EMERGING TRENDS IN ESG RESEARCH. BIBLIOMETRIC ANALYSIS

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Abstract: *This article presents a comprehensive analysis of the evolution and impact of Environmental, Social, and Governance (ESG) principles on banking performance over a twelve-year period, from 2012 -2024. Through a detailed bibliometric and big data analytics examination of the ESG Bank Performance (EBP) corpus within SCOPUS, we uncover the thematic and geographical distribution of research contributions that underline the sector's dynamic journey towards sustainability. Our findings illustrate a significant shift in the academic focus, from foundational explorations of ESG integration strategies and risk management to addressing the broader complexities of global sustainability challenges, technological advancements, and regulatory changes. The period has seen a maturation of ESG from a niche interest to a strategic imperative within the banking sector, underscored by increasing scholarly output and citation engagement globally, particularly from countries like Italy, the Russian Federation, China, and India. Keyword co-occurrence analysis reveals a rich thematic landscape, emphasizing the integration of ESG into operational and financial strategies, the role of digital innovation, and the banking sector's response to climate finance and social governance issues. Our review provides insights into the evolving discourse on ESG impact, offering forward-looking recommendations for research and practice. We argue that ESG considerations have become integral to the banking industry's evolution, necessitating innovative, interdisciplinary approaches to further our understanding of sustainable banking practices. This study contributes to the advancement of sustainable banking by highlighting the significance of ESG considerations in shaping future financial and operational strategies that align with global sustainability objectives, fostering a more sustainable and resilient banking sector for the future.*

Keywords: *ESG integration; Environmental Social Governance; Banking performance.*

JEL Classification: *G21; Q56; M14*

1. Introduction

The early 2000s marked a transformative period in the financial sector, characterized by the rise of "ESG" (Environmental, Social, and Governance) principles. This significant shift towards the integration of sustainability within capital markets was ignited by a collaborative effort between the United Nations Global Compact and various financial institutions, which resulted in the influential "Who Cares Wins" report of 2004 (Knoepfel, 2004). The fundamental proposition of this report was to emphasize the financial significance of ESG factors. It powerfully argued for incorporating ESG considerations into investment frameworks, suggesting that such an approach could lead to more sustainable markets and improved societal outcomes.

The initial phase of the past decade saw a profound transformation within the financial sector. New paradigms emerged, aimed at realizing sustainability objectives within financial markets, leading to the introduction of the "ESG" (Environmental, Social, and Governance) principle. This integration was facilitated through a collaborative effort between the United Nations and various financial institutions, culminating in the publication of the "Who Cares Wins" report in 2004 (Knoppville, 2004). This document underscored the significance of Environmental, Social, and Governance (ESG) factors from a financial perspective. It highlighted the necessity of incorporating these elements into the investment strategies of banking entities, demonstrating their potential to drive banking markets and sectors towards sustainability, while enhancing value addition and societal outcomes.

The 2006 publication of the United Nations Principles for Responsible Investment (PRI) marked a watershed moment in the ESG paradigm. With strong backing from the international investment community, this program established the applicability of ESG standards in the finance sector by offering a thorough framework for incorporating ESG considerations into investment decision-making processes (Sjåfjell and Richardson, 2015). The evolution of ESG from an area of interest to an urgent necessity has been influenced by the increasing awareness of climate change, the need for social justice, and corporate governance shortcomings (Senadheera et al., 2022). This increased consciousness has accelerated the adoption of ESG concepts and established them as essential components in the creation of investment plans and company policies across the globe.

The significance of ESG variables in improving banking performance has been highlighted by recent research endeavors, especially when viewed through the Sustainable Development Goals (SDGs) prism. The scholarly story, which dates back to the early 2000s, outlines how innovation and inclusive finance, when paired with ESG adherence, can improve financial performance and advance the SDGs (de Souza Barbosa et al., 2023). Subsequent investigations have centered on aligning sustainability programs with the Sustainable Development Goals of the United Nations in order to enhance a bank's value proposition, hence strengthening the belief that ESG is a fundamental component of sustainable banking operations (Weber, 2019). These talks have sparked an extensive, multidisciplinary, and global dialogue about how ESG practices affect banking performance and the importance of having a thorough understanding of ESG's impact within this sector.

The ESG Bank Performance (EBP) corpus created in this study is a monument to twelve years of international and interdisciplinary scholarly engagement, and it can positively contribute to this conversation. This corpus is an essential tool for finding patterns and creating well-defined hypotheses in the EBP space. We examine how research on banking performance and ESG has interacted over this time, providing a thorough analysis of relevant literature to convey the spirit and background of the EBP corpus.

We had commenced a thorough examination of the context and content of the EBP corpus, dividing our research into four discrete time periods: 2012–2015, 2016–2018, 2019–2021, and 2022–February 2024. This chronological division facilitates the analysis of methodological advancements, the introduction of new ideas, and the theoretical frameworks that steer the conversation, including COVID-19 and the SDGs. The diffusion and evolution of research are greatly impacted by the editorial stewardship in this discipline, which emphasizes the significance of editorial duties in promoting the proliferation of relevant scholarly publications.

We use big data analytics (BDA) and bibliometric analysis to analyze the ESG impact on banking performance throughout the period of January 2014 to February 2024 by looking at the ESG Bank Performance (EBP) corpus. With a focus on published papers in accounting, finance, and business, we want to use BDA to uncover hidden patterns, relationships, and insights from the aggregation of 208 articles published on this topic during the previous twelve years. By using an analytical method, the corpus can be examined holistically, which makes it easier to make evidence-based decisions and extract insightful information.

There are four sections in this article. Firstly, we describe the search parameters and bibliometric methods that were applied to create the ESG Bank Performance corpus in order to clarify the methodology utilized in this retrospective research. After presenting a thorough bibliometric analysis of the corpus's publishing and citation trends, we look at the co-occurrence of keywords and how they have changed throughout the given time periods. Our conclusions are summarized in the last section, which also offers recommendations for further research on the relationship between ESG and banking performance.

2. Method

The corpus was established by conducting searching for the work on the ESG impact on bank performance through the SCOPUS database. Because of this, all analyses related to outside citation counts also only relate to work compiled in SCOPUS. We chose SCOPUS because it is the largest multidisciplinary database of peer-reviewed literature in the social sciences (Schotten et al., 2017) and is widely recognized and used in BDA quantitative analyses (Parlina et al., 2020). The terms of search were only for keywords and the search filter was filled with the following keywords: ("Environmental Social Governance" OR "ESG") AND ("bank*" OR "banking sector" OR "financial institution") AND ("performance" OR "evaluation" OR "assessment"). Years were set between 2012-2024. As a result, SCOPUS identified 208 articles in the EBP corpus: 3 from (2012–2015), 9 from (2016–2018), 41 from (2019-2021) and 155 from (2022–2024). These include editorials and full-length articles. Given the variety of patterns, we sought to uncover, we extracted a broad range of data from SCOPUS including article bibliographic details, citations, keywords, and abstracts.

To dig deeper into the sophisticated patterns of scholarly communication and thematic developments within this corpus, we employed bibliometric mapping techniques. A keyword co-occurrence analysis was conducted, with a minimum occurrence threshold set to identify the 45 most pertinent keywords out of 507, allowing for a focused yet comprehensive visual exploration of the data. The type of analysis was specified as co-occurrence, relying on author keywords for a nuanced capture of the research themes. In terms of the counting method, full counting was utilized, ensuring that each occurrence of a keyword was given equal weight regardless of the number of keywords in a given article, thus avoiding the dilution of prevalent themes.

Additionally, we utilized VOSviewer dictionary file to refine the terminology and synonyms within the dataset. This bibliometric mapping will enable the identification of dominant themes, emerging trends, and potential gaps in the literature about ESG impacts on bank performance.

3. Results

3.1. Context

Table 1: Citation Metrics for the (EBP) corpus

Metric	Value
Publication Years	2012-2024/Feb
Citation Years	12 (2012-2024/ Feb)
Papers	208
Citations	3,126
Cites/Year	260.50
Cites/Paper	15.03
Authors/Paper	3.00
h-index	31
g-index	52
hI,norm	19
hI,annual	1.58
hA-index	18
Papers with ACC >= 1,2,5,10,20	125, 101, 61, 38, 14

Source: Author’s interpretation

We use the Publish or Perish citation metrics from 2012 to 2024/ Feb to analysis the dataset. The results provide a compelling narrative about the academic traction gained by research on the impact of ESG on bank performance. Over these 12 years, a consistent annual output of research, amounting to 208 papers, signifies a sustained scholarly engagement with the topic. The substantial citation counts of 3,126, with an impressive annual average of 260.5 citations, underscores the relevance and influence of this body of work within the academic discourse on sustainable banking practices. The average of 15.03 citations per paper points to the moderate to high impact that each publication has had, indicating the research's resonance within the scholarly community.

The collaboration coefficient, averaging 3 authors per paper, reflects the interdisciplinary nature of ESG research, requiring diverse expertise to navigate its complexities. The h-index of 31 highlights that a substantial number of papers are frequently referenced, showcasing their foundational role in furthering understanding of ESG’s role in banking. This is further bolstered by a g-index of 52, suggesting that the most cited works are not only influential but pivotal in shaping subsequent research. The normalized h- index of 19, considering co-authorship, and the annual h-index of 1.58 demonstrate a consistent addition of impactful research year on year. The hA-index of 18 reinforces the notion of individual authors' contributions being widely recognized.

Moreover, the citation distribution across different thresholds reveals a deep impact, with 125 papers cited at least once and 14 papers cited 20 times or more, reflecting a long tail of influence that spans a broad range of studies within the corpus. This robust citation landscape paints a picture of a vibrant and dynamic field, where research outputs on ESG and bank performance have not only contributed significantly to academic knowledge but also to practical, policy-oriented, and strategic dimensions in the banking sector, resonating well with global sustainability trends.

Table 2. Annual Publication and Citation Structure of the (EBP) corpus 2012-2024.

Year	TP	CTP	TC	TCP	TC/CTP	TC/TCP	h-index
2012	1	1	39	1	39.000000	39.000000	1
2014	1	2	1	1	0.500000	1.000000	1
2015	1	3	15	1	5.000000	15.000000	1
2016	2	5	13	2	2.600000	6.500000	1
2017	3	8	242	3	30.250000	80.666667	3
2018	4	12	231	4	19.250000	57.750000	4
2019	10	22	962	10	43.727273	96.200000	9
2020	15	37	375	14	10.135135	26.785714	11
2021	16	53	408	13	7.698113	31.384615	9
2022	47	100	488	37	4.880000	13.189189	13
2023	92	192	349	49	1.817708	7.122449	10
2024/Feb	16	208	3	2	0.014423	1.500000	1

Note: TP: Total Publications per Year, CTP: Cumulative Total Publications, TC: Total Citations per Year, TCP: Total Cited Publication per Year, TC/CTP: Citations per Paper, TC/TCP: Citations per Cited Paper, h-index: Yearly h-index, indicating the maximum number h such that h publications have at least h citations each.

Table 2 shows the evolving landscape of research focused on the ESG impact on bank performance. From 2012 to 2024, the corpus reveals a trajectory of increasing scholarly output and citation engagement, with a notable surge in total publications (TP) and cumulative total publications (CTP) over time. In the initial years, 2012 through 2015, the field appears to be nascent, with a modest number of publications but a promising average of citations per paper (TC/CTP), particularly in 2012, which suggests early research was received with considerable interest.

As we progress to the middle years (2016-2018), there is a steady growth in research output, accompanied by a substantial increase in citations. The year 2017 stands out with a remarkable TC/CTP of over 30 and a high TC/TCP, indicating that the publications in this year were particularly impactful, with each cited publication garnering, on average, over 80 citations. This trend of impactful research continues into 2018, with the h-index rising to 4, reflecting an expanding influence of the research being conducted during this period.

The period from 2019 to 2021 shows a remarkable uptick in research activity, with TP increasing significantly and a peak in TC in 2019, highlighting a year of profound academic interest and citation impact. The TC/CTP ratio remains impressive, and the h-index jumps to 9 and 11 in subsequent years, confirming the ongoing relevance and robust engagement with the research outputs.

The most recent years, 2022 to February 2024, present a dramatic escalation in TP, with the corpus almost doubling in size from the previous years, signifying a burgeoning field of inquiry. However, there is an interesting dip in TC and a noticeable decline in TC/CTP, which could suggest a multitude of factors, such as a lag in citations as newer publications typically take time to accumulate citations, or a dilution effect due to the rapid increase in publication volume.

The h-index fluctuates in these years, peaking at 13 in 2022, which indicates that a sizeable number of papers have achieved significant recognition. However, it drops back down to 1 by February 2024, which may be attributed to the incomplete data for the year or the aforementioned lag in the citation of newer publications.

In conclusion, the data paints a picture of a burgeoning field with a growing academic community that is increasingly engaging with the topic of ESG impact on bank performance. While the citation metrics suggest that the research field is maturing, with a diverse range of contributions gaining recognition, the dip in some citation metrics in the most recent years could indicate a need for a period of consolidation, in which the quality of research and its impact may become more focal than the sheer quantity of publications. The overall trend, however, underscores the significance of ESG considerations in banking, reflecting an academic response to the rising prominence of sustainability issues in the financial sector.

Table 3: Temporal Distribution of Top 10 Journals Citing of the (EBP) Corpus

Source Title	2012-2015	2016-2018	2019-2021	2022-2024 Feb
Sustainability (Switzerland)	0.0	134.0	214.0	87.0
Management of Environmental Quality: An International Journal	0.0	0.0	379.0	2.0
Corporate Social Responsibility and Environmental Management	0.0	122.0	249.0	2.0
Journal of Multinational Financial Management	0.0	0.0	139.0	0.0
Journal of International Financial Markets, Institutions & Money	0.0	0.0	112.0	11.0
Journal of Cleaner Production	0.0	0.0	114.0	3.0
Business and Society	0.0	83.0	0.0	0.0
Competitiveness Review	0.0	0.0	69.0	12.0
Journal of Business Ethics	0.0	64.0	0.0	16.0
British Accounting Review	0.0	0.0	0.0	76.0

Source: Author's interpretation

The temporal distribution of citations across top journals from 2012 to 2024, as shown in Table 3, reflects the escalating academic interest in the intersection of ESG factors and bank performance. The data reveals an initial latency in citations up to 2015, followed by a surge in attention, particularly in journals like 'Sustainability (Switzerland)', which leads in citations during 2016-2018 and 2019-2021. This peak of interest correlates with a global shift towards sustainability in financial practices.
Notably, the 'Management of Environmental Quality' and 'Corporate Social Responsibility and Environmental Management' journals experienced a spike in citations in 2019-2021, highlighting a period of intense research activity centered on corporate responsibility and environmental strategies in banking. The subsequent

decline in citations across most journals by 2022-2024 could be indicative of an academic pivot to emerging topics or a natural citation cycle following a period of high productivity.

'Sustainability' and 'Journal of Business Ethics' retain their relevance, with the latter seeing an increase in citations in the latest period, suggesting a continued focus on the ethical aspects of ESG in banking. Conversely, the 'British Accounting Review' shows a notable increase in citations in 2022-2024, pointing towards a growing interest in the accounting dimensions of ESG. In essence, the citation trends indicate a maturing field with shifting research priorities, reflecting the broader dialogues within the realms of sustainable finance and ethical banking practices. The variability in citation patterns underscores the nuanced and evolving nature of ESG research as it adapts to new challenges and scholarly directions.

Table 4: Top 10 Countries Affiliated with Authors in the (EBP) Corpus Over Time.

Country	2012-2015	2016-2018	2019-2021	2022-2024 Feb
Bahrain	0.0	0.0	6.0	1.0
China	0.0	0.0	1.0	10.0
India	0.0	0.0	1.0	9.0
Indonesia	0.0	0.0	0.0	7.0
Italy	0.0	1.0	5.0	24.0
Poland	0.0	0.0	5.0	2.0
Romania	0.0	0.0	3.0	4.0
Russian Federation	0.0	0.0	0.0	20.0
United Kingdom	0.0	1.0	5.0	8.0
United States	1.0	2.0	2.0	7.0

Source: Author's interpretation

Table 3's analysis of the top 10 countries affiliated with authors on ESG's impact on bank performance indicates a growing global research interest, particularly post-2015. Early contributions were sparse, with the United States being the only consistent contributor. From 2019 to 2021, there's a notable uptick in academic output from diverse geographies, including Bahrain, China, India, and several European countries, reflecting a burgeoning global discourse on sustainable banking practices.

The most recent data from 2022 to early 2024 shows a pronounced spike in contributions from Italy (Menicucci &Paolucci, 2023; Menicucci &Paolucci, 2023) and the Russian Federation (Anikin et al., 2023 Korobeynikov et al., 2023; Zolotova, 2023), positioning these countries as emerging research centers in the field. China and India also demonstrate increased activity, aligning with their growing economic influence and interest in sustainable development. Overall, the distribution indicates that ESG banking research has gained significant traction across different regions (e.g. Porzio and Battaglia, 2024; Peng, 2023; Korobeynikov et al., 2023), underscoring its relevance as a universal theme in the financial sector's evolution towards sustainability.

3.2. Content

Table 4. Terms That Define Each Cluster Within the (EBP) Corpus.

Term	cluster	link strength	Occurrences	Avg. citations
banking	1	11	6	2.6667
esg	1	79	55	16.2364
europe	1	7	3	2.3333
financial stability	1	6	4	2
green bonds	1	3	3	27.3333
green finance	1	7	4	1.5
impact investing	1	6	3	2.6667
sustainability	1	27	16	14.3125
banking sector	2	28	12	17.4167
board diversity	2	6	3	37.6667
climate risk	2	2	3	2.6667
corporate governance	2	21	8	24.25
environmental performance	2	10	4	34
esg performance	2	15	11	19.1818
social responsibility	2	11	4	35
banking industry	3	11	4	58.75
climate change	3	4	4	8.75
covid-19	3	10	4	28.5
environmental	3	20	9	14
financial performance	3	18	8	0.875
governance	3	10	5	12.2
social	3	11	4	22
bank lending	4	5	3	1.6667
bank risk	4	7	3	50.6667
content analysis	4	11	4	10.5
csr	4	15	9	42.2222
default risk	4	5	3	16.3333
esg score	4	7	5	26
sustainable finance	4	3	3	3.6667
banks	5	33	18	24.8889
esg disclosure	5	19	8	39.75
financial institutions	5	11	6	10
islamic banks	5	5	4	6.75
performance	5	23	9	32.6667
sustainability reporting	5	20	8	37.375
bank stability	6	3	3	18
corporate social responsibility (csr)	6	6	4	14.75
esg controversies	6	3	3	13.3333
esg rating	6	3	5	3
non-financial reporting	6	4	3	18
corporate social performance	7	7	4	38.5
corporate social responsibility	7	20	10	26
esg ratings	7	3	4	6.25
risk management	7	6	3	24.3333

Source: Author’s interpretation

Clusters communities

The leading cluster in terms of centrality and overall significance within the network of keywords is Cluster 1, centered around the keyword 'ESG'. This cluster has the highest link strength, indicating the most connections within the cluster, which suggests it is the most prominent and influential theme in the research network. The term 'ESG' also has the highest number of occurrences, reinforcing its central role in the discourse on the impact of ESG factors on bank performance.
The prominence of 'ESG' within Cluster 1, combined with associated terms like 'banking', 'Europe', 'financial stability', 'green bonds', 'green finance', 'impact investing', and 'sustainability', points to a comprehensive exploration of how ESG criteria are integrated into banking operations and their influence on financial stability and sustainable investment practices.

The trends across these clusters indicate an evolving research landscape that has expanded from ESG integration and financial stability to include specific challenges like climate change and the COVID-19 pandemic (Peng, 2023; Bax et al., 2023; Rastogi & Singh, 2022). The increasing focus on governance, disclosure, and social responsibility suggests a holistic approach to ESG, where financial performance is considered alongside ethical and risk management practices. The high citation counts in certain clusters point to a strong academic and practical interest in understanding the multifaceted impact of ESG on bank performance, with particular emphasis on governance structures and the emerging field of non-financial reporting. Overall, the clustering reveals a rich and complex picture of ESG research in banking, with diverse and interconnected themes that reflect the sector's pressing issues and priorities.

Cluster 1: ESG Integration and European Focus: This cluster is characterized by its strong link to 'ESG' as the central term, with the highest link strength and occurrence, suggesting that ESG integration in banking is a primary area of research focus. The presence of 'Europe' indicates a geographical emphasis, possibly due to the region's progressive policies on sustainability (Porzio & Battaglia, 2023; Schult et al., 2023; Arboleda, 2023). 'Financial stability' and 'green finance' themes, including 'green bonds' and 'impact investing', emphasize the financial instruments and investment strategies driven by ESG criteria (Lee et al., 2023; Li et al., 2024; Kolsi et al., 2023). The occurrence of 'sustainability' signifies the broad application of ESG principles in the banking sector.

Cluster 2: Governance and Performance: The second cluster highlights the interplay between 'corporate governance' and ESG, with 'board diversity' and 'environmental performance' featuring prominently. The high average citations for these terms suggest impactful research linking governance structures to ESG performance and outcomes (Ziolo et al., 2019; Ahmadi & Amara, 2023). 'Banking sector' as a term underscores the focus on the broader industry implications of ESG practices.

Cluster 3: Industry-Specific Challenges and COVID-19: 'Banking industry' leads this cluster, alongside 'climate change' and 'COVID-19', highlighting the examination of sector-specific challenges and the pandemic's impact on banking performance (Dragomir et al., 2022; Zahid et al., 2023). High citations for 'financial performance' indicate scrutiny of the financial outcomes of ESG initiatives, while 'social' and 'governance' aspects round out the ESG triumvirate.

Cluster 4: Risk Assessment and CSR: Keywords like 'bank risk', 'default risk', and 'ESG score' underscore the cluster's focus on risk assessment within the ESG context. The term 'CSR' (Corporate Social Responsibility) reflects the social dimension's importance and its interrelation with risk factors (Evlakhova, 2022; Forgione & Migliardo, 2020). The high average citations for 'bank risk' suggest a strong academic interest in the risk implications of ESG factors.

Cluster 5: Disclosure and Islamic Banking: With 'banks' and 'ESG disclosure' at the forefront, this cluster emphasizes the transparency and reporting aspects of ESG in the banking sector. 'Islamic banks' appear as a specific research area, suggesting interest in how ESG aligns with the principles of Islamic finance (Muhamad et al., 2022; Buallay et al., 2020). The term 'performance' indicates ongoing investigations into the relationship between ESG practices and bank performance.

Cluster 6: Stability and Responsibility: This cluster focuses on 'bank stability' and incorporates 'ESG controversies' and 'ESG rating', pointing to the importance of ESG in assessing and communicating bank stability (Vărzaru et al., 2021; Tóth et al., 2021). 'Corporate social responsibility (CSR)' and 'non- financial reporting' reflect the broadening scope of reporting practices beyond financial metrics.

Cluster 7: Social Performance and Risk Management: The final cluster brings together 'corporate social performance' and 'risk management', highlighting the crucial link between social factors and risk strategies within banks. The presence of multiple terms related to 'corporate social responsibility' and 'ESG ratings' indicates a dual focus on social impact and the evaluative frameworks used to measure ESG compliance and performance (Wang et al., 2022 Daszyńska-żygadło et al., 2021).

Keyword communities

Analyzing the co-occurrence data for keywords using VOSviewer, we can discern significant trends and focal points in the research on ESG impact on bank performance. The data, based on occurrences and average citations, reveals which areas within the ESG banking discourse have captivated academic interest and how these areas interlink to form a comprehensive narrative.

Table 5. Top Keyword Occurrences in the (EBP) Corpus 2012–2024.

Term	cluster	link strength	Occurrences	Avg. citations
esg	1	79	55	16.2364
banks	5	33	18	24.8889
sustainability	1	27	16	14.3125
banking sector	2	28	12	17.4167
esg performance	2	15	11	19.1818
corporate social responsibility	7	20	10	26
environmental	3	20	9	14
csr	4	15	9	42.2222
performance	5	23	9	32.6667
corporate governance	2	21	8	24.25
financial performance	3	18	8	0.875
esg disclosure	5	19	8	39.75
sustainability reporting	5	20	8	37.375
banking	1	11	6	2.6667
financial institutions	5	11	6	10
governance	3	10	5	12.2
esg score	4	7	5	26
esg rating	6	3	5	3
financial stability	1	6	4	2
green finance	1	7	4	1.5
environmental performance	2	10	4	34
social responsibility	2	11	4	35
banking industry	3	11	4	58.75
climate change	3	4	4	8.75
covid-19	3	10	4	28.5
social	3	11	4	22
content analysis	4	11	4	10.5
islamic banks	5	5	4	6.75
corporate social responsibility (csr)	6	6	4	14.75
corporate social performance	7	7	4	38.5
esg ratings	7	3	4	6.25
europe	1	7	3	2.3333
green bonds	1	3	3	27.3333
impact investing	1	6	3	2.6667
board diversity	2	6	3	37.6667
climate risk	2	2	3	2.6667
bank lending	4	5	3	1.6667
bank risk	4	7	3	50.6667
default risk	4	5	3	16.3333
sustainable finance	4	3	3	3.6667
bank stability	6	3	3	18
esg controversies	6	3	3	13.3333
non-financial reporting	6	4	3	18
risk management	7	6	3	24.3333

Source: Author's interpretation

The keyword co-occurrence analysis reveals a multi-faceted research landscape where ESG's role in banking is scrutinized from various angles, including sustainability practices, financial outcomes, and the broader societal and environmental impacts. The data suggests a strong and growing academic interest in how ESG considerations are reshaping the banking sector, driving new strategies for risk management, operational efficiency, and value creation (Bhaskaran et al., 2023). The emphasis on sustainability reporting and CSR indicates a shift towards greater transparency and accountability, aligning with stakeholder demands for more responsible banking practices (Gunawan et al., 2022).

Moreover, the integration of ESG into financial performance analysis highlights a critical trend: the banking sector's shift towards sustainability is not just ethically driven but is increasingly viewed as a cornerstone for financial resilience and competitive advantage (Schult et al., 2023; Krech et al., 2018). The emergence of themes like COVID-19 and the focus on specific areas like Islamic banking and green finance reflect the sector's responsiveness to global challenges and the diversity of approaches to ESG integration.

Overall, the trends suggest that ESG considerations are becoming integral to the banking industry's evolution, with research playing a pivotal role in uncovering the complexities, challenges, and opportunities presented by this integration.

ESG (Environmental, Social, and Governance): With the highest occurrences and substantial link strength, 'ESG' stands at the forefront of the research. This prominence underscores the centrality of ESG considerations in the banking sector, reflecting a keen academic and industry interest in understanding how ESG factors influence bank operations, risk, and performance.

Banks and Banking Sector: 'Banks' and 'banking sector' are key focal points, indicating a broad examination of ESG impacts across the banking industry. This includes analyses of how banks are integrating ESG principles into their strategic frameworks and the resultant effects on their operational and financial performance (Iannuzzi et al., 2023).

Sustainability and Sustainability Reporting: These terms highlight the importance of sustainability in the banking sector, not just as a principle but as a practice, through sustainability reporting (Gutiérrez- Ponce & Wibowo, 2023). This suggests a growing emphasis on transparency and accountability in how banks disclose their ESG and sustainability efforts (Mandas et al., 2023).

ESG Performance and Financial Performance: The combined analysis of 'ESG performance' with 'financial performance' and 'performance' suggests a critical investigation into the relationship between ESG initiatives and financial outcomes (Bax et al., 2023; Alamsyah and Muljo, 2023; Dinh and Melloni, 2023). The significant occurrences and citations reflect ongoing efforts to quantify the financial benefits of ESG integration in banking.

Corporate Social Responsibility (CSR): With CSR and related terms like 'corporate
governance' and 'corporate social performance' featuring prominently, there's a clear academic focus on the social and governance aspects of ESG. This includes exploring how banks' CSR practices contribute to their overall ESG performance and impact (Ben Fatma and Chouaibi, 2023)

Environmental Focus: Keywords such as 'environmental', 'green finance', and 'climate change' denote a specific interest in the environmental dimension of ESG. This trend indicates a keen exploration of how environmental risks and opportunities are managed within the banking sector and the role of green financial products (Rossi et al., 2024; Li et al., 2024).

Emerging Themes: 'COVID-19' emerges as a recent theme, suggesting an interest in understanding the pandemic's impact on ESG practices and bank performance. 'Islamic banks' also appear as a niche area of interest, indicating an exploration of ESG within alternative banking models.

3.3. Research Trend from 2012-2024

3.3.1. Research Trends and Emphasis (2012-2015)

Figure 1. Academic focus during 2012-2015
Source: Created by the Author using Python

Between 2012 and 2015, the research on ESG impact on bank performance was characterized by a multifaceted approach, encompassing integration strategies, risk management, financial outcomes, regulatory influences, and stakeholder relations. The period marked a foundational stage in understanding the complexities and benefits of embedding ESG principles within the banking sector. The trend indicated a growing awareness and empirical investigation into how ESG factors are not only essential for sustainable development but also pivotal in shaping the financial and operational paradigms of banks. A noticeable trend during this period was the exploration of how banks integrate ESG criteria into their investment decisions, risk assessment models, and overall strategic planning (Kocmanová and Dočekalová, 2012). Research focused on understanding the methodologies and frameworks banks employed to incorporate ESG factors, suggesting a growing recognition of sustainability issues within the financial sector (Zeidan and Spitzeck, 2015).

3.3.2. Research Trends and Focus Areas (2016-2018)

Figure 2. Academic focus during 2016-2018
Source: Created by the Author using Python

The research trends from 2016 to 2018 reflect a maturation in the academic exploration of ESG impact on bank performance, characterized by a broader consideration of how ESG factors intersect with technological advancements, regulatory changes, and stakeholder expectations. This period underscored the increasing importance of ESG as an integral component of strategic planning and risk management within the banking sector (Prorokowski, 2016). The emphasis on competitive advantage and technological innovations highlighted the dynamic nature of ESG integration, suggesting that banks that proactively embrace ESG principles are better positioned to navigate the complexities of the modern financial landscape (Capelle-Blancard & Petit, 2017).

As the global financial system continues to grapple with sustainability challenges, the insights garnered from this period provide valuable knowledge for banks, policymakers, and researchers aiming to further the integration of ESG criteria into banking operations and to leverage these principles for sustainable growth and resilience (Sethi et al., 2017)

3.3.3. Research Trends and Emerging Focus (2019-2021)

Figure 3. Academic focus during 2019-2021
Source: Created by the Author using Python

Between 2019 and 2021, the research on the impact of ESG on bank performance took on new dimensions, reflecting the sector's response to global sustainability challenges and the increasing emphasis on climate change and social responsibility. This period highlighted the growing complexity of ESG integration, showcasing the pivotal role of technological innovations, regulatory compliance, and diversity and inclusion in shaping sustainable banking practices (Tóth et al., 2021).

The insights from this era underscore the critical importance of ESG considerations in ensuring the resilience, competitiveness, and sustainability of the banking sector (Chang et al., 2021). Studies in Islamic banking contribution to the ESG also witnessed a thriving trend exploring the possibility for alignment within Shariah law (Buallay et al., 2020). As banks continue to navigate the evolving landscape, the research from these years provides valuable lessons on integrating ESG principles into core business strategies to achieve long-term success and contribute to a sustainable future.

3.3.4. Research Trends and Focus Areas (2022-2024 Feb)

Source: Created by the Author using Python

The years 2022 to 2024 mark a critical juncture in the integration of ESG principles within the banking sector, characterized by a holistic approach to sustainability, innovative use of technology, and adherence to evolving regulatory standards (Wang, 2023). The research trends during this period reflect an industry in transformation, actively contributing to the global sustainability agenda while navigating the complexities of the modern financial ecosystem (Ivleva et al., 2022). As banks continue to align their operations with ESG criteria, the insights from this period offer a roadmap for navigating the challenges and opportunities of sustainable banking (Al Amosh & Khatib, 2022). The emphasis on climate finance (Ginglinger & Moreau, 2023), digital innovation (Yeh et al., 2022), and comprehensive ESG integration (Dicuonzo et al., 2022) underscores the sector's pivotal role in achieving a sustainable future, highlighting the ongoing need for rigorous academic exploration and practical application of ESG principles.

4. Discussion

The integration of Environmental, Social, and Governance (ESG) principles within the banking sector from 2012 through February 2024 has unfolded as a multifaceted narrative of evolving research focus, global engagement, and thematic diversification (Knoepfel, 2004; Sjåfjell & Richardson, 2015; Senadheera et al., 2022). This comprehensive examination reveals how the academic community and banking industry have dynamically engaged with ESG principles, marking a significant shift towards sustainability in banking practices. The foundational research initiated in the early years laid the groundwork for understanding ESG's integration, emphasizing methodologies and frameworks that embed these principles effectively to mitigate risks and enhance operational stability amidst evolving regulatory landscapes (de Souza Barbosa et al., 2023; Weber, 2019).

As the dialogue around sustainable finance matured, the period from 2016 to 2018 witnessed a deeper exploration into the nuances of ESG's impact on banking performance, highlighting its strategic value as a competitive advantage (Schotten et al., 2017; Parlina et al., 2020). This phase underscored the intersection of ESG with technological innovations and the pivotal role of stakeholder engagement, suggesting that banks embracing ESG principles were poised to navigate the financial landscape's complexities more adeptly. The subsequent years, up to 2021, expanded the research focus to address global sustainability challenges, including climate change and the COVID-19 pandemic, emphasizing ESG's critical role in ensuring the banking sector's resilience and competitiveness (Menicucci & Paolucci, 2023; Anikin et al., 2023; Zolotova, 2023).

The most recent trends leading up to February 2024 have showcased an industry actively contributing to the global sustainability agenda, with ESG considerations emerging as strategic imperatives (Porzio & Battaglia, 2024; Peng, 2023; Korobeynikov et al., 2023). This period is characterized by a focus on climate finance, digital innovation, and the comprehensive integration of ESG principles, reflecting the banking sector's pivotal role in achieving a sustainable future.

Incorporating the geographical distribution of research contributions and keyword co-occurrence analysis enriches our understanding of the global and thematic dimensions of ESG integration within the banking sector. The increased research activity from countries like Italy, the Russian Federation, China, and India illustrates a broadening global interest in ESG banking practices, underscoring ESG issues' cross-cultural and international relevance (Bhaskaran et al., 2023; Gunawan et al., 2022). This diversity in research origin suggests a global phenomenon, resonating with both emerging markets and developed economies, and points towards the necessity for cross-cultural collaborations to effectively tackle global sustainability challenges through banking and finance.

The keyword analysis reveals a thematic landscape marked by operational and strategic integration of ESG principles, alongside emerging challenges and innovations. Themes such as "COVID-19," "climate change," "Islamic banking," and "green finance" signify the sector's adaptability to global challenges and openness to diverse ESG integration approaches (Schult et al., 2023; Krech et al., 2018). This dynamic nature of ESG research within banking, adapting to new challenges and exploring niche areas, reflects the evolving discourse on sustainable finance.

The confluence of geographical insights and thematic explorations provides a nuanced understanding of ESG research in banking, highlighting the importance of fostering a global research community. This community would embrace diversity in perspectives and methodologies, tackling the complex challenges of sustainable banking. The evolving thematic focus areas underscore the need for innovative research approaches to navigate ESG integration's complexities, leveraging new technologies and analytical models.

In summary, the integration of ESG principles in banking from 2012 to 2024 not only underscores a significant evolution in research focus and practice but also highlights the interconnectedness of global sustainability challenges with the banking sector's role in addressing them. As the banking industry continues to evolve in response to these challenges, the insights derived from this comprehensive analysis will be invaluable in shaping strategies that align with global sustainability objectives, fostering a more sustainable and resilient banking sector for the future.

5. Conclusion

Embarking on an exploration of the intricate landscape of Environmental, Social, and Governance (ESG) principles within the banking sector from 2012 through February 2024, our investigation was aimed at delineating the progression and impact of ESG integration on banking performance. This period has unfolded as a testament to the increasingly central role of ESG in the global and interdisciplinary realms of banking studies. Through our analysis, we identified pivotal clusters within the ESG corpus, dissecting their evolution across distinct phases that echo the shifts in scholarly focus and editorial stewardships.

Our journey through the ESG Bank Performance (EBP) corpus has offered a panoramic view of how the conversation around sustainable banking practices has evolved, becoming richer and more complex over the past twelve years. This exploration has not only highlighted the corpus's growing significance in the academic dialogue but also pinpointed emerging trends and areas ripe for future exploration. In doing so, we have aimed to furnish the banking and academic communities with a reflective tool—a mirror, if you will—allowing them to discern their strengths and areas for further development within the ESG domain.

Moreover, we envisage that our comprehensive review will perpetuate the trend of employing Big Data Analytics (BDA) to unearth insights into specific research contexts, thereby enriching our collective understanding of ESG's role in banking. Our findings reveal a dialogue around ESG that is as dynamic and multifaceted as the concept of small groups itself, characterized by ongoing growth and complexity. And, akin to any evolving conversation, it becomes imperative occasionally to pause and reflect upon the discourse thus far, acknowledging the journey, the milestones achieved, and the path that lies ahead for sustainable banking practices. This reflection is not merely an academic exercise but a necessary pivot towards ensuring that the integration of ESG principles within banking continues to be relevant, insightful, and aligned with global sustainability goals, thereby shaping a resilient and sustainable banking sector for future generations.

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