Sustainable Banking – concept or strategic objective?

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Abstract

The global financial crisis in 2008 triggered a multi-faceted transformation process of the banking system meant to rebuild the trust relationship with clients. The academic community did not delay its reaction, but only after the non-financial dimension of risk became inevitable and crises more frequent had the research activity became magis activa. The paper aims to define the boundaries of sustainable banking by exploring the related literature development, using a statistical description of the principal constituents of sustainable banking research and carrying out a dynamic analysis about its intellectual structure. The results indicate strong regional research centers scattered across the world, but with different levels of interest in the topic. The literature development highlights studies about the societal impact of banking activity, in a broader discussion about financial performance, risk management, corporate governance and other emerging themes. The paper provides a better understanding of the origins and the need for sustainable banking as a critical component in managing the adverse effects of new business models.

Keywords: sustainable banking, customers, corporate social responsibility, risk, bibliometric analysis

JEL Classification: G01, G21, G32

Introduction

The banking sector has an enormous influence on the economic activity and the scientific literature has produced vast amounts of research related to this topic. Its crucial role in channeling funds and the possibility to choose which clients to finance give banks a unique opportunity to contribute to the sustainable transformation process of the entire economy that emerged with the Paris Agreement. For banks, this approach refers to addressing customers` problems and creating solutions that are sustainable over time, rather than promoting innovations for their own interests. A robust business model is fundamental for banks to maintain their relevance in a changing business environment. Banks that value their resilience, strategic position and withstand various challenges build trust and improve access to financial services. Defining sustainable banking is not an easy task, as no consensus has yet been reached. This can be attributed to the numerous similar terms that are related to sustainable banking and the aforementioned lack of clarity and boundaries (Cunha et al., 2021). Accordingly, this paper reviews the sustainable banking literature, identifies its thematic development and provides potential directions for future research in this impactful area. To consistently proceed with this review, a descriptive analysis was performed to present the evolution of literature, including collaboration between authors and countries, affiliation and most frequent journals. Furthermore, through a co-word analysis the intellectual structure in this research topic was presented.

The post-2008 transformation process of the banking sector, with its multidimensional results, was the trigger for a sustainable approach in banking business, defined by social impact, financial performance, corporate governance and an increasing number of emerging topics that affect banking organizations. Following this approach, both the banking and academic communities became more active especially during periods with increased volatility. Future research trends point to more in-depth studies in terms of the social impact created by the banking system, with special attention to the level of responsibility of financial institutions in solving societal problems. Our analysis updates the literature with new perspectives following multiple problematic events that affect the banking sector, which could be used as a support in designing a more resilient relationship between banks and clients.

Literature review

Early research on sustainable banking focused on its role and how the implementation of decisions related to sustainability affects financial processes in firms' decision making (Bloxham, 2011a; Bloxham, 2011b; Salzmann, 2013; Hafenstein et al., 2016; In S.Y. et al., 2019; Martini, 2021) and climate-related financial policies (Baer et al., 2021). Several external shocks have deeply affected the pillars of the banking industry's business model, such as the 2008 financial crisis (Mattila et al., 2010; Ruiz et al., 2014), the Fourth Industrial Revolution (Schwab, 2017), and the Covid-19 pandemic. These shocks are accelerating the digital and sustainable transformation of banks (Forcadell et al., 2020). Researchers and scholars have been particularly interested in the implementation of ESG criteria and their links to the performance and risk of non-financial institutions (Garcia et al., 2017; Fatemi et al., 2018; Hassan et al., 2021; Naimy et al., 2021). Nonetheless, the number of studies on ESG performance in the banking industry has increased. Ahmed et al., 2018; Birindelli et al., 2018, Buallay, 2019; Miralles-Quirós et al., 2019a; Miralles-Quirós et al., 2019b; Shakil et al., 2019; Di Tommaso and Thornton, 2020; Paltrinieri et al., 2020 and Chen et al., 2021 show that banks provide much larger loan spreads, total borrowing costs, shorter loan maturities, and greater collateral to companies with higher levels of environmental impact. They also provided evidence that the corporate social responsibility (CSR) component of banks had a significant impact on environmental risk factors. According to Azmi et al. (2021), the most important drivers of bank stability are environmental transparency and emissions reduction, indicating that stockholders and bondholders are more interested in banks' commitment to environmental transparency and emissions reduction than traditional corporate governance concerns. Chiaramonte et al. (2022) examined the joint and separate effects of ESG factors on bank stability. In evaluating aggregated ESG ratings, they argued that involvement in CSR practices was connected to stronger stability (i.e., reduced default risk) during the global financial crisis. It also appeared to encourage more cautious banking, build more stable connections with the financial community, and improve reputation.

Banking supervisory authorities have recognized climate issues as a problem for financial institutions because the combination of economic and financial implications linked to climate change could result in a possible shortfall for the banking industry (Basel Committee on Banking Supervision, 2021). On the negative side, ESG factors may impact institutions' financial performance by materializing through financial risk categories, such as credit, market, operational, liquidity and funding risks, which are primarily affected by an institution's exposure to its counterparties and invested assets (European Banking Authority, 2021). Ahmed et al. (2023) examined the effects of the banking sector on green growth and found a significant positive relationship in both the short and long run. Ruan et al. (2023) highlighted the positive impact of the banking sector on China's green economic development from 1993 to 2017. Iqbal et al. (2019) argued that the role of the banking sector in developing the green economy is particularly critical for developing countries.

The incorporation of sustainability transition within the banking sector necessitates a substantial departure from conventional banking practices, as it entails a shift towards techniques that are more environmentally and socially sustainable (Choudhury et al., 2023)

At the same time, Citterio and King (2023) demonstrate how the inclusion of ESG dimensions strongly reduces the likelihood of misclassifying distressed banks as healthy, emphasizing the importance of embracing the ESG information in the model used to detect bank financial distress. Although the current literature has investigated the link between ESG and bank risk, only a few studies have analyzed the separate effects of environmental, social, and governance scores on bank riskiness profile. In this field, Chiaramonte et al. (2022) found that ESG sub-pillars reduce bank fragility during periods of financial distress. Gangi et al. (2019), focusing on the CSR dimension, found that banks that are more sensitive to ESG issues exhibit less risk. Environmental, Social, and Governance (ESG) characteristics and financial success have been shown to positively correlate in several research, including those by Hasanov et al. (2017). Investors consider the importance of incorporation of ESG factors into decision making procedures, hoping to improve long-term returns, reduce risk, and build resilience in the face of new global issues. A changing regulatory framework is also making it easier to include social and environmental factors in green finance decision-making. Standardized frameworks for sustainable financial practices are becoming more and more necessary, as recognized by governments and international organizations. A deliberate effort to integrate financial practices with larger sustainability objectives is shown by regulatory efforts like the principles for responsible banking (PRB) and the task force on climate-related financial disclosures (TCFD) (Šarac et al., 2022).

A "green economy" refers to an economic system with a low carbon footprint, effective use of resources, and inclusive of society. It has been hypothesized that one of the potential advantages of a green economy would be sustained economic growth. Several investigations have examined the potential connection between sustainability and a flourishing economy. For instance, investment in green energy sources was shown to boost the economy in underdeveloped nations by (Maes and Jacobs 2017). The theoretical work by Pastor et al. (2021) and Pedersen et al. (2021) formally show how attitudes towards ESG affect the pricing of financial assets. These theoretical models motivate Blomqvist and Stradi (2024) to empirically investigate the relationship between ESG preferences and stock returns. The authors empirically proxy for ESG attitudes and examine the link with stock returns. Kenjegalieva et al. (2022) take a different perspective. They recognize that ESG captures different aspects and dimensions. Specifically, they examine whether Environmental, Social and Governance are complementary or substitutes. This suggests that firms are facing trade-offs and have to choose which ESG element to prioritize given finite resources available. However, the study also finds that E, S and G are p-complements; this indicates that when the price of any falls, then there is an increase in the expected quantity of all three elements.

Research data and methodology

As bibliometric analysis in sustainable banking is not new, the research aims to provide an updated perspective on this topic and analyze the global research developments considering the multi-faceted transformation process of the banking system that started with the global financial crisis in 2008. Using multiple progress periods (generally defined in bibliometric analyses as five-year periods) and also a holistic approach (for the entire analyzed period – all relevant research papers published until July 2024), the evolution of specific research themes is observed over different periods and is mapped with future research directions. To this aim, the bibliometric analysis was carried out using information generated from the Web of Science (WoS) database, which has a good coverage and is ideal for financial researchers (Liu et al., 2015; Van Raan, 2014), as it has multiple and rigorous evaluation and selection processes.

A bibliometric review involves the use of publication and citation data analytics. This includes identifying patterns, uncovering networks and relationships, and tracking advancements in a specific research area over time, which makes it the most suitable for the research objectives.

The research consists of a two-stage systematic process:

- **Initial preparation for data gathering** Relevant keywords were selected and incorporated into a search statement that refers to sustainable banking. As the sustainability linked discussion has gained prominence in the years after the Paris Agreement, the search protocol was designed considering the slightest details to include only the documents relevant to the research scope. The final search statement is presented in Table 1.

Search statement

Table 1

Document type	Database	Field	Keywords
Article	Social Science Citation Index Science Citation Index Expanded	Title Abstract Keywords	(sustainab* OR "efficien* social" OR "social performance" OR "social* responsib*" OR "social efficien*" OR environment* OR green OR climate OR eco-friendly OR ethic* OR ESG OR SDG OR CSR) **NEAR**/10 (bank* OR "financ* sector" OR "financ* industry")

Source: elaborated by authors

To cover the multidimensional connections between banking and sustainability, the spectrum of keywords was grouped into two clusters of terms. The first outlines, to the best of our knowledge, all possible references to "sustainable". As this topic can be linked to multiple disciplines and can have different names, keywords like social responsibility, ethical banking, sustainable development goals (SGD) or corporate social responsibility (CSR) were considered. To extend the analysis, also the environmental perspective and banks` social efficiency were included. The second cluster refers to the banking and financial sector. The Boolean operator "OR" was used to increase the literature search coverage. As bibliometric analyses are prone to many false positives, the "NEAR" operator was used to retrieve only the papers in which at least one of the keywords from each cluster appears at a less than 10 words distance from each other. The distance between keywords was considered sufficient to maintain the relevance of the papers selected and the balance between precision and recall. The search was conducted in July 2024 and no time restrictions were applied. To avoid many irrelevant papers for this analysis, the WoS categories were reviewed, and the final selection included "Economics" or "Business Finance" or "Business" or "Management" or "Environmental Sciences". Only the Social Science Citation Index and Science Citation Index Expanded were considered, as they are the most influential in terms of financial studies. For the relevance of the analysis, the search was limited to articles, and it was directed to Title, Abstract and Keywords fields. Using these selection criteria, the search retrieved 2094 papers for the primary sample. All the titles, abstracts and keywords were reviewed by the authors independently to maintain only the papers that are precisely relevant for sustainable banking. Most false positives were related to other kinds of environment (e.g. regulatory, interest rate, business), other categories of banks (e.g. environmental banks, World Bank programs that have no connection to the banking sector) or the large spectrum of the financial sector (e.g. stock market, public finance). After filtering the initial results, only 665 remained for further analysis.

- **Bibliometric analysis**

Bibliometric analysis is a consistent quantitative tool to study the development and patterns of extended scientific data (Martens et al., 2016). It is useful to evaluate the relationship between input data and the quality/quantity of the output data (Ebadi and Schiffauerova, 2016). The overwhelming volume of scientific literature dedicated to sustainability, its multiple connections to different sectors and the availability of information through the online stored databases are the milieu where bibliometric analysis becomes a useful instrument that provides structured analysis of trends over time and can help in the identification of strategic shifts in a specific research line (Aria and Cuccurullo, 2017). To identify the most important research constituents of sustainable banking literature and "to evaluate the research and publication performance of individuals and institutions" (Zupic and Čater, 2015), a bibliometric performance analysis (BPA) was performed. For a dynamic and structural analysis of the envisaged literature, a science mapping was conducted to develop the research with an intellectual structure (e.g. co-word analysis). To perform the bibliometric analysis, VOSviewer, Bibliometrix and Microsoft Excel were used. As VOSviewer provides the necessary options to construct, visualize and examine the science mapping and Bibliometrix and Microsoft Excel have evolved enough to perform the BPA, these tools were considered to be the most suitable for this research.

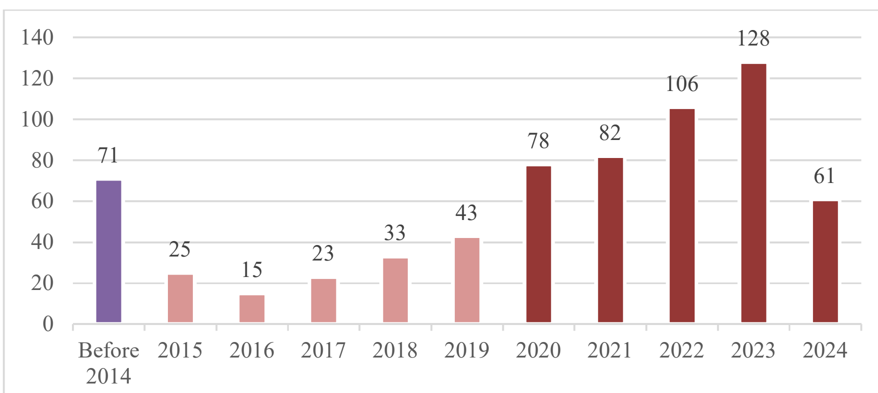
- **Bibliometric performance analysis**

Publication trend in sustainable banking research

The evolution of sustainable banking research is presented in Figure 1, where three periods of time can be distinguished: first, prior to and including 2014 – the year before the Paris Agreement; second, 2015-2019 – before the Covid-19 pandemic; and the last one, 2020-2024 (July). The reason behind this division is that one of the objectives of this research is the study of the main topics and their evolution over time. It is a common method in bibliometric studies to analyze progress over five-year periods (Cobo et al., 2011, Muñoz-Leiva et al., 2012). According to the data collected, there was not so much interest in sustainable banking before 2015, with a little more than 10% of the documents being published in that period. Only after the global financial crisis in 2008 has this topic started to receive increasing importance. This evolution can be connected to the banks` need to rebuild the relationship with their clients and at that moment the SDG (Sustainable Development Goals), ESG (Environmental, Social, Governance) and CSR (Corporate Social Responsibility) were strategically placed as the foundation on which trust could be regained (Laidroo and Sokolova, 2015). In that context of rebuilding the banks-clients relationship, the researchers in sustainable banking started to be active.

The evolution of sustainable banking research

Figure 1



Source: elaborated by authors

Although the Paris Agreement has been a turning point for the entire way of living, from how we relate to nature to how we do business and to plans with goals over decades in the future that have been established following its principles, it did not convey its global importance also to sustainable banking research, as only 21% from the total documents were published in the second analyzed period. As expected, most papers (70%) were published in the last analyzed period, with an exponential increase compared to the previous. Considering the relation between the global financial crisis and the Covid-19 pandemic, the increase in sustainable banking research should not be attributed to the crisis generated by the virus, as during the pandemic years banks were the solution, not the cause, as they were in the 2008 crisis (Nițescu et al., 2024). Emergencies like climate change and social inequality have intensified and are promoted intensively on the global agenda. Their growing importance has spurred the discussion about how banks can be guided towards a more sustainable future, aligning their portfolios with the Paris Agreement principles.

- **Research activity in sustainable banking**

The most active and prolific researchers in the field and the country where they activate are presented in Table 2.

Most active researchers in sustainable banking

Table 2

Author	# Publications	Country
Pérez, Andrea	13	Spain
Rodriguez Del Bosque, Ignacio	9	Spain
Forcadell, Francisco Javier	7	Spain
Galletta, Simona	7	Italy
Bose, Sudipta	6	United Kingdom
Ubeda, Fernando	6	Spain
Agnese, Paolo	5	Italy
Aracil, Elisa	5	Spain
Iannuzzi, Antonia Patrizia	5	Italy
Khan, Habib Zaman	5	Australia
Mazzu', Sebastiano	5	Italy
Adu, Douglas A.	4	United Kingdom
Gangi, Francesco	4	Italy
García-Meca, Emma	4	Spain
Lee, Chien-Chiang	4	China
Lui, Tze Kiat	4	Malaysia
Mendez, Alvaro	4	United Kingdom
Naciti, Valeria	4	Italy
Siddik, Abu Bakkar	4	China
Taddeo, Simone	4	Italy
Wang, Chih-Wei	4	Taiwan
Zainuldin, Mohd Haniff	4	Malaysia
Zhang, Cheng	4	China

Source: elaborated by authors

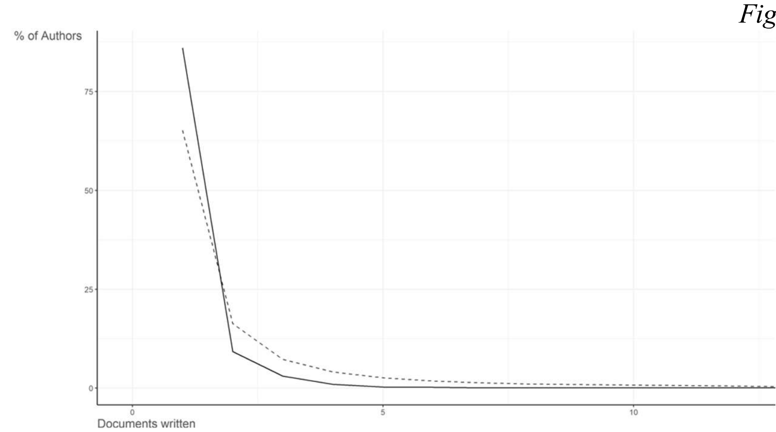
Through this analysis, both the individual interest and the broader regional trends are presented. Andrea Pérez, from Spain, stands out as the most prolific researcher in sustainable banking, with 13 publications. This is a strong suggestion that the local academic and banking community has a strong interest in sustainability issues. She has an extensive engagement with the topic, addressing multiple facets like the impact of sustainability practices on financial performance, ESG integration in banking practices and corporate social responsibility. The second most prolific author is Ignacio Rodriguez Del Bosque, also from Spain, with 9 publications. Together with Francisco Javier Forcadell (7 publications), Fernando Ubeda (6 publications), Elisa Aracil (5 publications) and Emma García-Meca (4 publications), they form a robust research community and emphasize Spain`s particular focus on sustainable banking practices.

Italy is the next significant contributor to research in sustainable banking. Simona Galletta and Francesco Gangi, each with 7 and 4 publications respectively, along with Paolo Agnese (5 publications), Antonia Patrizia Iannuzzi (5 publications), Sebastiano Mazzù (5 publications), Valeria Naciti (4 publications), and Simone Taddeo (4 publications) demonstrate Italy`s active interest in this topic. This representation highlights the country's academic and practical engagement with advancing knowledge in sustainable banking. United Kingdom is also very active in the field, with contributions from Sudipta Bose (6 publications), Douglas A. Adu (4 publications), and Alvaro Mendez (4 publications). The interest in sustainable banking reflects the country`s efforts towards remaining a major global financial hub. Other representative countries are China, with researchers like Chien-Chiang Lee (4 publications) and Abu Bakkar Siddik (4 publications); Malaysia, with Tze Kiat Lui (4 publications) and Mohd Haniff Zainuldin (4 publications); and Australia, represented by Habib Zaman Khan (5 publications). This heterogeneous group of active researchers in sustainable banking highlights the global nature of the topic and its importance across different economic, social and regulatory environments. With their podium positions, Spain, Italy and the United Kingdom reflect strong regional research clusters, while the presence of China, Malaysia and Taiwan suggests a global preoccupation in this domain.

Considering Figure 2, sustainable banking is on an upward trend and the work of the academic community will have a crucial role in designing the future financial system, with a mix of innovations and practices that bring banking organizations closer to the broader societal and environmental goals.

Lotka’s Law in sustainable banking research

Figure 2

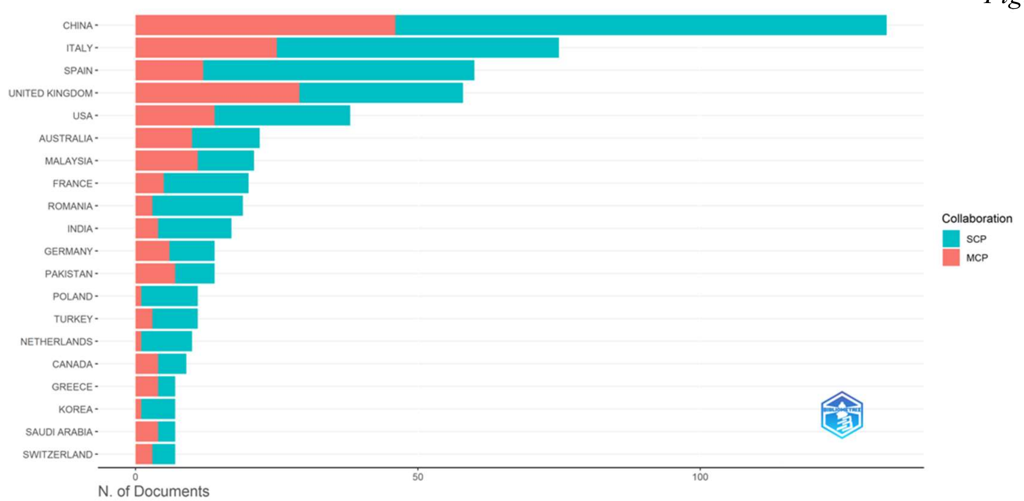


Source: elaborated by authors

Lotka`s law is used in analyzing authors` scientific productivity (Sahu and Jena, 2022) and states that the number of authors is inversely proportional to the number of papers allocated to them (Pao, 1985). In other words, there is only a small number of authors who publish several papers in a specific field of interest. The authors` distribution for sustainable banking research is presented in Figure 2, where a steep evolution can be observed. The results reflect that most authors published only one paper in this topic, followed at a significant distance by the authors with two documents published, these results confirming the distribution proposed by Lotka`s law, emphasizing an initial specific interest in this topic for most of the authors.

Corresponding author`s countries

Figure 3



Source: elaborated by authors

As presented in Figure 3, most corresponding authors` did not engage in international research cooperation (MCP – Multiple Country Publications), preferring local contributors (SCP – Single Country Publications). The only exception is in the United Kingdom, where there is equilibrium between local and international contribution.

Regarding the most active universities and institutions, presented in Table 3, Universidad De Cantabria was the most active university in sustainable research in the 2015-2019 period but registered a significant drop in the next period. In contrast, Bucharest University of Economic Studies and several other universities increased their research efforts in the 2020-2024 period.

Most active universities/institutions in sustainable banking research

Table 3

Name	Before 2015	2015-2019	2020-2024
Universidad De Cantabria	2	11	2
Bucharest University of Economic Studies	2	3	8
Parthenope University Naples	n/a	n/a	10
Universidad Rey Juan Carlos	n/a	4	6
Autonomous University of Madrid	n/a	1	8
ESIC University	n/a	2	7
Sapienza University Rome	1	2	6
Universita Degli Studi Di Bari Aldo Moro	n/a	3	6
University Of London	3	1	5
European Central Bank	2	1	4
London School Economics Political Science	2	1	4
Newcastle University UK	1	n/a	6
Roma Tre University	n/a	n/a	7
Shanghai University of Finance Economics	n/a	2	5
Southeast University China	n/a	n/a	7

Name	Before 2015	2015-2019	2020-2024
University Of Catania	n/a	n/a	7
University Of Messina	n/a	n/a	7
University Of Newcastle	n/a	2	5

Source: elaborated by authors

Table 4 presents the most frequent journals in sustainable banking research with the number of publications and the overall percentage. As per the dataset utilized, there are 166 journals, and almost half of the publications (47.67%) are related to 11 journals. The most noticeable fact is that more than half of the journals (85) have only published only one paper related to sustainable banking, revealing the accumulation of knowledge around a limited number of journals.

Most frequent journals in sustainable banking research

Table 4

Journal	# Documents	Percentage (%)
Sustainability	74	11.128
Journal of Business Ethics	45	6.767
Corporate Social Responsibility and Environmental Management	40	6.015
International Journal of Bank Marketing	35	5.263
Finance Research Letters	34	5.113
Business Strategy and The Environment	24	3.609
Research In International Business and Finance	16	2.406
International Review of Financial Analysis	15	2.256
International Journal of Islamic and Middle Eastern Finance and Management	13	1.955
Journal of Banking Finance	11	1.654
Journal of Financial Stability	10	1.504

Source: elaborated by authors

- **Global interest in sustainable banking research**

Table 5 presents the number of publications associated with the most prolific countries in sustainable banking research during the three analyzed periods:

Top 5 most active countries in sustainable banking research

Table 5

Country	Before 2015	2015-2019	2020-2024
China	3	17	118
United Kingdom	14	17	63
Italy	4	11	73
Spain	10	31	29
USA	7	15	39

Source: elaborated by authors

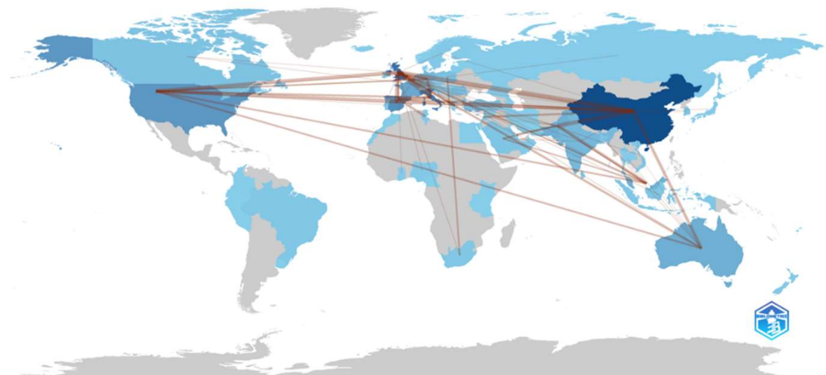
The results show a clear increasing interest in sustainable banking research across the top 5 most active countries. China registered the most important growth, especially during the 2020-2024 period.

United Kingdom, Italy and the USA have also enhanced their academic activity in this topic, while Spain had only a moderate growth at country level, registering even a decrease in the last analyzed period. This analysis confirms the global emphasis on sustainable banking research, as between the three analyzed periods there is an increase in publications from 38 before 2015 to 322 for the 2020-2024 period.

Figure 4 presents the cross-country collaboration in sustainable banking research. The most active collaborations are China-United Kingdom and Italy-United Kingdom. The United Kingdom is positioning itself as the European hub of research in this topic, with active collaborations also with Spain and the USA.

Country collaboration map

Figure 4

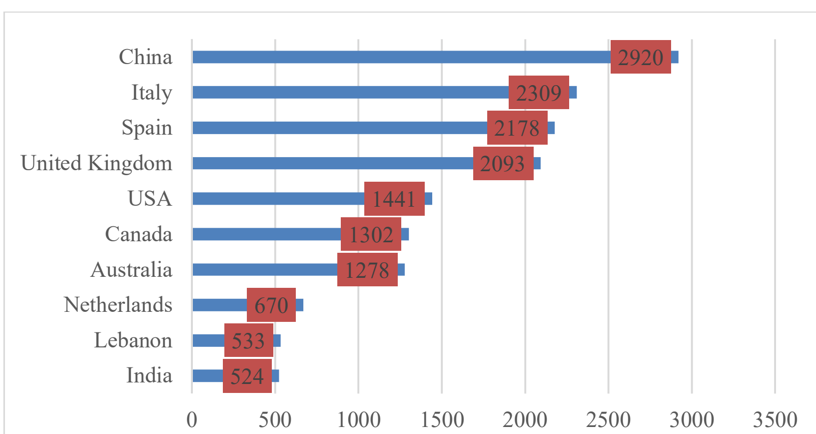


Source: elaborated by authors

Although it has the most publications in Europe, as it results from Table 5, the United Kingdom is outclassed by Italy and Spain at the number of citations per country. USA reconfirms its top five position also at this metric, highlighting a moderate interest in sustainable banking research.

Most cited countries

Figure 5



Source: elaborated by authors

- **Banking activity and sustainable development goals**

As per the data presented in Table 6, there is a strong emphasis on the social dimensions of sustainability within banking research.

SDG related publications

Table 6

Sustainable Development Goals	# Publications
08 Decent Work and Economic Growth	117
01 No Poverty	103
10 Reduced Inequality	98
09 Industry Innovation and Infrastructure	15
13 Climate Action	7
04 Quality Education	3
02 Zero Hunger	1
06 Clean Water and Sanitation	1
15 Life on Land	1

Source: elaborated by authors

For the selected data, the sustainable banking research was particularly focused on goals that address decent work, economic growth, reduction of poverty and social inequality. Specifically, SDG 08 (Decent Work and Economic Growth) is in the front position with 117 publications, closely followed by SDG 01 (No Poverty) with 103 publications, and SDG 10 (Reduced Inequality) with 98 publications. This is a clear commitment within the banking research to support the social aspects of sustainability. This trend emphasizes the importance banks have in promoting social well-being and economic equity. Through financial services provided to underserved populations, banks can develop communities, fostering inclusion and economic growth. This focus aligns banking practices with SDG 01 and SDG 10, connecting the financial system to the efforts against poverty and the reduction of social inequalities. Banks have a pivotal role in facilitating job creation and economic growth through their core activities – lending, investments and financial services. In contrast, goals related to the environment (SDG 13) receive a significantly reduced importance, with only 7 publications. Although the climate change is considered globally at all levels of responsibility, the primary focus remains targeted at the social challenges.

- **Bibliometric science mapping – a co-word analysis approach**

The exponential increase in sustainable banking literature over the 2020-2024 period (as presented in Figure 1) requires a better understanding of the intellectual and conceptual structure, or to map the dynamics of sustainable banking research. To this aim, a co-word analysis was used to identify the relationships between sub-topics in sustainable banking research and observe the evolution of science in this field. The co-word analysis has been utilized to objectively identify the themes of research and detect the relationship between these themes directly from the content of the literature, without using any a priori definition of research themes in scientific literature (He, 1999). Zupic and Čater (2015) consider that the co-word analysis results in semantic map, which can present changes over time in the conceptual space of intellectual structures. Before performing the science mapping analysis, the keywords were analyzed to identify the themes addressed. All keywords and the WoS database for each paper were analyzed. The keywords were standardized and are presented in Table 7, with their frequency and cluster allocation. After considering only the keywords with a co-occurrence frequency above the predefined value of 5, which is considered proper for a clear visualization of medium-size datasets, from 257 keywords, only 26 were retained for the analysis. In the standardization process, the terms that could not be associated with a certain meaning were eliminated (e.g. policy, price, identity), they were transformed into a unique form (e.g. bank was standardized into banks), synonyms were replaced by the most general term (e.g. consumer and customers) and abbreviations were avoided (e.g. ESG, CSR, SDG).

Most relevant keywords in sustainable banking research

Table 7

Keyword	Frequency	Cluster allocation
corporate social responsibility	357	3
customers	185	5
financial performance	168	4
corporate governance	164	4
banks	150	1
risk	144	1
disclosures	113	3
banking sector	102	2
environmental, social, governance	59	4
stakeholders	58	2
loyalty	53	5
diversity	49	4
green banking	47	1
sustainable banking	44	1
ethics	38	3
sustainable development	30	2
climate change	28	1
financial crisis	25	5

Source: elaborated by authors

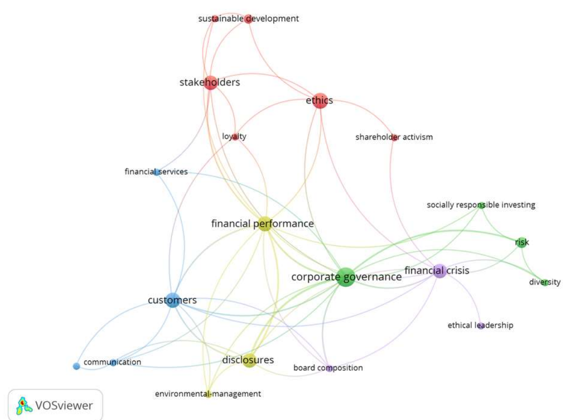
To analyze the structure of the keywords that emerged from this database, the VOS Viewer Software was utilized.

- **Cluster analysis**

Co-word analysis is a science mapping technique that uses words in a corpus of text to identify the relationships between different themes within a particular research topic (He, 1999). Figures 6, 7 and 8 present the themes identified and thematic networks for the three periods analyzed. Only the keywords that appear 2 times, respectively 3 and 4 times were considered. Keywords that could appear in all documents (“banks”, “corporate social responsibility”, “sustainable banking”), that refer to research methods and keywords that could not be associated with a certain meaning were removed.

Thematic network before 2015

Figure 6

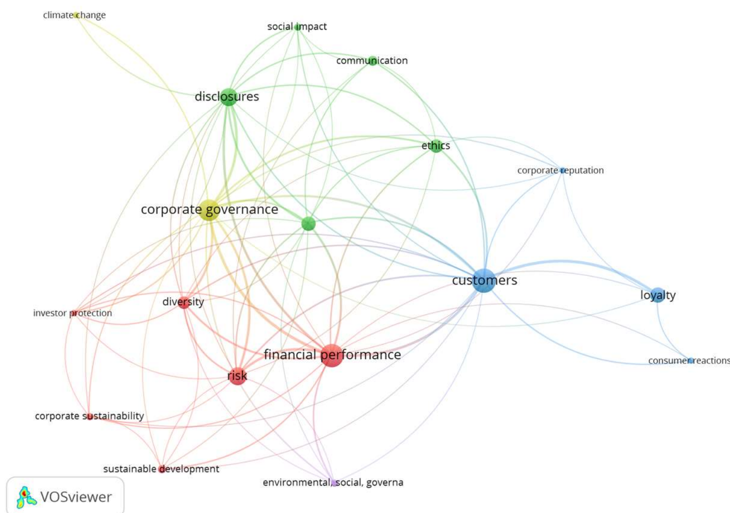


Source: elaborated by authors

The thematic network map presented in Figure 6 reveals complex relationships between diverse themes, represented by interconnected nodes and links. The red cluster illustrates strong interconnections between ethical considerations and stakeholders' loyalty. The blue cluster highlights the importance of communication with customers in the financial services sector, the customer relationship being of the utmost importance. The yellow cluster reveals that the financial performance is closely linked to disclosure of information and environmental practices. The green cluster, which is centrally located, focuses on corporate governance, risk, diversity and socially responsible investing. The concept of risk reveals a strong connection between governance structure, risks associated with the banking sector, the mitigating role of diversity in risk management and the permanent need for risk management strategies to safeguard against potential internal and external risk factors. The green cluster is closely linked to "financial crisis", which is the key theme of the last cluster. The first thematic network is designed around "corporate governance", "financial performance", "customers" and "financial crisis" as central nodes, underscoring the importance of these themes and the need for the banking sector to balance multiple interests. Ethics, connected to stakeholders (marginally positioned node) and financial performance underscores the importance of stakeholders` satisfaction, customer loyalty and accountability in investment strategies, vital for maintaining the financial health of the banks. Additionally, disclosure practices have a strategic importance in building trust and proving regulatory compliance, which influence financial performance. However, these thematic nodes are not close from each other, suggesting that there is not a strong link between them, a fact explained by the early stages in sustainable banking practices.

Thematic network 2015-2019

Figure 7

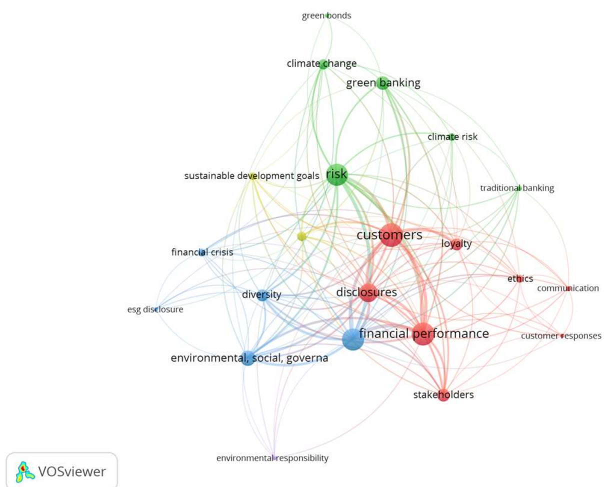


Source: elaborated by authors

Figure 7 underscores the relationship between “corporate governance”, “financial performance”, “customers” and “disclosures”. The central place of the thematic network is maintained by “corporate governance” and “financial performance”, revealing their importance and connections to other themes. Even though it is distant from the “financial performance” cluster (the closest one), the second thematic network highlights the blue cluster, dedicated to “customers” and focused on loyalty and corporate reputation. Also, even though there is a weak link strength, comparing to the first thematic network, customers are firstly linked to “environmental, social, governance” theme, suggesting the social importance of ESG. Also, emerging themes – “climate change” and “social impact”, grouped around “corporate governance” and “disclosures”, are highlighted for the first time, which suggests an initial specific focus in sustainable banking research. The second thematic network underscores a shift towards customer-related topics and emerging themes, highlighting an extended research focus and a more integrative approach, but also evolving challenges faced by the banking sector. The relationship between customer satisfaction, ESG factors, corporate reputation and financial performance emphasize the multifaceted nature of success (or failure) in the banking sector.

Thematic network 2020-2024

Figure 8

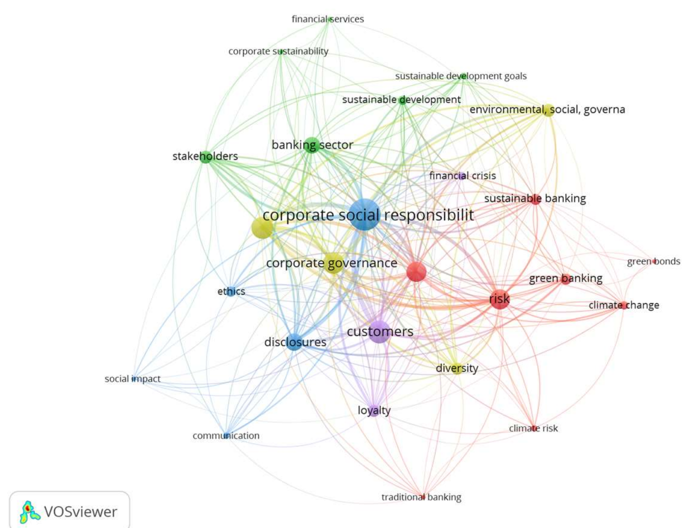


Source: elaborated by authors

The thematic network presented in Figure 8, which is specific to the years 2020-2024 (July), has for the first time "customers" as its core theme, with the most occurrences and total link strength similar to "corporate governance" and "financial performance". This is a strong proof that sustainable banking research has evolved towards customer-centric practices, indicating its growing importance both in banking practice and scientific research. Moreover, also the link to "environment, social, governance" is stronger than in thematic network map for the period 2015-2019. "Financial performance" is no more a cluster by itself, being part of the "customers" cluster. Additionally, the close distance between these themes highlights a strong connection between customer-centric practices and financial performance of the banking sector. Comparing with the previous thematic network, there are more emerging themes – "green banking", "climate change", "traditional banking", which are linked to "risk", suggesting that climate-related risks gained prominence during the 2020-2024 period and that the banking business model is changing towards a more inclusive approach, with focus on more and constantly developing topics that can affect the traditional way of doing banking. Also, a significant result from this thematic network is that the "risk" concept, similar to the "customers" one, is not part of a specific cluster ("corporate governance" and "financial performance" in the previous periods), but is a separate cluster for the first time, closely linked to "customers". This fact reveals the growing importance of risk management in banking organizations and the awareness of the role that the risk management function has in protecting the banking organization against the various risk landscape that emerged following the multiple crises in the first 24 years of the 21st century. The third thematic network reveals that for a sustainable alchemy between risk, financial performance and corporate governance, customers should play a central role in banking activity, a fact determined by the continuous transformation process the banking organizations are part of and by multiple challenges that prove them no matter how sophisticated and interconnected their operations are, both profitability and failure are built on the trust customers have in their financial intermediaries.

Thematic network for the entire period

Figure 9



Source: elaborated by authors

Figure 9 represents the thematic network map for the entire analyzed period (before 2015-july 2024), with no keywords excluded. The "corporate social responsibility" cluster is placed at the center of the map, which is strong suggestion about the social perspective of sustainable banking research, backed by the total link strength of 135 with cluster "customers", higher that the 106 link with "corporate governance", which has a central position in each of the maps for the three analyzed sub-periods. The link between "risk" and "green banking" highlights a growing focus on sustainable banking and environmental concerns. Another result is that "corporate governance" is not a separate cluster, but it is part of the "financial performance" cluster (yellow cluster), revealing its role in maintaining the financial health of the banking organization. Also, the network highlights that in the "corporate social responsibility" – "banks" – "customers" – "financial performance" square there are two peaks related to the social impact of banking activity, with a determinant role of "risk", "corporate governance" and "disclosure" in maintaining a proper functionality of the system. The thematic network map reveals an integrating perspective of sustainable banking business, with emerging themes included and a shift towards holistic banking practices, where customers, corporate social responsibility, disclosures, ethics and climate considerations are included in the ever transforming banking activity, revealing the strategical importance of being a "sustainable bank" in a challenging environment.

Conclusions

Customers` trust in banking organizations was seriously damaged by the global financial crisis in 2008, generating the premises for a new banks-clients relationship and the transformation of the banking business model. In that context, a confluence of multiple factors related to social, macroeconomic and environmental impact of banking highlighted the need for a sustainable approach. The new banking framework generated an increased number of emerging topics in banking practices and research, with an emphasis on the years after the Paris Agreement. Themes like ESG, social impact, corporate reputation, climate change and consumer reactions reveal a banking activity with multiple dimensions and also complex expectations from customers. The increasing interest in social impact and customers` reactions to banking activity emphasizes the role banks have in promoting social well-being, economic equity and developing communities. Additionally, through financial services provided to underserved populations, banks can foster inclusion and economic growth. The results of the research highlight that banking activity has always been related to customers, but only after serious shocks customers have been placed at the center of this activity. The increase in volatility and complexity of the environment in which banks operate granted the risk concept a strategic importance, especially after the Covid-19 pandemic, being a research theme by itself. The strategic positioning of risk management is due to the multitude of internal and external factors that can challenge the banking organizations in the interconnected and complex world after the global financial crisis in 2008. The multiplication of risk factors and their diversified nature highlight the financial impact these issues pose to banks and their stakeholders.

Sustainable banking concerns firstly the social impact of banking products and services by (re)building trust and strengthening the relationship between banks and clients. It is also strategic in balancing long-term goals with short-term financial performance pressures, and it is a critical component in managing the adverse effects of new business models. However, we acknowledge the possible limitations our study may have. To ensure a rigorous methodology, we have limited our research to articles within the sample, which may have caused us to lose some publications. Besides this, further studies should also be conducted to understand whether social and environmental impact assessments could be a tool to stimulate social finance initiatives. More in-depth studies could also be achieved in terms of the social impact created by the banking system, which could help researchers verify the level of responsibility of financial institutions in solving social, ethical and environmental problems.

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