

RISK MANAGEMENT AND ESG DISCLOSURE: TRENDS, GAPS, AND EMERGING THEMES – A BIBLIOMETRIC EXPLORATION

Wan Razazila Wan Abdullah^{1*}

Norhayati Zamri²

Farah Husna Mohd Fatzel³

Liyana Ab Rahman⁴

Ahmad Saiful Azlin Puteh Salin⁵

¹ Faculty of Accountancy, Universiti Teknologi MARA, Perak Branch, Tapah Campus, 35400, Tapah Road, Perak, Malaysia (E-mail: wanrazz@uitm.edu.my)

² Faculty of Accountancy, Universiti Teknologi MARA, Perak Branch, Tapah Campus, 35400, Tapah Road, Perak, Malaysia (E-mail: norha266@uitm.edu.my)

³ Faculty of Accountancy, Universiti Teknologi MARA, Perak Branch, Tapah Campus, 35400, Tapah Road, Perak, Malaysia (E-mail: farahhusna@uitm.edu.my)

⁴ Faculty of Accountancy, Universiti Teknologi MARA, Perak Branch, Tapah Campus, 35400, Tapah Road, Perak, Malaysia (E-mail: liyana748@uitm.edu.my)

⁵ Faculty of Accountancy, Universiti Teknologi MARA, Perak Branch, Tapah Campus, 35400, Tapah Road, Perak, Malaysia (E-mail: ahmad577@uitm.edu.my)

*Corresponding author: wanrazz@uitm.edu.my

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Abstract: *This study conducts a bibliometric meta-analysis to map the intellectual structure and research evolution at the intersection of risk management (RM) and environmental, social, and governance (ESG) practices. Drawing on 1,275 Scopus-indexed publications from 2009 to 2025, the dataset includes 47,812 citations, an h-index of 102, and contributions from over 3,800 authors across 71 countries. Data cleaning and harmonization were performed using OpenRefine and biblioMagika®, while VOSviewer enabled science mapping through co-authorship, keyword co-occurrence, and bibliographic coupling. The analysis identifies four thematic clusters: (1) ESG risk disclosure and financial performance, (2) governance and regulatory frameworks, (3) climate and sustainability risk integration, and (4) risk-based ESG investment strategies. Emerging themes include transition risk modeling, ESG stress testing, and digital ESG analytics. Publication trends show sharp growth after 2015, driven by regulatory reforms and investor demand for ESG-aligned practices. Geospatial analysis highlights dominant contributions from the United States, United Kingdom, China, and the European Union, alongside increasing engagement from Southeast Asia and Latin America. Co-authorship mapping reveals moderately dense collaboration with influential hubs and cross-disciplinary linkages. Overall, the study provides a comprehensive synthesis of RM–ESG research, offering insights for academics, policymakers, and institutional stakeholders advancing sustainable risk governance.*

Keywords: *Risk Management, ESG; Bibliometric Meta-Analysis; Scopus; VOSviewer*

Introduction

In recent years, the intersection of risk management and environmental, social, and governance (ESG) disclosure has emerged as a focal point in both academic research and corporate practice. The growing importance of ESG stems not only from its ethical underpinnings but also from its profound implications for financial performance, firm resilience, and systemic risk. As sustainability becomes increasingly integrated into strategic decision-making, scholars and practitioners alike are seeking to understand how ESG practices shape risk perceptions, financial stability, and long-term value creation. A growing body of evidence suggests that ESG factors play a crucial role in shaping firm performance and mitigating risks, particularly during times of crisis. For instance, firms with stronger corporate social responsibility (CSR) and ESG practices demonstrated greater resilience during the COVID-19 pandemic (Bae et al., 2021), while socially responsible funds have historically exhibited relative stability during market downturns (Nofsinger & Varma, 2014). Moreover, climate-related risks have become a central concern for institutional investors, influencing portfolio allocation and risk assessment (Krueger et al., 2020). These findings highlight the evolving recognition of ESG as a key determinant of both firm-level and systemic risk.

At the micro level, ESG practices influence governance structures, corporate investment, and disclosure quality. Research shows that board characteristics and sustainable compensation policies enhance firms' carbon performance (Haque, 2017), while ESG controversies and board gender diversity moderate the relationship between ESG performance and financial risk (Shakil, 2021). Similarly, ESG disclosure practices are associated with reduced financial irregularities in Chinese firms (Yuan et al., 2022) and can shape investors' perceptions of risk during initial public offerings (Reber et al., 2022; Baker et al., 2021). These findings reinforce the idea that governance mechanisms and disclosure quality are integral to managing reputational and financial risks (Chasiotis et al., 2024).

Beyond firm-specific implications, ESG disclosure carries broader market and policy relevance. Media coverage of corporate social irresponsibility has been shown to increase financial risk (Kölbel et al., 2017), while ESG-related news influences stock market reactions (Capelle-Blancard & Petit, 2019). Moreover, spillovers across markets highlight ESG's role in financial stability and systemic resilience (Bax et al., 2024). In this regard, regulators and policymakers are advancing disclosure standards, exemplified by the EU's Corporate Sustainability Reporting Directive (European Commission, 2023) and the OECD's call for consistent ESG investment practices (OECD, 2022). These initiatives underscore the policy momentum to harmonize ESG reporting and enhance its decision-usefulness for both market participants and regulators.

Despite these advances, significant gaps remain. Scholars note a lack of consensus on measurement frameworks, with studies showing heterogeneous results across countries, sectors, and methodologies (Chen et al., 2023; Zhao et al., 2018). While ESG integration has been increasingly adopted by asset managers (van Duuren et al., 2016), empirical evidence highlights challenges in aligning disclosure with risk management practices, particularly in emerging markets (Zumente & Bistrova, 2021; Galbreath, 2013). Moreover, the links between ESG and public finance performance remain underexplored (Zioło et al., 2022, 2019), and the

role of technological innovation, Industry 4.0, and circular economy strategies in enhancing ESG risk disclosure is only beginning to be investigated (Alkaraan et al., 2023).

This fragmented evidence base calls for a systematic bibliometric exploration of how ESG disclosure and risk management have co-evolved, what intellectual and conceptual structures define the field, and where critical research gaps persist. By mapping publication trends, identifying influential authors, institutions, and journals, and analyzing thematic evolution, this study aims to consolidate knowledge, uncover emerging themes, and outline future research directions. Such an inquiry is essential for advancing scholarly debates and informing practitioners, investors, and policymakers on how ESG disclosure can serve as a credible mechanism for risk governance, financial stability, and sustainable value creation.

Problem Statement

Despite growing attention to the RM–ESG nexus, the literature remains fragmented. Inconsistent measurement frameworks limit comparability, geographic coverage is skewed toward developed economies, and ESG is often analyzed separately rather than as part of integrated risk management. Moreover, the role of technological innovations in ESG disclosure remains nascent. These gaps necessitate a systematic bibliometric study to consolidate insights, reveal thematic clusters, and chart future directions in RM–ESG research.

The study seeks to answer the following key questions:

- a) What are the publication trends in risk management and ESG disclosure research?
- b) Which countries, institutions, and authors contribute most?
- c) What are the most influential works?
- d) What thematic clusters and emerging themes are shaping the field?

The remainder of the paper is organized as follows: Section 2 reviews the existing literature on risk management and environmental, social, and governance (ESG) disclosure, focusing on key trends, methodologies, and research gaps. Section 3 outlines the research methodology used in this study, including the bibliometric tools and techniques applied for data analysis. Section 4 presents and discusses the findings from bibliometric analysis, highlighting significant patterns, trends, and influential contributions within the field. Finally, Section 5 summarizes the results, offers conclusions on the impact of risk management and environmental, social, and governance (ESG) disclosure, and provides insights into future research directions and practical applications for integrating big data technologies in accounting practices.

Literature Review

The nexus between risk management and environmental, social, and governance (ESG) disclosure has become a central theme in both scholarly research and corporate practice. Increasing stakeholder scrutiny, regulatory reforms, and market expectations have elevated ESG disclosure from a voluntary reporting activity to a core mechanism for managing financial and non-financial risks. Scholars have examined ESG through diverse lenses, ranging from its role in enhancing firm resilience during crises (Bae et al., 2021; Nofsinger & Varma, 2014) to its implications for investor decision-making, governance structures, and systemic stability (Krueger et al., 2020; Capelle-Blancard & Petit, 2019; Bax et al., 2024). At the same time, institutional developments such as the Corporate Sustainability Reporting Directive (European Commission, 2023) and OECD's global recommendations (OECD, 2022) have underscored the policy relevance of ESG risk disclosure.

Despite this growing body of work, the literature remains fragmented across disciplines, methodologies, and geographies. Some studies emphasize firm-level governance and disclosure practices, while others highlight macro-level financial stability and regulatory challenges. Moreover, divergent measurement frameworks and inconsistent empirical results complicate efforts to synthesize findings and trace the intellectual evolution of the field. Against this backdrop, a structured review is necessary to consolidate knowledge and identify emerging research frontiers.

ESG Disclosure and Firm Resilience

A substantial body of research highlights the role of ESG disclosure in enhancing firms' resilience, particularly in times of crisis. For example, firms with stronger CSR and ESG practices outperformed peers during the COVID-19 pandemic, demonstrating reduced downside risk and faster recovery (Bae et al., 2021). Similarly, socially responsible investment funds have shown relative stability during financial market crises, reinforcing the risk-mitigating potential of ESG integration (Nofsinger & Varma, 2014). At the institutional level, investors are increasingly attentive to climate-related risks, incorporating them into asset allocation and portfolio management (Krueger et al., 2020). These findings suggest that ESG transparency not only contributes to reputation management but also strengthens firms' ability to withstand systemic shocks.

Governance Mechanisms and ESG Risk Management

Corporate governance structures play a pivotal role in shaping ESG disclosure and its effectiveness in mitigating risks. Studies show that board composition and sustainable compensation policies are associated with improved carbon performance (Haque, 2017), while the presence of gender diversity on boards moderates the impact of ESG controversies on firm risk (Shakil, 2021). Likewise, reputational risks linked to ESG practices influence corporate investment decisions, with firms facing ESG concerns adjusting their strategies more cautiously (Chasiotis et al., 2024). Evidence also suggests that ESG factors affect IPO underpricing (Baker et al., 2021) and idiosyncratic risk at listing (Reber et al., 2022), highlighting the growing relevance of ESG governance in capital markets.

ESG Disclosure, Market Reactions, and Systemic Stability

Beyond firm-specific outcomes, ESG disclosure exerts significant effects on broader market dynamics. Media coverage of corporate irresponsibility has been shown to amplify financial risk (Kölbel et al., 2017), while ESG-related news generally elicits measurable stock market reactions (Capelle-Blancard & Petit, 2019). Cross-market analyses further reveal ESG's role in financial spillovers and systemic risk (Bax et al., 2024). This body of research underscores the dual nature of ESG disclosure: it can enhance investor confidence when well-aligned with risk management, but poor disclosure or negative ESG events may exacerbate volatility.

ESG Performance and Financial Outcomes

The relationship between ESG practices and financial performance has been widely debated, with mixed evidence across contexts. Some studies report positive associations between ESG performance and financial outcomes (Chen et al., 2023; Zhao et al., 2018), while others highlight moderating factors such as board diversity or ESG controversies (Shakil, 2021). Sectoral evidence also suggests heterogeneity; for instance, Australian firms have displayed unique ESG-performance dynamics (Galbreath, 2013), while power generation firms in China show strong ESG-performance linkages (Zhao et al., 2018). Such findings reveal the contextual

dependency of ESG outcomes and highlight the need for comparative and cross-sectoral studies.

ESG Integration in Investment and Financial Systems

From an investor perspective, ESG integration has reshaped the investment management process, moving beyond screening approaches toward fundamental, risk-adjusted analysis (van Duuren et al., 2016). Recent studies extend this perspective to public finance, where ESG factors influence efficiency and sustainability of financial systems (Zioło et al., 2019, 2022). Moreover, the convergence of governance mechanisms with Industry 4.0 and circular economy strategies is driving new pathways for ESG-oriented investment decisions (Alkaraan et al., 2023). These developments suggest that ESG integration is not only reshaping corporate finance but also influencing the architecture of global financial systems.

Emerging Themes and Research Gaps

Critical Synthesis and Research Gaps The reviewed literature demonstrates the growing importance of ESG disclosure as a mechanism for enhancing corporate resilience, governance quality, and market stability. However, evidence remains fragmented and at times contradictory. For instance, while Bae et al. (2021) and Nofsinger & Varma (2014) highlight the stabilizing role of ESG during crises, Galbreath (2013) finds context-specific outcomes in Australia, pointing to geographical variation. Similarly, Zhao et al. (2018) report strong ESG–performance linkages in Chinese firms, whereas studies in other regions yield mixed or weak associations. These inconsistencies reflect differences in institutional environments, disclosure practices, and measurement approaches. Systematic gaps can be grouped as follows:

1. Measurement Inconsistency – Divergent ESG rating systems and reporting frameworks limit comparability across contexts.
2. Geographic Underrepresentation – Emerging and developing markets remain understudied, leaving a Western-centric bias in the evidence base.
3. Integration Weakness – ESG disclosure is often examined in isolation rather than as a component of enterprise risk management frameworks.
4. Technological Blind Spots – Limited attention has been given to the impact of Industry 4.0, big data, and AI in shaping ESG disclosure and risk governance.

By consolidating these findings, this study underscores the need for a systematic bibliometric mapping to clarify conceptual structures and provide a foundation for advancing RM–ESG scholarship.

Despite significant advances, several gaps remain in literature. First, methodological inconsistencies, particularly in ESG measurement and disclosure frameworks, limit comparability across studies and jurisdictions (OECD, 2022). Second, ESG disclosure in emerging markets remains underexplored, with evidence suggesting uneven adoption and alignment with investor expectations (Zumente & Bistrova, 2021; Park & Jang, 2021). Third, while regulatory initiatives such as the EU’s Corporate Sustainability Reporting Directive (European Commission, 2023) aim to standardize ESG disclosure, the implications for risk governance are still unfolding. Finally, the role of innovation and technological advances (e.g., AI-driven analysis of disclosures, Industry 4.0 adoption) remains a nascent but promising area for future inquiry (Alkaraan et al., 2023).

Overall, the existing literature establishes ESG disclosure as both a risk mitigation tool and a driver of corporate and systemic resilience. Empirical studies consistently highlight the value of robust governance, transparent disclosure, and proactive ESG strategies in reducing downside risk, enhancing investor confidence, and aligning firms with sustainability imperatives. At the same time, unresolved challenges, including fragmented measurement standards, uneven adoption in emerging markets, and the evolving role of technological innovation, suggest that the field is still in a state of transition.

This fragmented yet dynamic research landscape underscores the importance of a bibliometric exploration to map the intellectual and conceptual structures of the domain. By systematically analyzing publication trends, co-citation patterns, and thematic evolution, the present study seeks to provide clarity on how risk management and ESG disclosure have developed as intertwined research streams. Such a synthesis not only consolidates existing knowledge but also reveals critical gaps and emerging themes, thereby offering a robust foundation for future scholarly inquiry and policy development.

Research Methodology

Research Design

This study adopts a bibliometric approach to systematically map the intellectual, conceptual, and social structures of research at the intersection of risk management (RM) and environmental, social, and governance (ESG) disclosure. Bibliometric methods are particularly well-suited for capturing the evolution of knowledge domains, identifying influential contributions, and uncovering emerging themes across large bodies of literature. By integrating performance analysis with science mapping, this study provides a comprehensive, replicable, and objective overview of the global RM–ESG disclosure research landscape.

Data Source and Collection

The Scopus database was selected as the primary data source due to its broad coverage of peer-reviewed journals and robust bibliographic metadata. The search strategy combined keywords related to “risk management” and “ESG disclosure” within titles, abstracts, and author keywords. Boolean operators and wildcard symbols were used to maximize coverage while maintaining relevance. The search was conducted on 13 August 2025, covering publications from the earliest available year up to 2025. Only journal articles and reviews were included; editorials, notes, and non-scholarly items were excluded.

The following search string was used to identify relevant literature:

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TITLE-ABS-KEY ( risk AND management AND esg ) AND ( LIMIT-TO ( SUBJAREA , "ECON" ) OR LIMIT-TO ( SUBJAREA , "BUSI" ) OR LIMIT-TO ( SUBJAREA , "ENVI" ) OR LIMIT-TO ( SUBJAREA , "SOCI" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) )
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The initial query yielded 1,181 records. A rigorous screening process was applied to ensure relevance: (i) duplicate records were removed, (ii) titles and abstracts were reviewed to exclude unrelated works, and (iii) only documents explicitly addressing both ESG disclosure and risk management were retained. The final dataset comprised 813 articles and reviews published between 1986 and 2025.

Data Cleaning, Standardization, and Harmonization

The raw dataset underwent a rigorous two-stage cleaning and harmonization process to ensure accuracy, consistency, and reliability. In the first stage, biblioMagika® (Ahmi, 2024) was used for automated pre-processing and preliminary standardization. This included the unification of author names (e.g., “Smith, J.” and “Smith, John”), consolidation of institutional variants (e.g., “Univ. of Oxford” and “University of Oxford”), and normalization of country names. These steps significantly reduced redundancy and prepared the dataset for seamless integration with visualization software. In the second stage, OpenRefine was applied to refine and manually validate the data. This process focused on disambiguating authors with similar names by cross-checking affiliations, correcting incomplete or inconsistent institutional records, and aligning country identifiers with ISO standards. Together, these procedures ensured a high-quality dataset, minimizing potential errors that could distort bibliometric indicators or network visualizations.

Bibliometric Tools and Analysis Techniques

Limitations of the Methodology. While bibliometric methods provide robust insights into research patterns and intellectual structures, this study is subject to several limitations. First, the analysis is restricted to the Scopus database, which excludes other academic repositories (e.g., Web of Science, SSRN) as well as industry reports and grey literature. Second, only English-language publications were included, introducing a potential language bias and excluding valuable contributions from non-English scholarship. Third, the focus on peer-reviewed journals overemphasizes academic discourse at the expense of practice-oriented or policy-focused works. To assess research impact, bibliometric indicators such as the h-index, g-index, and m-index were applied. The h-index captures both productivity and recognition, the g-index emphasizes the role of highly cited works, and the m-index adjusts for time, offering a fairer comparison across early and late contributors. Together, these indicators provide a balanced and comprehensive evaluation of scholarly influence in RM–ESG research.

Following data preparation, the cleaned dataset was imported into VOSviewer for performance analysis and science mapping. Several complementary techniques were employed. Performance analysis was conducted to assess publication and citation trends and to identify the most productive authors, institutions, and journals. Co-authorship analysis mapped patterns of collaboration across authors, institutions, and countries, while co-citation analysis identified influential references and the shared intellectual foundations of the field. Keyword co-occurrence analysis was used to uncover conceptual linkages, research hotspots, and thematic clusters within RM–ESG disclosure research. In addition, bibliographic coupling highlighted thematic connections among documents and sources, capturing the intellectual proximity of contemporary studies. Finally, thematic evolution analysis was carried out across three periods (2000–2010; 2011–2017; 2018–2025) to trace shifts in research focus over time. Collectively, these methods provided both a historical overview and a forward-looking perspective on the intellectual and conceptual development of RM–ESG scholarship.

3.5 Visualization and Interpretation

Visualizations were generated using VOSviewer, where nodes represent research entities (authors, journals, keywords) and link strengths represent their relationships (collaboration, citation, or co-occurrence). Network maps, thematic evolution diagrams, and bibliographic coupling clusters provided visual insights into the intellectual and conceptual structures of the field. These outputs were interpreted to identify dominant research themes, collaborative patterns, and emerging areas of inquiry in risk management and ESG disclosure.

First, duplicate records were identified and removed to avoid any potential bias in the analysis. Next, the titles, abstracts, and keywords of the remaining documents were carefully reviewed to exclude unrelated papers, non-peer-reviewed publications, and those that did not directly address the themes of Big Data Analytics and Accounting Information Systems (Hassan et al., 2023). To ensure data quality and interoperability, OpenRefine and biblioMagika® were used to standardize and harmonize author names, affiliations, countries, and keywords. These tools enabled the detection and correction of inconsistencies, duplicates, and metadata anomalies. For bibliometric visualization, VOSviewer (Van Eck & Waltman, 2010) was utilized to construct co-authorship, co-citation, and keyword co-occurrence networks, facilitating the identification of intellectual structures, collaboration patterns, and thematic clusters in the RM–ESG research domain. The final dataset, refined through this process, consists of 881 articles and reviews, spanning a period from 2009 to 2025.

Results and Discussion

This section presents and interprets the findings of the bibliometric analysis conducted on research at the intersection of risk management and ESG disclosure. Guided by the study's objectives, the results are structured to move from descriptive performance indicators to relational and conceptual insights. Specifically, the analysis begins with an overview of publication and citation trends to capture the field's growth trajectory and academic impact. This is followed by an examination of collaboration patterns among authors, institutions, and countries, highlighting the social structure of the research community.

Documents Profiles

To provide a comprehensive overview of the research landscape, the descriptive citation metrics of publications on risk management and ESG disclosure are summarized in Table 1.

Table 1: Citation Metrics

Main Information	Data
Publication Years	2009 - 2025
Total Publications	881
Citable Year	17
Number of Contributing Authors	2477
Number of Cited Papers	596
Total Citations	13,670
Citation per Paper	15.52
Citation per Cited Paper	22.94
Citation per Year	854.38
Citation per Author	5.52
Author per Paper	2.81
Citation sum within h-Core	11,209
h-index	57
g-index	102
m-index	3.353

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2024)

As shown in Table 1, the bibliometric analysis for the period 2009–2025 identified 881 publications on risk management and ESG disclosure, reflecting contributions from 2,477 authors over 17 years. Of these, 596 papers were cited, underscoring that a substantial proportion of the research output has achieved scholarly visibility. The dataset accumulated 13,670 citations, with an average of 15.52 citations per paper; when limited to cited works, this rises to 22.94 citations per paper, highlighting the influence of key contributions. The annual citation rate of 854.38 citations further indicates sustained relevance and consistent engagement by the academic community.

Collaboration levels are moderate, with an average of 2.81 authors per paper. Citation impact is broadly distributed, with a mean of 5.52 citations per author. Core bibliometric indicators reinforce the field’s maturity: an h-index of 57 reflects consistent productivity and recognition, a g-index of 102 highlights the role of highly cited works, and an m-index of 3.35 signals steady scholarly impact across the 17-year span. Overall, these metrics demonstrate that research on risk management and ESG disclosure has evolved into a well-established domain, marked by robust growth, significant citation impact, and increasing international collaboration.

To further understand the modes of scholarly communication in this field, the distribution of publications by document type is summarized in Table 2.

Table 2: Document Type

Document Type	Total Publications	Percentage (%)
Article	638	72.42%
Book Chapter	119	13.51%
Conference Paper	52	5.90%
Review	32	3.63%
Book	26	2.95%
Conference Review	8	0.91%
Note	3	0.34%
Erratum	2	0.23%
Letter	1	0.11%
Total	881	100.00

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2024)

The distribution of document types, as illustrated in Table 2, highlights the preferred outlets for research on risk management and ESG disclosure. Journal articles dominate the field with 638 publications (72.42%), reflecting the strong reliance on peer-reviewed journals as the primary channel for disseminating findings. This aligns with academic publishing norms, where journal articles are regarded as the most credible and impactful medium of scientific communication. Beyond journal outlets, book chapters (119; 13.51%) and conference papers (52; 5.90%) form a meaningful share, indicating that edited volumes and conferences also serve as important venues for scholarly debate and knowledge exchange. Reviews (32; 3.63%) and books (26; 2.95%) contribute comprehensive treatments of specific themes, although their proportion is comparatively modest. Other formats, including conference reviews (8; 0.91%), notes (3; 0.34%), errata (2; 0.23%), and letters (1; 0.11%), together account for less than 2% of the total. These forms typically play specialized roles, such as offering clarifications, brief commentaries, or corrections.

Overall, the dominance of journal articles, complemented by book-based and conference contributions, underscores a mature, academically oriented research domain anchored in formal peer-reviewed communication channels.

Publication Trends

To trace the evolution and growth dynamics of research output in this field, the annual distribution of publications, contributing authors, citations, and related bibliometric indicators is presented in Table 3.

Table 3: Publication by Year

Year	TP	NCA	NCP	TC	C/P	C/CP	<i>h</i>	<i>g</i>	<i>m</i>
2009	1	3	0	0	0.00	0.00	0	0	0.000
2010	2	4	2	51	25.50	25.50	2	2	0.125
2012	2	2	1	1	0.50	1.00	1	1	0.071
2013	2	2	2	303	151.50	151.50	2	2	0.154
2014	5	10	4	496	99.20	124.00	2	5	0.167
2015	6	8	6	116	19.33	19.33	4	6	0.364
2016	6	16	5	689	114.83	137.80	5	6	0.500
2017	4	6	4	871	217.75	217.75	3	4	0.333
2018	12	30	11	558	46.50	50.73	7	12	0.875
2019	20	43	19	625	31.25	32.89	13	20	1.857
2020	43	96	39	2087	48.53	53.51	18	43	3.000
2021	62	156	58	2113	34.08	36.43	21	45	4.200
2022	75	192	64	1879	25.05	29.36	21	42	5.250
2023	121	325	97	2184	18.05	22.52	25	44	8.333
2024	285	873	199	1443	5.06	7.25	16	24	8.000
2025	235	711	85	254	1.08	2.99	6	9	6.000
Total	881	2477	596	13670	15.52	22.94	57	102	3.353

Note: TP=total number of publications; NCA=Number of contributing authors; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; *h*=*h*-index; *g*=*g*-index; *m*=*m*-index.

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2024)

The annual distribution of publications on risk management and ESG disclosure, as summarized in Table 3, illustrates the field's growth trajectory between 2009 and 2025. Early contributions were sparse, with only a handful of papers published from 2009 to 2013. Despite their limited volume, these pioneering studies achieved considerable impact, most notably in 2013, when publications averaged 151.5 citations per paper, underscoring their formative influence.

Between 2014 and 2018, the field entered a stage of gradual but steady expansion, with annual outputs ranging from 5 to 12 publications. Citation performance during this period remained strong, particularly in 2016 and 2017, when average citations per paper exceeded 100, reflecting the enduring influence of research produced in these years. From 2019 onward, the field experienced rapid acceleration. Outputs surged in 2020 (43 publications) and 2021 (62 publications), coinciding with heightened global attention to ESG amid the COVID-19 pandemic. Growth continued in 2022 (75) and 2023 (121), peaking in 2024 with 285 publications, the most productive year to date. Although 2025 records fewer outputs (235), this reflects a partial dataset. Overall, citation dynamics confirm the pioneering role of early works and the growing momentum of recent research, marking the transition from a nascent field to a rapidly expanding domain of scholarly inquiry.

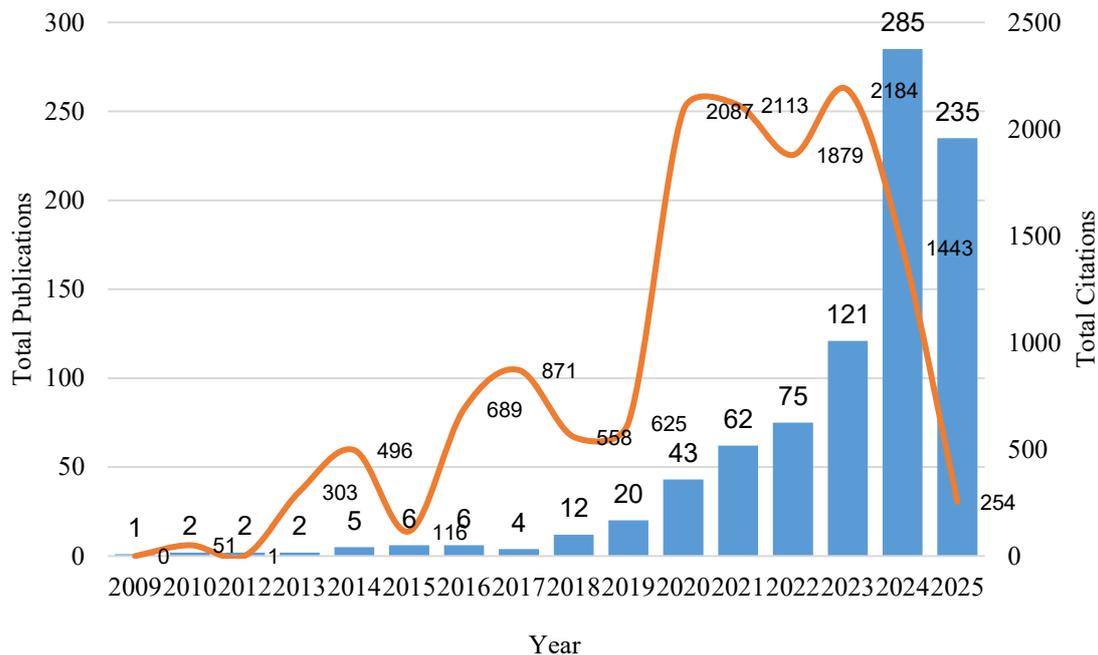


Figure 1: Total Publications and Citations by Year

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2024)

The trajectory of research on risk management and ESG disclosure, as illustrated in Figure 1, reveals a steady upward trend, with only limited publications before 2015 and rapid acceleration thereafter. A major surge occurred in 2020 and 2021, coinciding with the COVID-19 pandemic, which heightened awareness of non-financial risks and underscored the importance of corporate resilience (Bae et al., 2021). Growth continued in 2022 and 2023, peaking in 2024, a year strongly influenced by regulatory developments such as the EU's Corporate Sustainability Reporting Directive (CSRD) and the EU Taxonomy, which expanded disclosure requirements and elevated ESG's role in governance (European Commission, 2023). Beyond regulatory and crisis-driven factors, increasing investor and stakeholder demand for reliable ESG information has fueled scholarly inquiry into disclosure quality, risk frameworks, and greenwashing risks (OECD, 2022). The availability of ESG datasets from Refinitiv, MSCI, and Sustainalytics further facilitated empirical analysis, lowering barriers for bibliometric and quantitative studies (Capelle-Blancard & Petit, 2019).

Earlier publications continue to attract high citation counts due to their pioneering role, while recent years show rapid growth in volume and interdisciplinarity. Together, these dynamics demonstrate a transition from a nascent field to a mature yet evolving domain. The next subsection explores this development through performance and impact indicators.

Publications by Source Title

Table 4: Most Productive Source Title

Source Title	TP	NCA	NCP	TC	C/P	C/CP	h	g	m
Sustainability (Switzerland)	51	147	39	1202	23.57	30.82	17	34	1.700
Journal of Environmental Management	26	84	21	705	27.12	33.57	12	26	2.400
Finance Research Letters	22	56	19	420	19.09	22.11	9	20	1.500
International Review of Financial Analysis	20	70	13	111	5.55	8.54	5	10	1.250
Business Strategy and the Environment	16	58	13	244	15.25	18.77	8	15	1.333
Journal of Portfolio Management	15	36	13	201	13.40	15.46	9	14	1.500
Resources Policy	14	53	9	512	36.57	56.89	7	14	1.400
Journal of Cleaner Production	13	37	12	455	35.00	37.92	9	13	1.125
Springer Proceedings in Business and Economics	13	23	3	13	1.00	4.33	1	3	0.167
Corporate Social Responsibility & Environmental Mgt	13	41	12	481	37.00	40.08	8	13	1.600
Journal of Risk Management in Financial Institutions	11	14	7	66	6.00	9.43	4	8	0.571
SINDREA Series in Accounting & Business Administration	9	24	1	1	0.11	1.00	1	1	0.500
Energy Economics	9	36	6	132	14.67	22.00	5	9	1.667
Journal of Sustainable Finance and Investment	9	18	7	280	31.11	40.00	4	9	0.333
Journal of Risk and Financial Management	9	24	7	80	8.89	11.43	3	8	0.600
E3S Web of Conferences	9	23	6	67	7.44	11.17	3	8	0.600
Journal of Asset Management	8	25	5	127	15.88	25.40	3	8	0.214
CSR, Sustainability, Ethics and Governance	8	16	7	17	2.13	2.43	3	3	0.273
Sustainability (Switzerland)	8	19	8	41	5.13	5.13	5	6	2.500
Sustainable Finance	7	8	3	11	1.57	3.67	2	3	0.250

Note: TP=total number of publications; NCA=Number of contributing authors; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; g=g-index; m=m-index.

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2024)

The analysis of source titles, as shown in Table 4, highlights the leading outlets shaping research on risk management and ESG disclosure. Sustainability (Switzerland) is the most prolific contributor, publishing 51 articles, of which 39 were cited, generating 1,202 citations and an h-index of 17. This underscores its role as a central platform for ESG-related scholarship within interdisciplinary sustainability studies. Other highly productive and influential journals include the Journal of Environmental Management (26 publications, 705 citations, h = 12) and Finance Research Letters (22 publications, 420 citations, h = 9), reflecting the field's dual anchoring in environmental and financial domains. Business Strategy and the Environment and the Journal of Cleaner Production also stand out, achieving high citation rates of 15.25 and 35.00 citations

per paper, respectively, and demonstrating the integration of ESG scholarship with corporate strategy and cleaner production practices.

Finance-oriented outlets such as the International Review of Financial Analysis and the Journal of Portfolio Management emphasize the financial implications of ESG disclosure and its role in risk assessment. Meanwhile, specialized sources, including the Journal of Risk Management in Financial Institutions and the Journal of Sustainable Finance and Investment, contribute fewer papers yet deliver strong citation performance per study. Conference proceedings and book series, notably Springer Proceedings in Business and Economics and CSR, Sustainability, Ethics and Governance, further illustrate the field's multidisciplinary scope. Collectively, these findings confirm that ESG disclosure research bridges sustainability and finance, reinforcing its cross-cutting academic character.

Table 5: Top 20 highly cited article

No.	Author(s)	Title	Source Title	TC	C/Y
1	Krueger P.; Sautner Z.; Starks L.T. (2020)	The importance of climate risks for institutional investors	Review of Financial Studies	1018	169.67
2	Haque F. (2017)	The effects of board characteristics and sustainable compensation policy on carbon performance of UK firms	British Accounting Review	470	52.22
3	van Duuren E.; Plantinga A.; Scholtens B. (2016)	ESG Integration and the Investment Management Process: Fundamental Investing Reinvented	Journal of Business Ethics	410	41.00
4	Nofsinger J.; Varma A. (2014)	Socially responsible funds and market crises	Journal of Banking and Finance	402	33.50
5	Kölbel J.F.; Busch T.; Jancso L.M. (2017)	How Media Coverage of Corporate Social Irresponsibility Increases Financial Risk	Strategic Management Journal	385	42.78
6	Shakil M.H. (2021)	Environmental, social and governance performance and financial risk: Moderating role of ESG controversies and board gender diversity	Resources Policy	317	63.40
7	Galbreath J. (2013)	ESG in Focus: The Australian Evidence	Journal of Business Ethics	301	23.15
8	Chen S.; Song Y.; Gao P. (2023)	Environmental, social, and governance (ESG) performance and financial outcomes: Analyzing the impact of ESG on financial performance	Journal of Environmental Management	298	99.33
9	Zhao C.; Guo Y.; Yuan J.; Wu M.; Li D.; Zhou Y.; Kang J. (2018)	ESG and corporate financial performance: Empirical evidence from China's listed power generation companies	Sustainability (Switzerland)	286	35.75
10	Owen J.R.; Kemp D.; Lèbre É.; Svobodova K.	Catastrophic tailings dam failures and disaster risk disclosure	International Journal of Disaster Risk Reduction	254	42.33

	Pérez Murillo G. (2020)				
11	Reber B.; Gold A.; Gold S. (2022)	ESG Disclosure and Idiosyncratic Risk in Initial Public Offerings	Journal of Business Ethics	221	55.25
12	Kim S.; Li Z. (2021)	Understanding the impact of esg practices in corporate finance	Sustainability (Switzerland)	203	40.60
13	Yuan X.; Li Z.; Xu J.; Shang L. (2022)	ESG disclosure and corporate financial irregularities – Evidence from Chinese listed firms	Journal of Cleaner Production	177	44.25
14	Zumente I.; Bistrova J. (2021)	Esg importance for long-term shareholder value creation: Literature vs. practice	Journal of Open Innovation: Technology, Market, and Complexity	164	32.80
15	Park S.R.; Jang J.Y. (2021)	The impact of ESG management on investment decision: Institutional investors' perceptions of country-specific ESG criteria	International Journal of Financial Studies	151	30.20
16	Alkaraan F.; Elmarzouky M.; Hussainey K.; Venkatesh V.G. (2023)	Sustainable strategic investment decision-making practices in UK companies: The influence of governance mechanisms on synergy between industry 4.0 and circular economy	Technological Forecasting and Social Change	142	47.33
17	Li H.; Zhang X.; Zhao Y. (2022)	ESG and Firm's Default Risk	Finance Research Letters	141	35.25
18	Vural-Yavaş Ç. (2021)	Economic policy uncertainty, stakeholder engagement, and environmental, social, and governance practices: The moderating effect of competition	Corporate Social Responsibility and Environmental Management	137	27.40
19	Baker E.D.; Boulton T.J.; Braga-Alves M.V.; Morey M.R. (2021)	ESG government risk and international IPO underpricing	Journal of Corporate Finance	126	25.20
20	Ziolo M.; Filipiak B.Z.; Bak I.; Cheba K. (2019)	How to design more sustainable financial systems: The roles of environmental, social, and governance factors in the decision-making process	Sustainability (Switzerland)	123	17.57

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2024)

The most influential contributions to research on risk management and ESG disclosure are summarized in Table 5, which lists the 20 most cited articles in the field. These works reflect the thematic breadth of the domain, spanning institutional investment, corporate governance, financial performance, and disclosure practices. The most highly cited study is by Krueger, Sautner, and Starks (2020) in the *Review of Financial Studies*, which highlights the importance of climate risks for institutional investors and has accumulated 1,018 citations (169.67 per year).

This benchmark contribution underscores the centrality of climate risk in investment decision-making. Other influential works include Haque (2017) in the *British Accounting Review* and van Duuren, Plantinga, and Scholtens (2016) in the *Journal of Business Ethics*, which emphasize governance structures, compensation policies, and ESG integration in investment processes.

Several studies link ESG practices with financial resilience and risk. Nofsinger and Varma (2014) demonstrate the stability of socially responsible funds during crises, while Shakil (2021) examines how ESG controversies and board gender diversity shape risk outcomes. More recent work, such as Chen, Song, and Gao (2023) in the *Journal of Environmental Management* (298 citations; 99.33 per year), shows the growing intensity of ESG scholarship. Geographic diversity, from the UK and Australia to China and global markets, further reflects the field's international relevance. Collectively, these highly cited articles anchor the intellectual foundations of ESG disclosure research, signaling climate risk, governance, and financial performance as enduring themes.

Co-authorship by Country

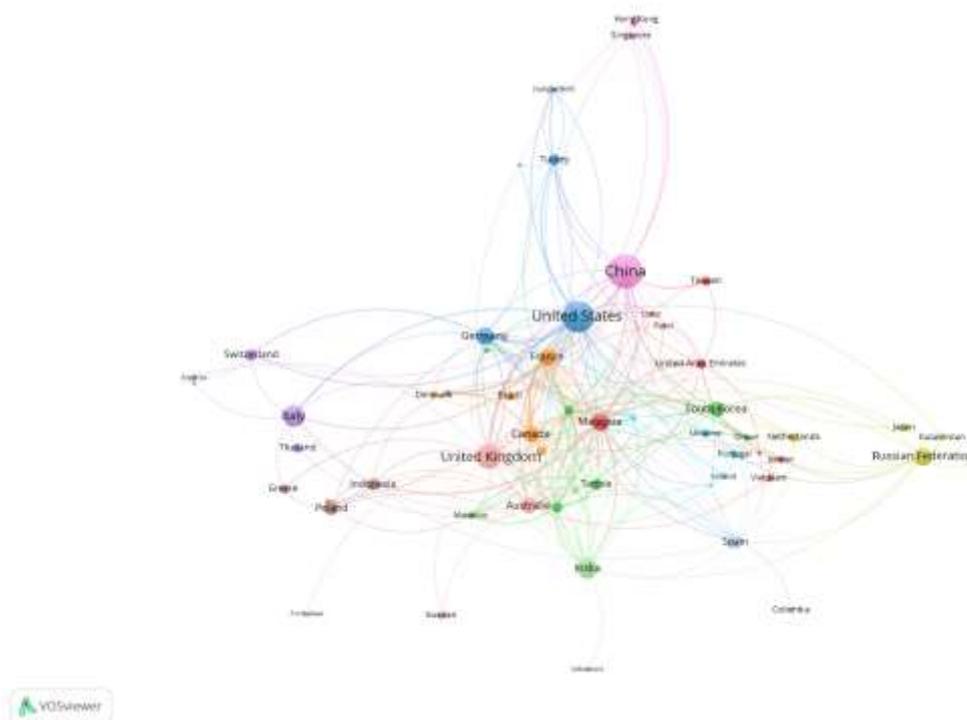


Figure 2: Network visualization of the co-authorship analysis by country

Source: Generated by the author(s) using VOSviewer (van Eck & Waltman, 2014)

The co-authorship network presented in Figure 2 illustrates the collaborative landscape of research on risk management and ESG disclosure across countries. The visualization highlights the United States, China, and the United Kingdom as the most prominent contributors, positioned centrally with dense connections to other countries. This indicates their leading role not only in publication volume but also in fostering international research collaboration. The United States occupies the largest node, reflecting both high productivity and extensive co-authorship ties, particularly with the United Kingdom, Canada, Germany, and China. China also demonstrates significant influence, forming strong collaborative clusters with East Asian

neighbors such as Hong Kong, Singapore, and Taiwan, as well as with Western countries. Similarly, the United Kingdom shows broad linkages with European partners (Germany, France, Italy, and Switzerland) and Commonwealth countries (Australia, India, and Malaysia), reinforcing its position as a central hub for cross-regional ESG scholarship.

Other notable contributors include India, Germany, Italy, and Australia, each of which exhibits strong regional clustering while maintaining international co-authorship networks. Emerging economies such as Malaysia, South Korea, and Brazil are increasingly integrated into the global collaboration map, suggesting their rising engagement in ESG-related research. In contrast, countries like Russia, Japan, and several Middle Eastern nations appear on the periphery, indicating more limited collaboration networks despite active contributions. Overall, the network underscores the highly globalized and interdisciplinary nature of ESG disclosure and risk management research, where established research powers drive the field while collaborations with emerging economies broaden its geographic diversity. This pattern reflects both the global scope of ESG challenges and the necessity of cross-border scholarly cooperation in addressing them.

Citation by Document

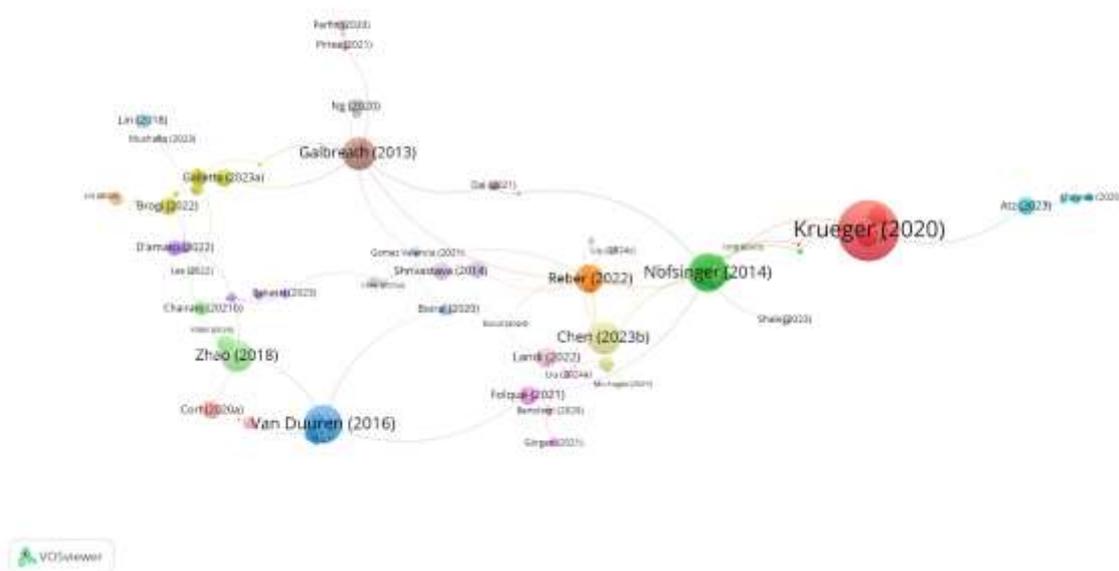


Figure 3: Network visualization of the citation analysis by documents

Source: Generated by the author(s) using VOSviewer (van Eck & Waltman, 2014)

The citation network in Figure 3 highlights the most influential documents shaping the intellectual structure of research on risk management and ESG disclosure. The visualization identifies several key works that function as central nodes, indicating both high citation counts and strong connectivity with other studies. The most prominent node is Krueger (2020), which examines the importance of climate risks for institutional investors. Its size and central position demonstrate its role as a pivotal reference point in the literature, establishing climate-related risk as a central theme in ESG discourse. Similarly, Nofsinger (2014), which investigates the performance of socially responsible funds during market crises, and Reber (2022) on ESG disclosure and idiosyncratic risk in IPOs, form critical nodes that bridge earlier foundational

The keyword co-occurrence network in Figure 5 illustrates the conceptual structure of research on risk management and ESG disclosure. “ESG” forms the largest and most central node, highlighting its role as the dominant anchor of the field. Its strong links with terms such as risk assessment, corporate governance, financial performance, sustainable finance, and corporate social responsibility reveal the multidimensional nature of ESG scholarship. Several thematic clusters emerge. The green cluster reflects environmental management and sustainability, with keywords such as environmental risk, carbon emissions, and mitigation, underscoring the ecological dimension of ESG. The red cluster emphasizes financial and governance perspectives, with terms including sustainable finance, portfolio management, and financial stability, showing the integration of ESG into markets and risk management. The blue cluster highlights decision-making and risk analysis, featuring investments, risk assessment, and corporate governance approaches, pointing to methodological advances in risk modeling and investment strategies.

Smaller clusters enrich the landscape. The purple cluster links ESG with CSR, stakeholder theory, and management practices, reflecting ethical and normative dimensions. Peripheral terms such as integrated reporting, fintech, and green bonds signal emerging directions tied to digital finance and impact investing. Overall, the network demonstrates that ESG scholarship is highly interdisciplinary, bridging environmental, financial, governance, and ethical domains while expanding into innovation-driven themes.

Conclusion

This bibliometric study provides a systematic overview of risk management and ESG disclosure research between 2009 and 2025, analyzing 881 publications to map its growth, intellectual foundations, and emerging directions. The results reveal exponential growth in output, particularly since 2020, driven by global sustainability agendas, regulatory reforms, and increased investor demand for ESG transparency. While earlier contributions remain highly cited, recent years have witnessed a surge in multidisciplinary research that integrates environmental, financial, and governance perspectives. The analysis also highlights uneven global contributions, with China, the United States, and the United Kingdom emerging as dominant hubs, while developing regions remain underrepresented. Co-citation, keyword, and bibliographic coupling analyses identify four core research streams, climate and environmental risk, financial performance and sustainable finance, corporate governance and ethics, and disclosure and regulatory frameworks, alongside emerging themes such as fintech, impact investing, and integrated reporting. Despite the field’s rapid expansion, collaboration remains fragmented, and practice-oriented research remains limited.

Overall, the findings demonstrate that ESG disclosure and risk management have matured into a globally relevant and multidisciplinary research domain, yet opportunities remain for broader geographic participation, deeper interdisciplinary integration, and greater engagement with practice. These directions present a pathway for advancing the field and ensuring its continued relevance to academia, policy, and industry.

Limitations and Future Research. This study is not without limitations. The reliance on Scopus-indexed, English-language publications may introduce database and language biases, potentially excluding relevant studies in other repositories or languages. Furthermore, the exclusion of grey literature, practitioner reports, and policy documents narrows the scope of insights into practical applications. Future research should adopt a multi-database strategy, incorporate non-English and industry sources, and employ mixed methods that integrate

bibliometric mapping with qualitative reviews. Such efforts would enrich the understanding of RM–ESG linkages and expand the evidence base for policy and practice.

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