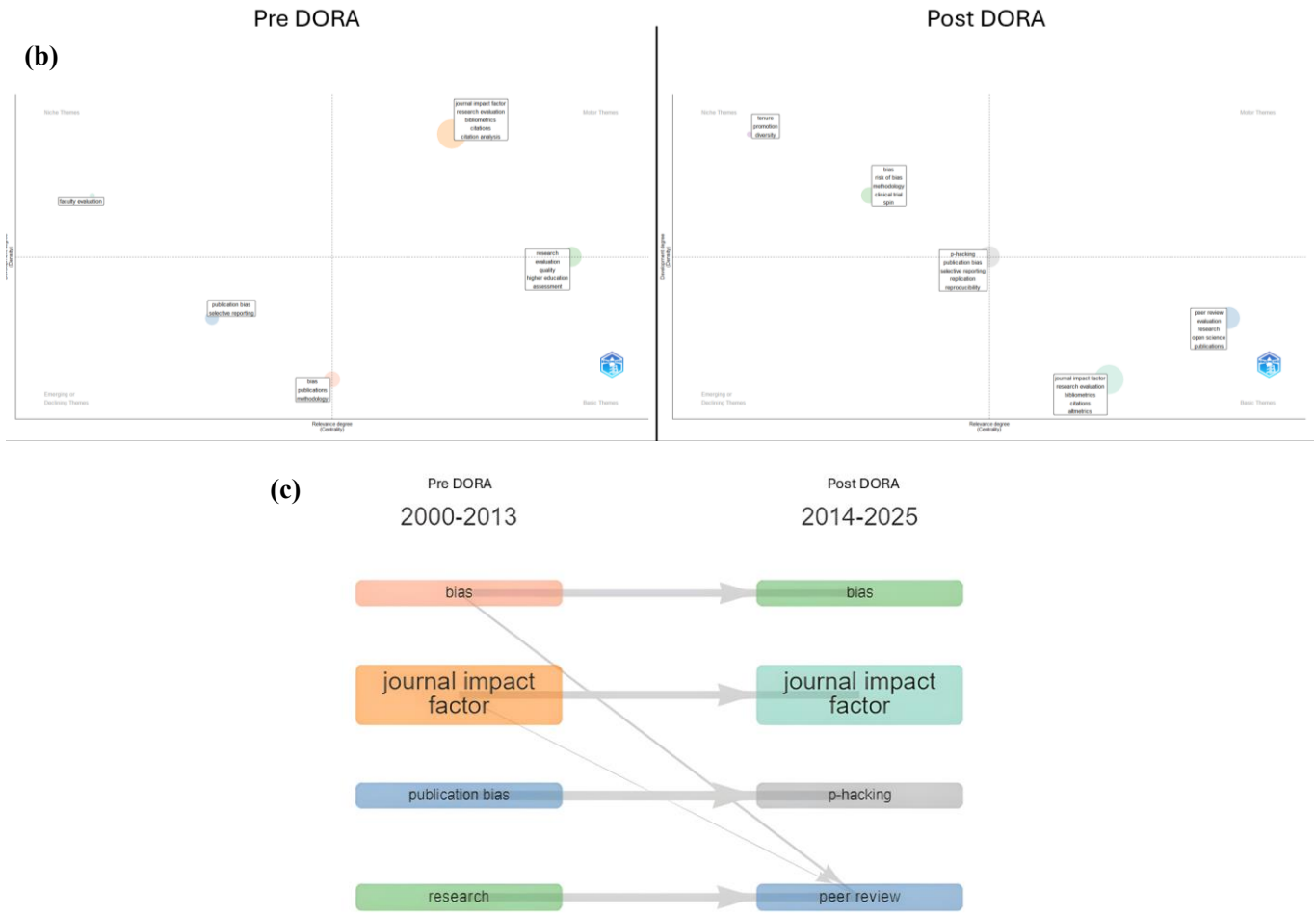


FIGURE 3 | Keyword Co-occurrence Networks (a), Thematic Map (b), and Thematic Evolution (c) of the Prestige-driven Metrics and Research Evaluation Topic.

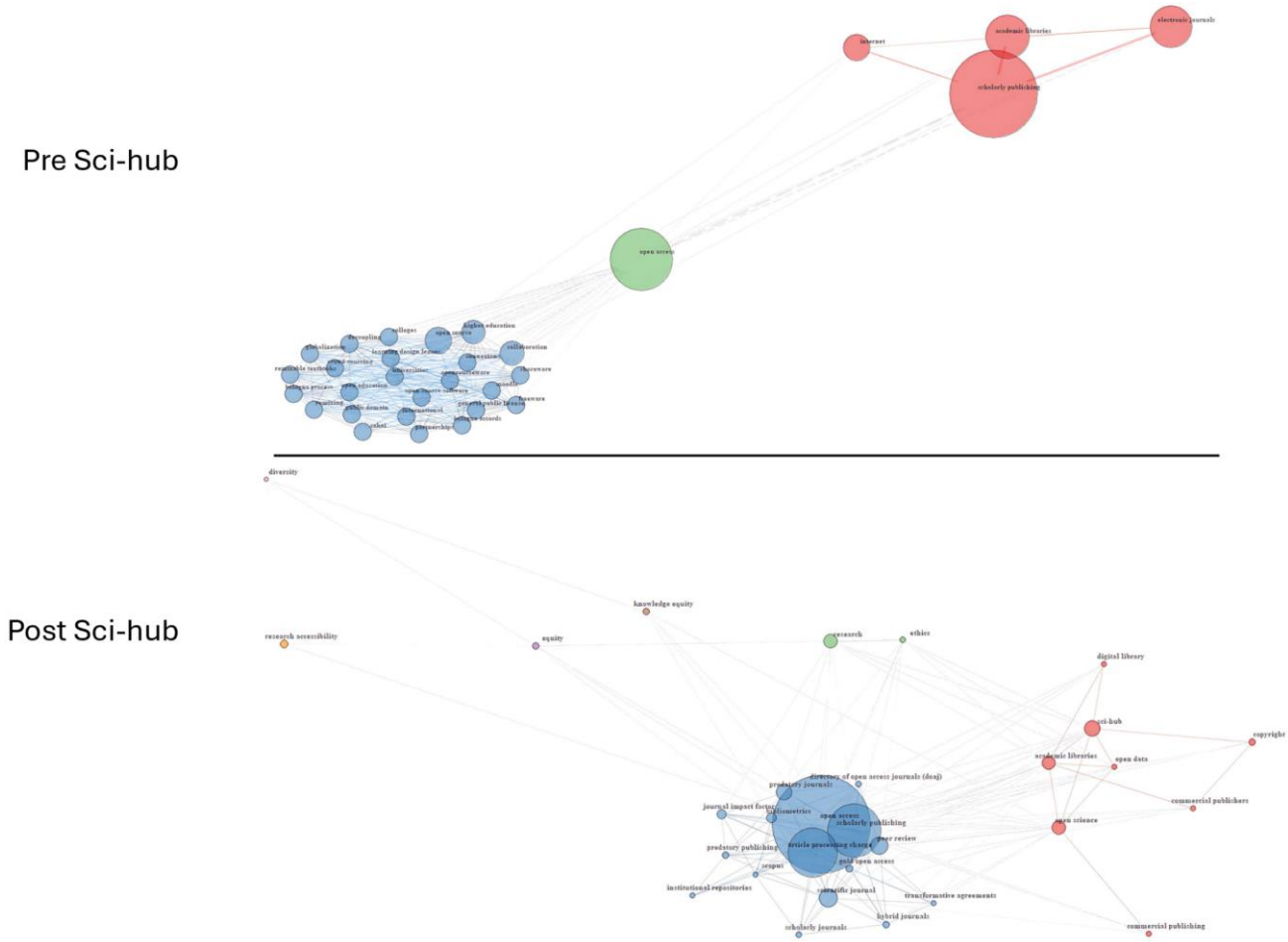
This shift confirms the integration of rigor and equity into the post-DORA discourse. Figure 3(c) illustrates the thematic evolution of the pre-DORA and post-DORA period. The results show high thematic stability for "Bias" and JIF, indicating that these keywords remain as unresolved discourses, as evidenced by their appearance across the divide. However, a significant evolutionary transition is observed where "Publication Bias" in the first period evolved into "P-hacking" in the second. This indicates a shift from macro-level concerns about what is published toward a more granular, methodological scrutiny of how research is conducted. Furthermore, the linkages suggest that in the contemporary era, peer review has emerged as the primary hub where previously disparate concerns around metrics and systemic exclusion now converge. Overall, the evolution demonstrates a transition from metric-driven, superficial evaluation toward the integrated scrutiny of transparency, methodology, and systemic change.

Barrier and equity issues in research accessibility Before and After Sci-Hub: Figure 4(a) displays the keyword co-occurrence networks. Before Sci-Hub, the discourse was fragmented, clustering around two parallel systems: one focused on scholarly publishing, academic libraries, and electronic journals, and another on open education, collaborative platforms, and open-source innovation. Open access was an isolated keyword, indicating recognition but lacking integration into the main discourse. Post-Sci-Hub, the discourse shifts to center on open access, integrating it with related terms like scholarly publishing, APCs, and predatory journals. A second, pivotal discourse forms around Sci-Hub, highlighting the tension between traditional publishing and disruptive alternatives. The introduction of terms like open science, open data, and copyright in this discourse reframes knowledge as a public good. Fragmented nodes emphasize justice-oriented concerns such as knowledge equity and research accessibility. Figure 4(b) displays the thematic map of this topic. The pre-Sci-Hub landscape reflects an entrenched but fragmented system. Debates over commodification and costs were central, while advocacy for alternatives remained marginal. Libraries and digital infrastructures anchored the basic discourse, but the field lacked a unifying mechanism to challenge systemic access barriers, which is a gap Sci-Hub would soon fill. After the emergence of Sci-Hub, the map depicts a mature but fragmented discourse. Open access is institutionalized, shadow libraries remain central, and justice-oriented themes are scattered; this suggests an unsettled terrain where reform, disruption, and normative claims intersect without full integration. Figure 4(c) displays the thematic evolution of this topic. The Pre–Sci-Hub era focused on technical and library-centric themes such as "Institutional Repositories" and "Databases". The Post–Sci-Hub era shows a critical shift toward accessibility, legitimacy, and evaluation. The appearance of Sci-Hub as a

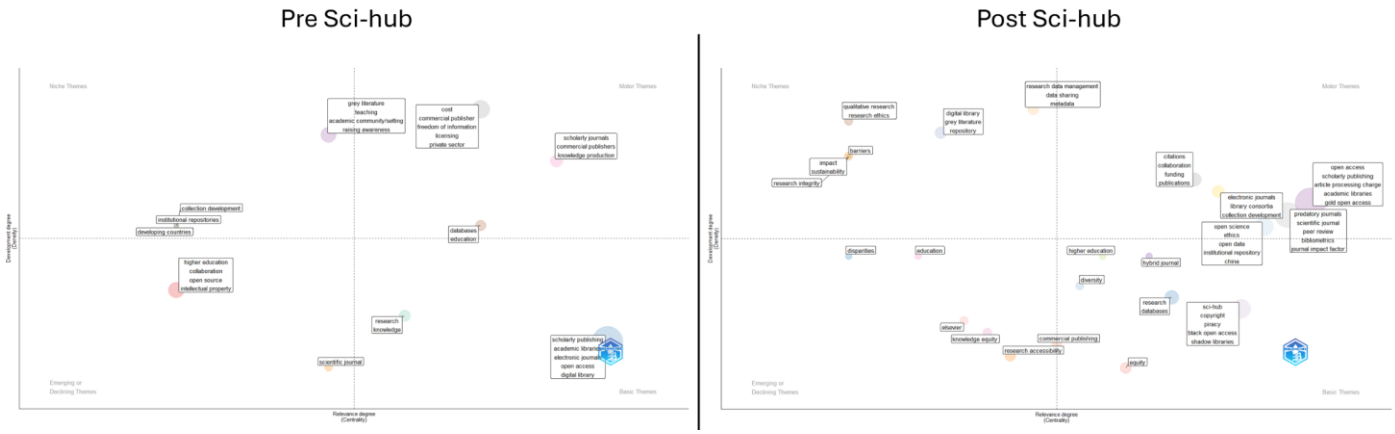
standalone theme, alongside open access and predatory journals, signals intensified scrutiny of publishing hierarchies. Linkages show that core infrastructures (libraries, repositories) remain, but they are re-situated within broader debates on openness.

Overall, this evolution indicates that the discourse has moved from internal library management toward a high-stakes debate over the ethics of access and the quality of the digital record.

(a)



(b)



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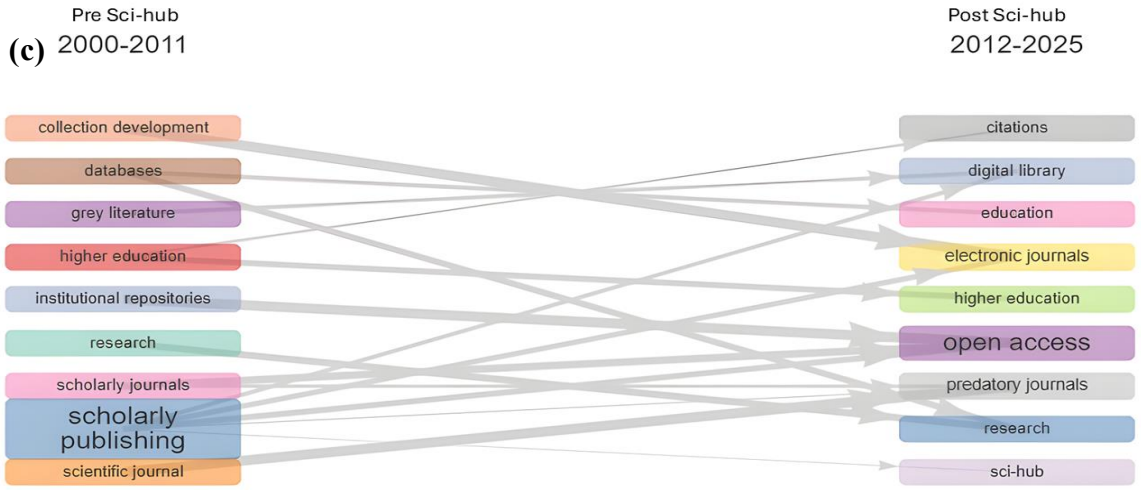

FIGURE 4 | Keyword Co-occurrence Networks (a), Thematic Map (b), and Thematic Evolution (c) of the Barrier and Equity Issues in Research Accessibility Topic.

6 | Discussion and conclusions

This study demonstrates that academic publishing reform has transitioned from a technical management phase to a socio-political critique centered on power, prestige, and access. The longitudinal analysis reveals three distinct but intersecting trajectories as follows (see Appendix D for the summary table).

6.1 | Gatekeeping as a venue of epistemic justice

The rapid growth in gatekeeping discourse (10.7% annually) mirrors an intensifying scrutiny of structural exclusion [21, 47]. Result integration shows a trend of reflexive scrutiny of the system, especially in elite venues that disadvantage underrepresented scholars and global perspectives, as key terms such as publication bias and decision-making are brought into the discussion [49]. Additionally, practices such as insider bias and elitism constitute an issue of epistemic (in) justice by shaping whose knowledge is legitimized in scholarship [21-22].

6.2 | From metric-centric to evaluative pluralism

The largest dataset of this discourse reflects the community's attention, which is natural since research evaluation impacts nearly all scholars. The integration shows the trend of methodological reorientation; JIF–once regarded as a proxy for excellence–is recontexualized and considered with other indicators and narrative summaries [50-51]. In academia, the field is moving, in part, from measuring research outputs to interrogating the integrity of the scientific process itself (e.g., transparency, reproducibility) [52-53]. The rise of Chinese authorship reflects a global shift in how research is conducted, challenging the historical Anglo-American hegemony over evaluative norms.

6.3 | Beyond infrastructure: accessibility as a political Imperative

The most drastic paradigm shift occurred in Topic 3. Pre-2011, access was framed as a library-led infrastructural concern. Then, Sci-Hub catalyzed a transition to a confrontational, ethical debate over the right to knowledge [7, 37, 54]. The links between actors such as journals and repositories to emerging factors such as open access, predatory journals, and Sci-Hub itself suggest that the field has shifted from asking how knowledge should be stored to a confrontational debate over who has the right to knowledge and under what economic conditions [55-57].

Collectively, these shifts reflect a move toward reflexivity and transparency, yet structural inertia remains a barrier. Reform is experienced unevenly; while the Global North debates narrative CVs, the Global South faces "predatory" labels and economic exclusion. However, the expansion of diamond open-access models in Latin America (e.g., *SciELO*) and library-based publishing demonstrates that high-quality, sustainable alternatives to commercial models are feasible [58-59]. These examples emphasize that economic barriers are contingent upon how publishing ecosystems are organized and funded, rather than being intrinsic.

The study carries significant implications for evaluation reform, open science, and equity discourse and practice. For policymakers and institutions, research evaluation should pivot from metricization toward assessing methodological rigor and societal impact. Institutions should adopt frameworks such as DORA or the Leiden Manifesto to reward data sharing rather than journal prestige. For editors and publishers, gatekeeping should evolve into mentorship, replacing the binary accept-reject model with open, constructive dialogue for continuous improvement (e.g., *eLife*'s "Publish, Review, Curate" model). Diversifying editorial boards demographically and geographically is a moral and professional imperative [60]. Knowledge access should be reconceptualized as a public right rather than a publisher-granted privilege. At the individual level, scholars should reflexively confront the ethical foundations of their publishing choices, recognizing that uncritical adherence to prestige metrics could reproduce systemic inequality.

The study carries significant implications for evaluation reform, open science, and equity discourse and practice. For policymakers and institutions, research evaluation should pivot from metricization toward assessing methodological rigor and societal impact. Institutions should adopt frameworks such as DORA or the Leiden Manifesto to reward data sharing rather than journal prestige. For editors and publishers, gatekeeping should evolve into mentorship, replacing the binary accept-reject model with open, constructive dialogue for continuous improvement (e.g., *eLife*'s "Publish, Review, Curate" model). Diversifying editorial boards demographically and geographically is a moral and professional imperative [60]. Knowledge access should be reconceptualized as a public right, rather than a publisher-granted privilege. At the individual level, scholars should reflexively confront the ethical foundations of their publishing choices, recognizing that uncritical adherence to prestige metrics could reproduce systemic inequality.

Looking forward, the trajectory of reform is being further disrupted by AI-driven gatekeeping [61]. As AI begins to mediate discovery and reviewer selection, the risk of reinforcing historical epistemic biases increases. Despite this, the reform is moving forward, as seen in examples such as the 2025/2026 implementation of the Coalition for Advancing Research Assessment toward a more pluralistic, narrative-based evaluation era [62]. Future research should apply the lens of epistemic injustice to these emerging technologies and practices to ensure that transparency and equity remain the goal of scholarly communication. Ultimately, the value of knowledge is determined not solely by quantitative metrics but by its capacity to foster understanding, inclusivity, and societal progress.

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Ethical Statement

This study does not contain any studies with human or animal subjects performed by any of the authors.

Conflicts of Interest

The authors declare no conflict of interest to the best of their knowledge.

Author Contribution Statement

Tarid Wongvorachan: Conceptualization, Methodology, Validation, Formal Analysis, Data curation, Original draft preparation, Writing, review, and editing, visualization.
Suchada Naknarin: Validation, Resources, Writing, review, and editing
All authors have agreed to the published version of the manuscript.

Data Availability Statement

The dataset is available upon request.

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Appendix A | Metadata Export Fields from Scopus

The following fields were exported from Scopus:

- Authors
- Author Full Names
- Author(s) ID
- Title
- Publication Year
- Source Title
- Volume
- Issue
- Article Number
- Page Start
- Page End
- Page Count
- Cited By
- DOI
- Link
- Affiliations
- Authors with Affiliations
- Abstract
- Author Keywords
- Index Keywords
- Molecular Sequence Numbers
- Chemicals/CAS Registry Numbers
- Tradenames
- Manufacturers
- Funding Details
- Funding Texts
- References
- Correspondence Address
- Editors
- Publisher
- Sponsors
- Conference Name
- Conference Date
- Conference Location
- Conference Code
- ISSN
- ISBN
- CODEN
- PubMed ID
- Language of Original Document
- Abbreviated Source Title
- Document Type
- Publication Stage
- Open Access Status
- Source
- EID (Electronic Identifier)

Appendix B | Methodological Tools and Parameters

The bibliometric analyses were conducted using the following tools and settings:

- Bibliometrix R package (Aria & Cuccurullo, 2017): used for performance analysis (publication trends, sources, countries).
- Biblioshiny: interface for running and validating Bibliometrix routines.
- biblioAnalysis function for performance analysis with only sep = ";" parameter configu-
- ration.
- biblioNetwork function for keyword co-occurrences network analysis, with the following configuration: analysis = "co-occurrences", network = "authorkeywords", sep = ";"
- thematicMap for thematic map analysis (Cobo et al., 2011), with the following configuration: field = "DE", n = 250, minfreq = 4, stemming = FALSE, size = 0.5, n.labels=5, repel = TRUE
- thematicEvolution function for thematic evolution analysis (Cobo et al., 2011), with thefollowing configuration: field = "DE", years = years, n = 250, minFreq = 4

Appendix C | Removed and Consolidated Keywords

For the Gatekeeping and Editorial Bias topic, following terms were excluded: “news production”, “online journalism”, “journalism”, “news”, “newspapers”, “online-news, “on-line news”, “social media”, “communication”, “innovation”, “content analysis”, “cultural evolution”, “cultural transmission”, “social learning”, “clinical trials”, “meta-analysis”, “meta-analyses”, “systematic review”, “COVID-19”, “epidemiology”, “artificial intelligence”, “trial registration”, “clinical trial registration“, “evidence-based medicine”, “protocol”, “depression”, “systematic reviews”, and “spine”. This was done because these terms, while potentially frequent or popular in bibliographic records, reflect broader or unrelated topics and thus dilute the thematic precision of the analysis.

Moreover, following terms were merged: “publication”, “publishing”, “academic publishing”, and “scholarly publishing” were treated as a single concept. “journal prestige” and “prestige” were also merged. “Academic journals”, “academic journal”, “Journal” and “journals” were also merged. “Editorial decisions” and “editorial decision” were also merged. This was necessary to prevent the dispersion of conceptually similar ideas into separate

clusters, which could obscure the true thematic structure of the field.

For the Prestige-driven metrics and research evaluation topic, following terms were excluded: “depression”, “surgery”, “consort”, “internet”, “child”, “optimization”, “deep learning”, “serials”, “data mining”, “machine learning”, “schizophrenia”, “uncertainty”, “randomized controlled trials”, “systematic review”, “meta-analysis”, “simulation”, “management”, “evidence-based practice”, “education”, “china”, “clinical trials”, “evidence-based medicine”, “systematic reviews”, “review”, “COVID-19”, “SARS-CoV-2”, “PRISMA”, “artificial intelligence”, “meta-analyses”, “clinical trial registration”, “HARKing”, “clinical appraisal”, “big data”, “clinical practice guidelines”, “observational study”, “correlation”, “biology”, “neck pain”, “qualitative research”, “Iran”, “World Wide Web”, “UK”, “Australia”, “United Kingdom”, “marketing”, “history”, “modeling”, “communication”, “MEDLINE”, “pharmacoepidemiology”, and “coronavirus”.

Moreover, following terms were merged: “randomized controlled trials” and “randomized controlled trial”; “human” and “humans”; “research evaluation” and “research assessment”; “journal impact factor”, “impact factors”, and “impact factor”; “citations” and “citation”; “h-index” and “h index”; “journals” and “journal”; “journal ranking” and “journal rankings”; “publications” and “publication”; “altmetrics” and “alternative metrics” and “altmetric”.

For the Barrier and equity issues in research accessibility topic, following terms were excluded: “Wikipedia”, “cancer”, “pharmacology”, “Ethiopia”, “Nigeria”, “recruitment”, “COVID-19”, “periodicals”, “assessment”, “cognitive behavioral theory”, “economics”, “federated search”, “metasearch”, “electronic books”, “usage statistics”, “blogs”, “evaluation”, “serials”, “chemistry”, “portals”, “case study”, “information technology”, “information retrieval”, “Web 2.0”, “reference services”, “guidelines”, “Dublin Core”, “OAI-PMH”, “health disparities”, “health inequity”, “climate change”, "International Association for Vegetation Science (IAVS), “health equity”, “medical education”, “artificial intelligence”, “serials crisis”, "vegetation classification", “systematic review”, and “meta-analysis”.

Moreover, following terms were merged: “article processing charge”, “APC”, “article processing charges”, “article processing charge (APC)”, “article processing charges (APC)”; “human” and “humans”; “open access”, “open access journals”, “open access publishing”, “OA”; “journal impact factor”, “impact factors”, “impact factor”; “academic libraries”, “university libraries”, “libraries”, “library”, “digital library” and “digital libraries”; “scholarly publishing”, “scholarly communication”, “academic publishing”, “publishing”, “scientific publishing”, “journal publishing”; “scientific journal”, “journals”, “scientific journals”; “research accessibility” and “accessibility”; “electronic journals”, “electronic publishing”, “e-journals”; “cost” and “price”; “predatory journals”, “predatory journal”, “predatory”; “Directory of Open Access Journals (DOAJ)” and “DOAJ”.

Appendix D | Summary Table of Key Characteristics of the Discourse

Topic	Insights from performance analysis	Insights from conceptual analysis	Key characteristics of the discourse through result integration
1	• Highest growth across topics, indicating a steadily increasing scholarly interest. • The discourse is not only empirical but also reflective and opinion-driven • US is the dominant country	• Focus on peer review systems and editorial practices • Clusters reveal discourses on editorial bias, inclusion, and power asymmetries in the scholarly communication process. • Recurring keywords are “peer review,” “publication bias,” “prestige bias”	• Discourse is critical and reform-oriented • The main theme is transparency, bias, power in editorial systems • Links to epistemic justice and legitimacy in academia
2 pre-DORA	• Rapid publication growth • High number of conference proceedings, implying topic engagement • Dominated by USA	• Evaluation centered on quantification and hierarchy • Journal impact factor viewed as legitimate proxy for value • Early concerns (e.g., selective reporting) were marginal • Critiques were emergent and peripheral	• Shift from a metrics-dominated, performance-driven model to a more reflexive, ethically grounded, and pluralistic evaluation paradigm. • Metrics are now contextualized within broader concerns of transparency, fairness, and methodological rigor. • Keyword shifts to conversation in examining the processes and incentives that shape scientific outputs.
2 post-DORA	• Relatively lower engagement from growth rate and number of conference proceedings. • More diversified discussion as seen from the distribution of document type. • Dominated by China	• Reflexive and multidimensional discourse • Focus on methodological integrity, ethics, and equity • Research integrity and peer review now central • Emphasis on rethinking research evaluation	

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(Continued)

Topic	Insights from performance analysis	Insights from conceptual analysis	Key characteristics of the discourse through result integration
3 pre-Sci-hub	• Relatively smaller starting point interest from high growth but low citation rate • Dominated by USA • Sources are library-oriented field	• Framed as infrastructure and digitization issue • Themes focused on institutional roles (e.g., libraries) • Open access was fragmented and peripheral • Debate largely within traditional publishing structures • Keywords imply discussion around the infrastructure of research access.	• Shift from technical/institutional access issues to a politicized, systemic critique of publishing norms. • The field now engages with ethical, economic, and global dimensions of access, driven by Sci-Hub's role in exposing structural inequities and legitimizing informal knowledge sharing.
3 post-Sci-hub	• Relatively higher engagement with the topic as seen from nearly doubled citation rate albeit lower growth rate. • Dominated by USA • Sources include science evaluation and communication venues.	• Shift to systemic, ethical, and legal critique • Central themes are APCs, piracy, predatory journals, open access • Motor themes now include reform and inclusivity • Expanded discourse on grassroots dissemination and data ethics • Keywords imply economic and political-oriented discourse, with Sci-hub as a key object.	