Journal of Financial Services Marketing
https://doi.org/10.1057/s41264-022-00187-4

ORIGINAL ARTICLE

Sustainable financial services: reflection and future perspectives

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Received: 15 July 2022 / Revised: 11 September 2022 / Accepted: 29 September 2022

Abstract
Sustainability transformations in global financial services aimed at addressing sustainability-related risks have been long overdue and are critical for the future development of financial services. The call for sustainability transformations in financial services arose out of the Paris Agreement and the UN Sustainable Development Goal agenda. The financial services sector plays an important role in providing sustainable financial services to nudge sustainability practices among firms and consumers around the world. However, efforts for sustainability transformations among financial service providers are still slow, and little research has been documented in this area. So far, no bibliometric analysis has been conducted in this area as well. Therefore, this research undertakes a comprehensive snooping review of extant sustainable financial services research in order to establish a trend of existing financial services sustainability activities to enhance future research possibilities. Our comprehensive review of the Scopus database was guided by the PRISMA protocols, including PRISMA-P and SPAR-4-SLR. Bibliometric and content analysis approaches were also employed as analytical tools within an analytical framework. This study has also employed Microsoft Excel and the *VOSviewer* tool in conducting performance and science mapping analyses. After article filtering for "sustainability" was conducted, a total of 103 research documents published between 1991 and 2022 were identified as usable samples, which were critically reviewed and analyzed in this study by means of content analysis. Three major themes were investigated, including—*sustainable financial products*, *sustainable financial services delivery*, and *sustainable financial services marketing strategies*. Our findings show a recent growth in academic publications in the area, but also indicate relatively low financial sustainability activities around the world. This research therefore aims to provide present and future innovative insights on sustainable financial services aimed at stimulating more financial institutions, financial service managers, policy makers, and academic researchers to take more action toward greater sustainability development activities in the financial services sector.

Keywords Bibliometrics · SDG · Sustainability · Financial services · Banking institutions · Non-bank financial institutions · Sustainable financial services marketing

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Introduction

Transforming the financial services industry for sustainable financial services is vital to support the global 2030 agenda for sustainable development. An important part of the sustainability ecosystem is the transition to a green economy that requires support from sustainable financial services to provide financial products and services with a positive environmental and social impact (Miroshnichenko and Brand, 2021). This requires supportive, sustainable policy, and practical adoption by financial institutions and financial customers. Accordingly, moved by pro-sustainability stakeholders' pressure, the financial services industry has been undergoing sustainability transformations in modern financial services from purely profit motifs to

Published online: 04 November 2022

social and environmental responsibility. This has resulted into the emergence of new sustainable banking principles since the 1990s (Weber, 2012) as a general guide for the creation of sustainable financial services for bank and non-bank financial institutions. Ideally, sustainability transformation requires the reinvention of business models (Sachs and Sachs, 2021; van Zanten and van Tulder, 2020) to a new sustainable banking model that integrates sustainability issues into policies, strategies, products, and services (Yip and Bocken, 2018; Méndez-Suárez et al., 2020). Despite the long history and the pressing importance, today, sustainable financial services practices remain low and exclusive globally.

To recap, the world is facing a critical planetary crisis arising from environmental issues[1] (climate change, nature and biodiversity loss, pollution, and waste) and social issues (human rights, labour and decent work, and gender equality) (UNEP Finance Initiative, 2021). Global collective solutions[2] to address these sustainability risks are formalized in the UN Paris Agreement[3] and the UN SDGs.[4] While the Paris Agreement is concerned with environmental risks, the SDG outlined 17 integrated goals with 169 associated targets to form the core of the 2030 agenda for sustainable development globally for all (ICMA, 2020). In the recent negotiations, the aim has been extended to 2050 (van Vuuren et al. 2022). Presently, as illustrated in Fig. 1, the global average SDG index stands at 65 percent (SDG 2020) and the global average for sustainability competitiveness index is 44 percent (GSCI 2021). For the first time since the adoption of the SDGs in 2015, the global average SDG Index score has decreased, with the global average below 66%[5] dampened by the COVID-19 pandemic situation (Sachs et al., 2021). Confirming this concern, the TWI2050[6] report for the year 2020 stressed that the global progress is not on track to achieve the majority of the SDG targets by 2030 and urged that sustainability transformation needs to be accelerated (TWI2050, 2020). Global-scale industry-wide sustainability transformation requires widespread changes in every country with collective actions by governments for the provision of supportive policies; by science and technology experts for the measurement of efficiency; and by business and civil society for the adoption of sustainability practices (Sachs et al., 2019). Currently, sustainability practice is optional, isolated, and exclusive.

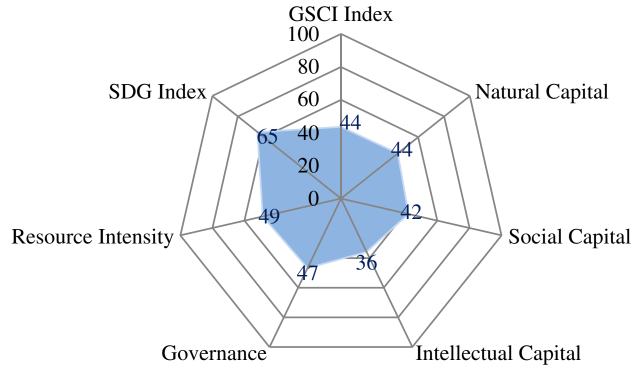


Fig. 1 Global average sustainability performance. SDG Index is the global average sustainable development index for 2020 published by the United Nations. (*Source*: https://dashboards.sdgindex.org/chapters). GSCI Index is the global average for sustainability competitiveness index for 2021 published by SolAbility. (*Source*: https://solability.com/the-global-sustainable-competitiveness-index/the-index). The GSCI components comprise natural capital, social capital, intellectual capital, governance, and resource intensity

Sustainable financial sector practice is ideally seen as a mechanism for accelerating positive change in ensuring healthy people and a healthy planet for a sustainable future (UNEP Finance Initiative, 2021). Historically, the financial services industry has undergone three major waves of transformation since 1970, including ethical reforms, social responsibility, and sustainability (Weber, 2012). Renewed consideration for the transformation of sustainable financial services has been motivated by a series of global financial crises experienced between 2007 and 2009, which have been

[1] Global temperature will rise to 2.7 °C that could lead to catastrophic climate impacts by the end of the century. The sustainability target is to keep global warming below 1.5 °C this century. Available at; https://www.unep.org/news-and-stories/story/why-financial-institutions-are-banking- sustainability.

[2] Series of international policy discussions gathering in mid 2012 involving world's political leaders, and a multitude of scientific, UN, governmental and non-governmental agencies is discussed in Stephens and Skinner (2013).

[3] The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels. Available at; https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

[4] The SDGs, also known as the Global Goals, were adopted by the United Nations on 25 September 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity. The 17 SDGs are: (1) End poverty; (2) Zero hunger; (3) Good health and well-being; (4) Quality education; (5) Gender equality; (6) Clean water and sanitation; (7) Affordable and clean energy; (8) Decent work and economic growth; (9) Industry, innovation and infrastructure; (10) Reduced inequalities; (11) Sustainable cities and communities; (12) Responsible consumption and production; (13) Climate action; 14) Life below water; (15) Life on land; (16) Peace and justice; and, (17) Partnerships for the goals. Available at https://www.undp.org/sustainable-development-goals

[5] https://s3.amazonaws.com/sustainabledevelopment.report/2021/2021-sustainable-development-report.pdf

[6] TWI2050 is a global research initiative in support of a successful implementation of the United Nations' 2030 Agenda led by the International Institute for Applied Systems Analysis (IIASA). Available at; https://previous.iiasa.ac.at/web/home/research/twi/TWI2050.html

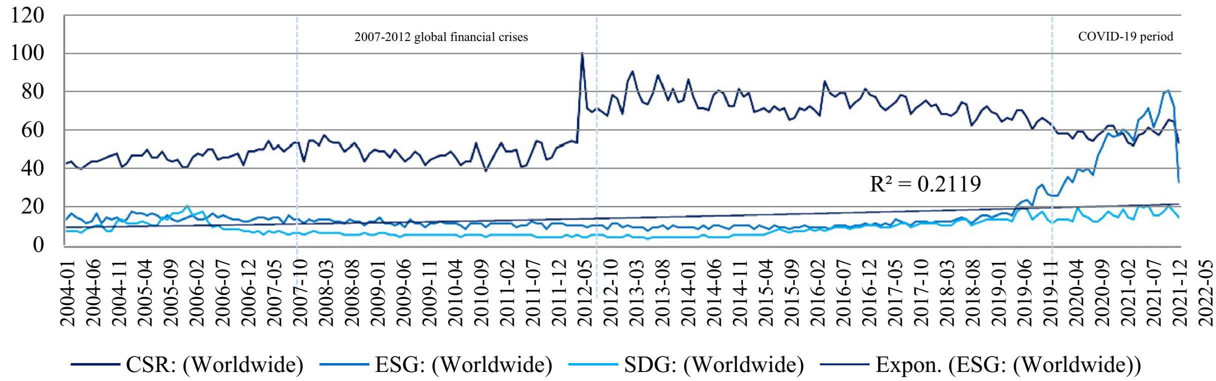


Fig. 2 Google trends search for SCR, ESG, SDG. Source: https://trends.google.com/trends/explore?date=all&q=CSR,ESG,SDG

caused by the erosion of ethics in the financial sector (Schoen, 2017). The ethical-moral problems have been partly due to the lack of transparency and inefficient financial regulations (Valls Martínez et al., 2021). The period witnessed a change in the structure of banking, raising public distrust, and a lack of confidence in the conventional financial system (Climent, 2018).

Consequently, financial consumers and investors demand ethical banking practices with greater transparency and safety in operational activities and ethics embedded in product and services offerings (Valls-Martínez, 2020; Valls Martínez et al., 2021). This situation pressured the enhancement of ethics in the financial services business model, resulting in the acceptance of ethical banking as a new banking model with concern for social responsibility at the end of the twentieth century (Valls- Martínez, 2020). Further pressure for change continued after the Paris Climate Agreement and the UN 2030 Agenda demanding sustainability integration in the financial services sector, whereby financial institutions are now demanded to be responsible for combating various sustainability risks, including but not limited to climate change, social inequality, gender discrimination, and environmental pollution (Valls Martínez, Martín-Cervantes, and Peña Rodríguez, 2021). The transitions have been assisted by several guidelines, including the principles for responsible banking, the principles for values-based banking, and the principles for sustainable finance. This move has promoted sustainability innovation in financial products and services with a wider strategic ESG focus by financial intermediaries, as well as greater acceptance by consumers, investors, and asset managers (Climent, 2018; Usher, 2020) (Fig. 2).

In academic research, sustainable financial services are a prime finance-related research area that has increasingly attracted accounting and finance scholars worldwide (Linnenluecke et al., 2020). Sustainable financial services essentially combine innovative finance with fiduciary duties and reconcile profit motive with responsible conduct (Bavoso, 2018). Despite long introduces and the promised benefits, industry sustainability transformation progress has been slow. Scholars have highlighted the following fundamental reasons that need to be corrected. First is due to policy inefficiency in imposing industry-wide sustainability practice (Valls Martínez et al., 2021). Second, stakeholders lack a shared understanding of how the 17 SDGs can be operationalized (Sachs et al., 2019). Third, conflicts arise out of many principles and guidelines (ADB, 2020). Fourth, individuals and institutions' denial of change (Roux, 2015) is given voluntary choices.

In the present practice, many financial institutions claim to be ethically compliant, socially responsible, and committed to the philosophy of sustainable finance (Jeucken, 2010). These are reflected in CSR and sustainability reporting. However, their following observations are of great concern and again due to ethical-moral problems. Some are just recording a CSR rhetoric in their corporate communication (Paulet and Relano, 2012). Many areas in financial services practice still lack sustainable strategies (Orbach and Busch, 2017). Some presume that the greening efforts by financial institutions are not intended to do good but for good looking (Bowers, 2020) by portraying the direct impact of banks on the society and planet by doing CSR for social care and green image for environmental care. The indirect impact, which is more critical concerning sustainability implications for consumers and businesses, is less visible (Saeed, 2004; Relano and Paulet, 2012).

This research aims to advance discussion on the sustainability transformation in financial services with a systematic review of past research and a strategic framework to advance future research and practice.

Literature review

Sustainable financial service principles

Despite being proposed long ago, there is still no consensus on what a sustainable bank is; and studies related to the measurement terminologies in this sector are still incomplete

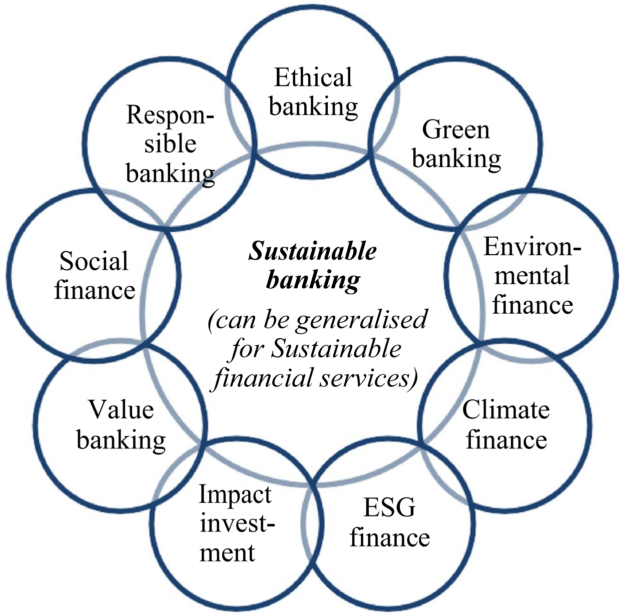


Fig. 3 Reconciling sustainability-related financial terminologies

(Da Silva Inácio and Delai, 2021). However, a commonality of the terminologies can be established as illustrated in Fig. 3 with brief descriptions. Although the word "banking" is frequently associated with these sustainability-related terms, the terms can also be applied to a wide range of financial services, including finance, investment, and insurance. Based on the reviewed literature, the evolution of sustainable financial services can be arranged in the following order: ethical banking, responsible banking, social banking, value-based banking, and sustainable banking. These terms have often been used interchangeably in past studies. *Ethical banking* adopts a business model in which the principles of integrity, responsibility, and affinity prevail in all its operations. CSR has been used as an importance evidence for ethical banking practice (Valls Martínez et al., 2021). *Responsible banking* aims to help improve the financial well-being of its client, the community, and society (Dufays, 2012). Microfinance and concern for inclusive financial services providers have been a popular focus. *Social banking's* focus is on providing financial products and services to society and the economy and taking into account the benefits of financial services to social, cultural, and ecological sustainability and economic sustainability (Dufays, 2012). *Values-based banking* incorporates sustainability concerns (social or environmental) into the bank's core operations and the financial product and services provided. In particular, loans are granted with sustainability benefits, and deposits are utilized for sustainability compliance activities. These banks also support the financial inclusion agenda by providing financial services for NGOs and poor people (Győri et al., 2021). *Sustainable banking* is concerned with the wide area of sustainability that comprises environmental and social care in the financial services provision and the governance of sustainability in their business conduct (Bouma et al., 2017). Sustainable banking terms have also been associated with other sustainability-concerned terms (green banking, environmental finance, climate finance, ESG finance, impact investment).

The ten general principles for sustainable banking are as follows;

> *"1. Fair and transparent corporate governance. 2. Fair and clear relations with customers with a customer-centric approach. 3. The provision of useful and appropriate products and services that contribute to the improvement of the financial well-being of the customers. 4. Responsible investment through the integration of environmental, social, governance (ESG) and ethical issues into financial analysis and decision-making, 6. The promotion of accessibility and financial inclusion. 6. The promotion and provision of financial education policies and instruments. 7. Environment-friendly business. 8. Making a responsible contribution to the community. 9. Being a responsible employer through the application of fair and equal treatment of all staff. 10. Contribution to financial stability"* (Dufays, 2012, p. 245).

To guide the financial industry toward sustainability transformations, the UN Environment Programme Finance Initiative (UNEP FI) launched a series of guiding frameworks Guiding principles,[7] including the 2019 Principles for Responsible Banking; the 2012 Principles for Sustainable Insurance; and the 2006 Principles for Responsible Investment. The UN PRI – The 2017 Principles for Responsible Investment,[8] the Equator Principles, the Sustainable Blue Economy Finance Principles, the Task Force on Climate-Related Financial Disclosures, and other sustainability and impact reporting guidelines and various country-specific initiatives. These too many principles that different organizations manage have caused inconsistency in sustainability terminology. There is no standardized practice and impact reporting and no consolidated financial or impact performance data available to inform various stakeholders (ADB, 2020).

Sustainable financial service practices

Proponents of the sustainability principles indicate commitment to sustainability practices. So far, the Principles for Responsible Investment has attracted 80 percent of the

[7] https://www.unep.org/news-and-stories/story/why-financial-institutions-are-banking-sustainability

[8] https://www.unpri.org/about-us/about-the-pri

institutions in the investment industry, and the Principles for Responsible Banking has attracted 260 banks membership representing about 40% of the global banking institutions. Mapping the banks based on country development regions, 62% of banks are from developed economies, 37% from developing economies, and 2% from transition economies. Over 90% of banks are considering sustainability in their policy, business strategy, and operational systems from this record. These institutions have been focusing on climate and financial inclusion issues. These institutions have collectively created US$ 2.3 trillion of sustainable finance that will positively impact the sustainable economic transitions. This is still low compared to the projected more than US$100 trillion required for sustainable financial initiatives to finance the global economic activities and green economic transitions that are needed to achieve the net-zero emissions target by 2050 (UNEP Finance Initiative, 2021). In another report focusing on the ASEAN region, WWF Sustainable Banking Assessment 2020[9] provides a sustainability practice assessment of 38 ASEAN banks. The report indicated that these banks' sustainability integration performance is still very low (2%) compared to about 1900 banks[10] established in Asia. In fact, sustainability practices are limited and incomplete.

Bibliometric research on sustainable finance

Systematic literature review using bibliometric research approach is important for understanding the development of any field of endeavor and advancing the theories and principles in that area (Lim Kumar and Ali, 2022a, b, c; Mukherjee et al., 2022). Earlier systematic review on general sustainable banking practice has been documented in Yip and Bocken (2018), Méndez-Suárez et al. (2020), and Da Silva Inácio and Delai (2021). However, bibliometric research on sustainable financial services is still limited, as summarized in Table 1. Based on the Scopus database, past bibliometric studies have been focusing on sustainable banking, responsible banking, green banking, and social banking. This review presents different perspectives focusing on specific sustainable financial products, services delivery, and marketing strategies.

[9] https://susba.org/pdfs/report-2020.pdf

[10] https://www.bankinfobook.com/pages/banks_in_asia/List_of_banks_in_Asia.php

Research methodology

Systematic literature review protocols

The preferred reporting items for systematic reviews and meta-analyses (PRISMA) statement provide the review framework as presented in Fig. 4 to identify, select, appraise, and synthesize research evidences transparently (Page et al., 2021). The review process is guided by the review protocol (PRISMA-P) which consists of a 17-item checklist facilitating the preparation and reporting of a robust systematic review (Moher et al., 2015). To enhance the review process clarity, the SPAR-4-SLR protocol which consist of identification, acquisition, organization, purification, evaluation, and reporting developed by Paul et al. (2021) is used as a supplementary protocol. The review process involves four stages, namely identification, screening, eligibility, and inclusion. In the *Identification* stage, research questions, search keywords, scope, and databases were pre-identified. The research questions are: *What research has been done on sustainable financial services (research reflection)? How to improve sustainable financial services (future perspectives)?* Accordingly, the established research objectives were to analyze past research studies undertaken in the area, and to draw future research insights on sustainable financial services. Scopus database was used and accessed via the Universiti Teknologi MARA's database system.[11] The searched keywords and search query are summarized in Table 2. All publication types were considered, and the resulting raw sample totaled 1,164. The article titles were then manually checked. Irrelevant articles were excluded. The final number of articles used in this study after filtering is: 103.

First search query (21 document results). All is included

TITLE-ABS-KEY ("sustainable financial services" OR "sustainable financial services product" OR "sustainable financial services delivery" OR "sustainable financial services marketing") OR TITLE-ABS-KEY ("green financial services" OR "green financial services product" OR "green financial services delivery" OR "green financial services marketing") OR TITLE-ABS-KEY ("responsible financial services" OR "responsible financial services product" OR "responsible financial services delivery" OR "responsible financial services marketing") OR TITLE-ABS-KEY ("ethical financial services" OR "ethical financial services product" OR "ethical financial services delivery" OR "ethical financial services marketing") OR TITLE-ABS-KEY ("SDG financial services" OR "SDG financial services product" OR "SDG financial services

[11] https://www-scopus-com.ezaccess.library.uitm.edu.my/

Table 1 Bibliometric research on sustainable finance in Scopus' database

No	Authors	Year	Focus	Methods	Prioritized terms[a]
1	Dervi, Khan, Saba, Hassan, and Paltrinieri	2022	Green and socially responsible finance	Bibliometric analysis	Financial services industries, Bibliometrics, Information science, Corporate responsibility, Environmental management
2	Tao, Zhuang, Xue, Cao, Tian, and Shan	2022	Environmental Finance	Bibliometric and systematic review	Environmental management, Financial services industries, Corporate responsibility, Emissions policy, Energy policy
3	Kumar, Sharma, Rao, Lim, and Mangla	2022	Sustainable finance	Big data analytics	Finance, Text analytics, Bibliometrics, Scholarly publishing, Corporate responsibility
4	Aracil, Nájera- Sánchez, and Forcadell	2021	Sustainable banking	Systematic literature review	Corporate responsibility, Environmental education, Environmental management, Bibliometrics, Microfinance
5	Purnomo, Sari, Susanti, Mannan, and Lumentut	2021	Sustainable finance	Bibliometric analysis	Financial services industries, Finance, Environmental education, Information science, Text analytics
6	Chiţimiea, Minciu, Manta, Ciocoiu, and Veith	2021	Green investment	Bibliometric and systematic review	Environmental management, Bibliometrics, Supply chain management, Economic principles, Financial services industries
7	Vorontsova, Makarenko, Petrushenko, Ostapchuk, and Boiko	2021	Responsible investment	Bibliometric analysis	Text analytics, Bibliometrics, Information science, Environmental management, Corporate responsibility
8	Kuanova, Sagiyeva, and Shirazi	2021	Islamic social finance	Bibliometric analysis	Economics, Bibliometrics, Zakat, Literature reviews, Information science
9	Secinaro, Calandra, Petricean, and Chmet	2020	Social finance and banking	Bibliometric analysis	Financial services industries, Bibliometrics, Information science, Corporate responsibility, Environmental management
10	Nájera-Sánchez	2021	Sustainable banking	Co-word analysis	Bibliometrics, Text analytics, Economiccrises,Corporate responsibility, Computer networking
11	Zaby	2019	Microfinance as a sustainable finance instrument	Bibliometric analysis	Microfinance, Bibliometrics, Information science, Mapping, Ecological sustainability

Search keywords: TITLE-ABS-KEY ("sustainable finance" OR "sustainable banking" OR "sustainable investment" OR "sustainable financial" OR "social finance") AND TITLE-ABS-KEY ("bibliom*").19 document results have been retrieved using the following keywords. After filtering for only financial services related articles, only 11 articles were selected for analysis

[a]Identified from text analyzer using https://www.jstor.org/analyze/analyzer

delivery" OR "SDG financial services marketing") OR TITLE-ABS-KEY ("ESG financial services" OR "ESG financial services product" OR "ESG financial services delivery" OR "ESG financial services marketing")

Expanded search query (1145 document results)

TITLE-ABS-KEY ("sustainable financial institution" OR "sustainable bank" OR "sustainable non-bank financial company" OR "sustainable non-bank financial institution")

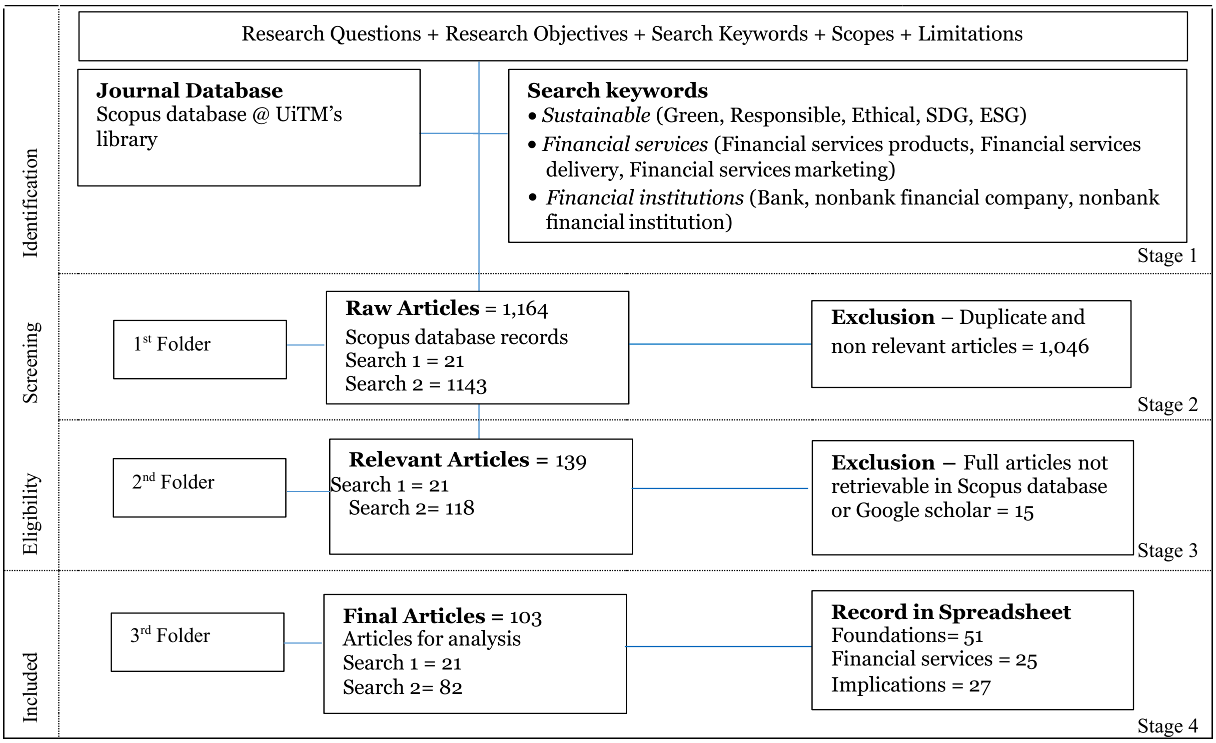


Fig. 4 PRISMA evidence review framework

Table 2 Search keywords

Keyword	Synonyms
Sustainable	Green, responsible, ethical, SDG, ESG
Financial services	Financial services products, financial services delivery, financial services marketing
Financial institution	Bank, non-bank financial company, non-bank financial institution

OR TITLE-ABS-KEY ("green financial institution" OR "green bank" OR "green non-bank financial company" OR "green non-bank financial institution") OR TITLE- ABS-KEY ("responsible financial institution" OR "responsible bank" OR "responsible non-bank financial company" OR "responsible non-bank financial institution") OR TITLE-ABS-KEY ("ethical financial institution" OR "ethical bank" OR "ethical non-bank financial company" OR "ethical non-bank financial institution") OR TITLE-ABS-KEY ("SDG financial institution" OR "SDG bank" OR "SDG non-bank financial company" OR "SDG non-bank financial institution") OR TITLE-ABS-KEY ("ESG financial institution" OR "ESG bank" OR "ESG non-bank financial company" OR "ESG non-bank financial institution")

In the *Screening* stage, all 1,164 captured lists (articles) based on the keywords searched and manually screened (title inspection) to ensure that the selected articles are related to sustainability in financial services. In the *Eligibility* stage, articles included in the analysis were subject to compliance with availability of the full article and its English version. If access was not available, the check was done in Google Scholar and Research Gate. Articles published in another languages were included only if extended abstract were provided in English. In the *Inclusion* stage, the full article was retrieved from the referred databases and included in this study. The articles were then manually screened and segmented according to their categories.

Bibliometric and content analysis methods

The techniques for bibliometric analysis are categorized into main techniques (performance analysis and science mapping) and enrichment techniques (network analysis) (Donthu et al., 2021). Excel and VOSviewer are data analysis tools used for performance analysis and science mapping. Performance analysis is used for summarizing the selected matrices of the articles including total publication, contributing authors, research funding, journals, and citations. In the science mapping, co-words analysis is selected to systematically capture the representative themes of the research work in focus. VOSviewer analysis methods have been introduced by Van Eck and Waltman (2010). Further, the content analysis method is used to perform a more detailed analysis of the emerging research themes for further discussion. The content analysis is implemented with Voyant tools (https://voyant-tools.org/), a web-based text analysis tool.[12] In addition, a text analyzer (https://www.jstor.org/analyze/analyzer) is used to identify popular terms reflected in the body of the full article.

Bibliometric analysis

Based on a sample of 103 selected articles,[13] the bibliometric analysis in this study was performed to summarize the overall body of knowledge so far published in the extant literature on sustainability in financial services. Specific focus is on (a) analysis of sustainable financial services research, (b) analysis of publishing journals, and (c) analysis of the research grants in the study area. These analyses provide the basis for the research reflections and future perspectives in this paper.

Trends in sustainable financial services research

The sustainable financial services research trends are presented in Fig. 5a, with records of 103 articles relevant to the sustainable financial services context distributed from 1991 to 2022. The cumulative number of articles is growing, corresponding to the growing number of articles in recent years with an exponential growth rate of 0.66, notably from 2011 to 2022. The research growth has been supported by a growing number of research grants in recent years (2017–2022). In confirmation with the empirical evidence, attention to sustainable financial services has been increasingly emphasized after a series of financial crises that affect the global financial services industry. As summarized in Fig. 5b, sustainable financial services research citations have been growing in line with growing research publications. The citation records trended extremely high during the 1998's Asian financial crisis and another higher citation trend during the 2007–2010 subprime mortgage crises. A map of the sustainable financial services research relations to country sustainability progress is illustrated in Fig. 5c. The result shows that countries with high SDG practice and competitiveness (Spain, USA, China, UK, France, Germany, and Italy) are generally associated with higher sustainability research outputs.

Article and impact analysis

Article and impact analysis focuses on articles with highest citations. Based on the total sample of 103 articles, there are 216 researchers involved in 92 clusters of research teams. The researchers represent 169 institutions. The top 10 articles are filtered for analysis as reported in Table 3 with attention to authors information, sustainability research focus, number of citations, and authors affiliations. Collectively, the top 10 articles represent the core sustainability financial services research concerned on ethical foundations in financial institutions (ethical banking), responsible to social risks (microfinance, socially responsible investment, corporate social responsibility), and be part of solutions to environmental risks (sustainable banking, environmental risk in project financing, green finance).

Journal and research grants analysis

In the analyzed database, there are 68 journals title recorded. Table 4 presents the top 10 journals filtered to identify supporting publication outlets. At the top of the list is sustainability, the leading multidisciplinary sustainability focus journal. Scoping finance focus journals show Journal of Sustainable Finance and Investment ranked second place. Further scoping marketing related journals, the Journal of Financial Services Marketing recording one article. As presented in Table 5, 21 research grants are recorded granted by world-leading research institutions and national level research institutions in the research grants record. China is recording more research grants, with seven researches funded. The second highest record is identified for the USA with three research funded.

Co-occurrence analysis

The first co-occurrence analysis was based on the bibliographic data analysis performed on all the keywords (author keywords and index keywords). The data consist of 537 keywords, and the full counting method was used. With the minimum threshold of 2 occurrences resulted in 71 keywords left for analysis. The results are illustrated in Fig. 6a and b. In the co-occurrence analysis, four associated terms have been identified for sustainable banking: ethical banking, responsible banking, green banking, and social banking. Figure 6a presents the overlay visualization of the terms' co-occurrence. In terms of sustainability foundations, corporate social responsibility, corporate sustainability, and ethical and Islamic banking are popularly documented. Sustainability concerns have concentrated on climate change

[12] https://unimelb.libguides.com/textmining/user-input

[13] Evidence database is provided in Appendix 1 at the back pages of this article.

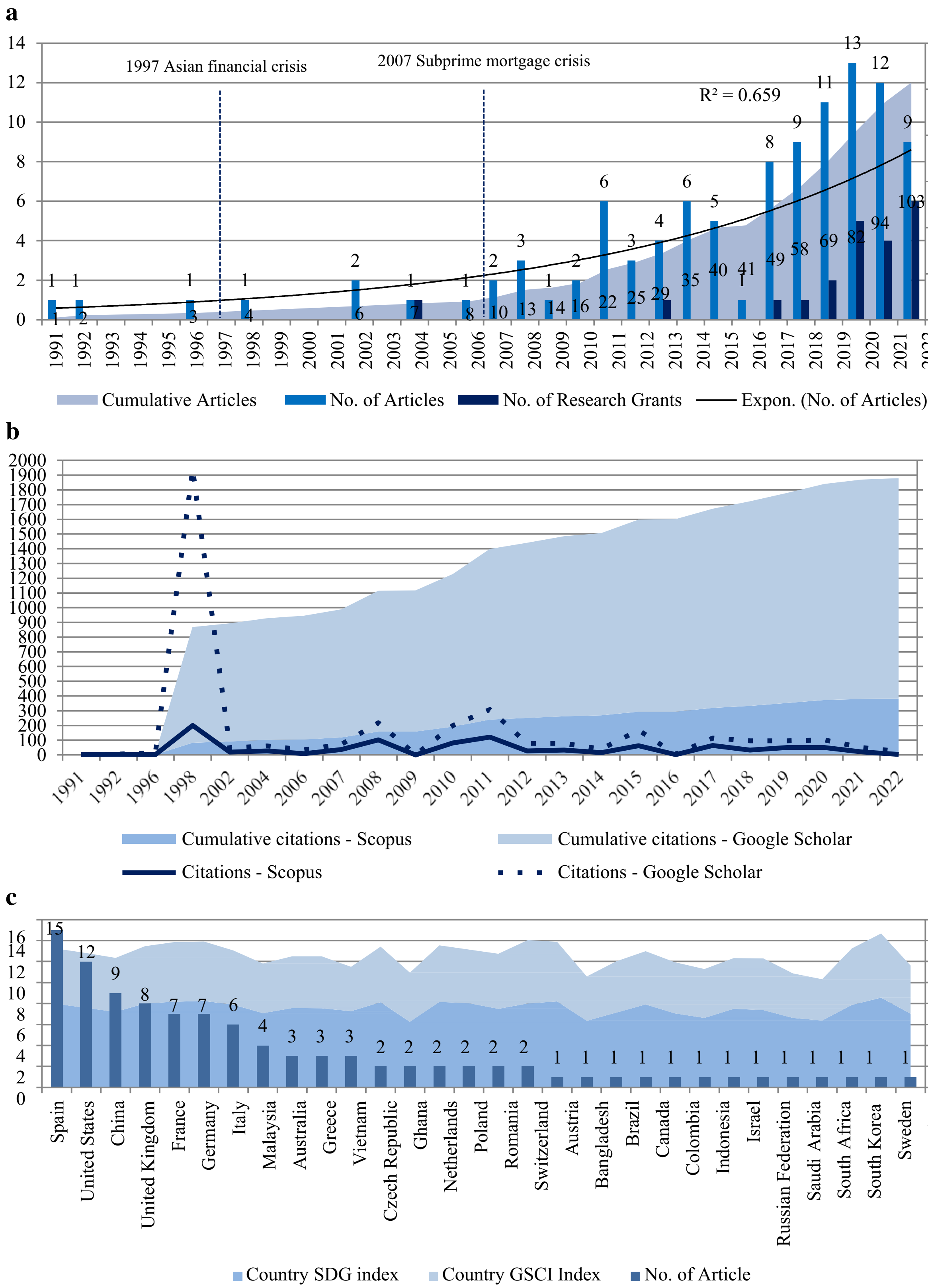


Fig. 5 **a** Sustainable financial services research trends. **b**. Sustainable financial services research citations. **c**. Sustainable financial services research related to country sustainability progress

Table 3 Top article with highest number of citations

No	Authors	Citations	Focus	Affiliations/Collaborations
1	Ledgerwood (1998)	200	Microfinance	The World Bank
2	Keating et al. (2008)	96	Sustainable banking	University of Wollongong, Australia; University of Canberra, Australia; University of Newcastle, Australia
3	San-Jose et al. (2011)	79	Ethical banking	University of Huddersfield, UK; University of the Basque Country, Spain; AURKILAN Business Ethics Research Institute, Spain; Institute of Applied Business Economics, Spain
4	Maclean (2010)	63	Microfinance	King's College London, United Kingdom
5	García-Sánchez and García-Meca (2017)	42	CSR in banks	University of Salamanca, Spain; Technical University of Cartagena, Spain
6	Paulet et al. (2015)	38	Ethical banking	ICN Business School, France; Essca School of Management, France
7	Scholtens (2007)	35	Socially responsible investment	University of Groningen, Netherlands
8	Missbach (2004)	27	Environmental and social risk in project finance	Berne Declaration, Switzerland
9	Becchetti et al. (2011)	25	Credit rationing in ethical bank	University of Rome, Italy; German Development Institute, Germany
10	Amuakwa-Mensah et al., (2018)	23	Green finance	Swedish University of Agricultural Sciences, Sweden; University of Cape Town, South Africa; City University of Hong Kong, Hong Kong; Central University, Ghana; University of Leicester, United Kingdom; Methodist University College, Ghana

This table reports only the top 10 articles based on high number of citations from the 103 samples

Table 4 Journal analysis

No.	Source title	Publisher	No. of Articles	Impact Score	*h*- Index	SJR	Q
1	Sustainability (Switzerland)	MDPI AG	9	3.48	85	0.612	Q1
2	Journal of Sustainable Finance and Investment	Taylor and Francis Ltd	3	1.87	16	0.445	Q2
3	Enterprise Development and Microfinance	Practical Action Publishing	3	0.31	17	0.209	Q3
4	Corporate Social Responsibility and Environmental Management	John Wiley and Sons Ltd	2	7.99	73	1.519	Q1
5	Journal of Business Ethics	Springer	2	5.77	187	2.209	Q1
6	Environmental Science and Pollution Research	Springer Science and Business Media	2	4.01	113	0.845	Q2
7	International Journal of Islamic and Middle Eastern Finance and Management	Emerald Group Holdings Ltd	2	2.68	29	0.487	Q2
8	Qualitative Market Research	Emerald Group Holdings Ltd	2	2.44	54	0.652	Q2
9	International Journal of Business Governance and Ethics	Inderscience Publishers	2	0.79	15	0.216	Q3
10	Risk Governance and Control: Financial Markets and Institutions	Virtus Interpress	2	N/a	6	0.115	n/a

This table reports only the top 10 journal with high number of published articles. The article statistics are referred from Journal Ranking—https://www.resurchify.com/ranking

and human—rural poor. Banking has been widely investigated in terms of financial institutions, followed by microfinance as the non-bank financial institution—no record for other types of non-bank financial institutions. Focusing on sustainable financial services, some articles discussed sustainable business models. Limited financial products and services discussed include; fintech, sustainable finance, green financing/bond, socially responsible investment, and

Table 5 Grants analysis

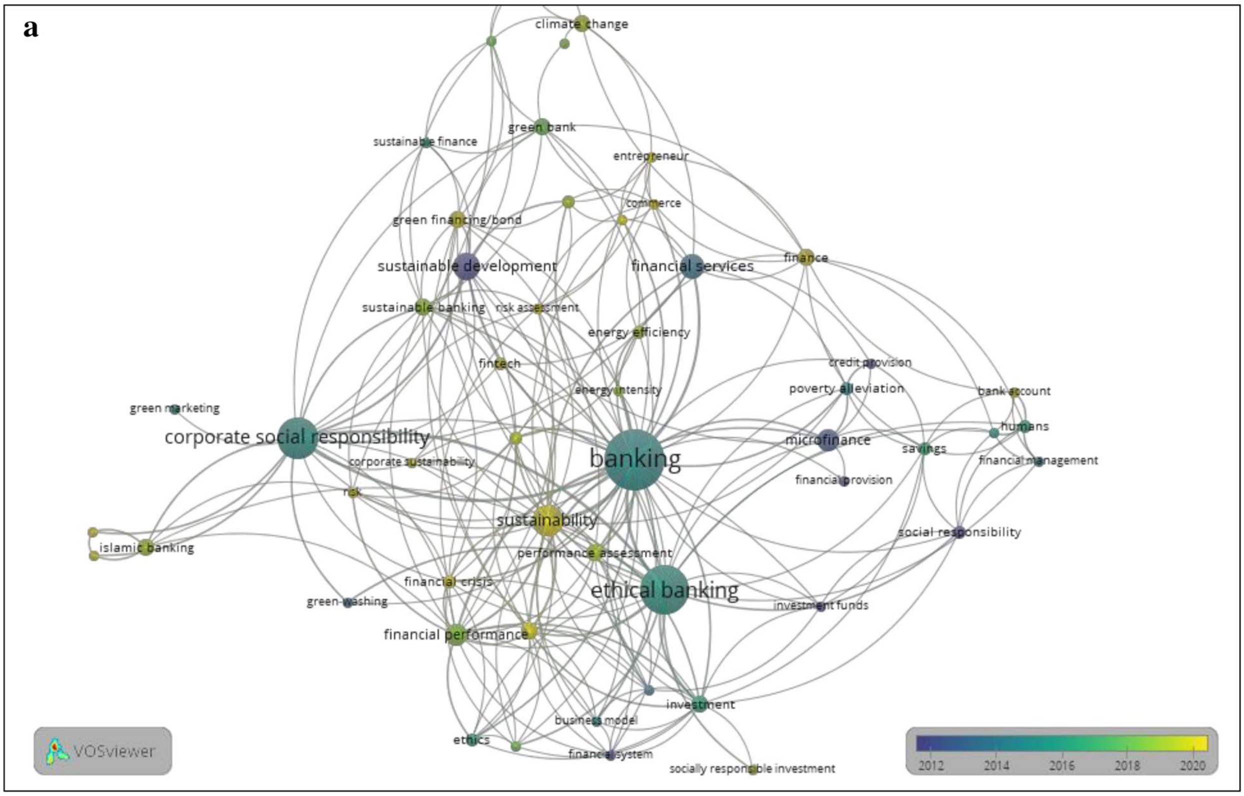
No	Year	Research grants	Country	Sustainable finance research focus*
1	1/2004	World Bank Group	United States	Socially responsible banks
2	1/2013	J.W. McConnell Family Foundation; Social Sciences and Humanities Research Council of Canada	Canada	Social finance
3	1/2017	Czech Science Foundation; Prague University of Economics and Business	Czech Republic	Ethical banks performance
4	1/2018	Asian Development Bank	Philippines	Sustainable microfinance program
5	1/2019	European Regional Development Fund	Belgium	Socially responsible investment – consumers preference
6	1/2019	Ministry of Science and Technology, China; National Natural Science Foundation of China; The World Academy of Sciences; Chinese Academy of Sciences; Marianne and Marcus Wallenberg Foundation; Key Project of Frontier Science Research of Chinese Academy of Sciences	China; Italy; Sweden	Sustainable banks efficiency and productivity
7	1/2020	National Natural Science Foundation of China	China	CSR – brand value
8	1/2020	European Commission; Government of Extremadura	Brussels; Spain	Socially responsible investment – investor intention
9	1/2020	Alfred P. Sloan Foundation	United States	Residential energy efficiency financing
10	1/2020	The University of Warsaw	Poland	Business model of sustainable banks
11	1/2020	National Natural Science Foundation of China	China	CSR – brand value
12	1/2021	The John Paul II Catholic University of Lublin	Poland	Social responsibility – financial performance
13	1/2021	Robert Wood Johnson Foundation	United States	Socially responsible financial institution
14	1/2021	The Russian Foundation for Basic Research	Russia	Banks financing the green economy
15	1/2021	National Natural Science Foundation of China	China	Microfinance and poverty reduction
16	1/2022	Ministry of Education, Culture, Research, and Technology, Republic of Indonesia	Indonesia	Financial Technology—Sustainable Bank Performance
17	1/2022	CAPES Foundation, government agency under the Brazil Ministry of Education	Brazil	Sustainable banking
18	1/2022	National Office for Philosophy and Social Sciences	China	Green finance—green innovation efficiency
19	1/2022	National Office for Philosophy and Social Sciences	China	Green finance – green bankers
20	1/2022	National Natural Science Foundation of China; National Key Research and Development Program of China	China	Green finance – carbon neutrality goals
21	1/2022	Ministry of Higher Education, Malaysia	Malaysia	Sustainable financial services—eWallet

*The sustainable finance research focus is determined from reading the article abstract

microfinance concerning credit provision, savings, bank accounts, and financial management for the rural poor. In terms of sustainable marketing strategy, green marketing has been documented. Other research focuses on sustainability practice implications/impacts concerning risk, returns and greenwashing. Figure 6b presents the network visualization of the closely linked terms grouped into five blocks: sustainable banking, ethical banking, green banking, CSR, and microfinance.

The second co-occurrence analysis is based on text data performed on the title and abstract fields. With the minimum threshold of 10 occurrences, 69 terms are left for analysis using the full counting method. Similar terms have been combined using the thesaurus file. The results are illustrated in Fig. 6c and d. Figure 6c illustrates the overlay visualization for extracted terms in the title and abstract. As a starting point, there has been a visible interest in policy and regulation governing sustainable financial services. In terms of sustainability foundations, corporate social responsibility, corporate sustainability, ethical, ESG, value-based and Islamic banking are popularly documented. There is a large concern about sustainable development, and there is a need to support the newly promoted common good economic model known as the ECG model as the ideal economic system for sustainable transformation globally. Research related to the analysis of sustainability issues, policy, strategy, and impacts is highly visible. Timeline-wise, in the 1990s, research focused more on microfinance which is related to social finance and linked to financial inclusion and sustainability concerns.

Generally, attention has been focused on banks and microfinance. The microfinance research has concentrated



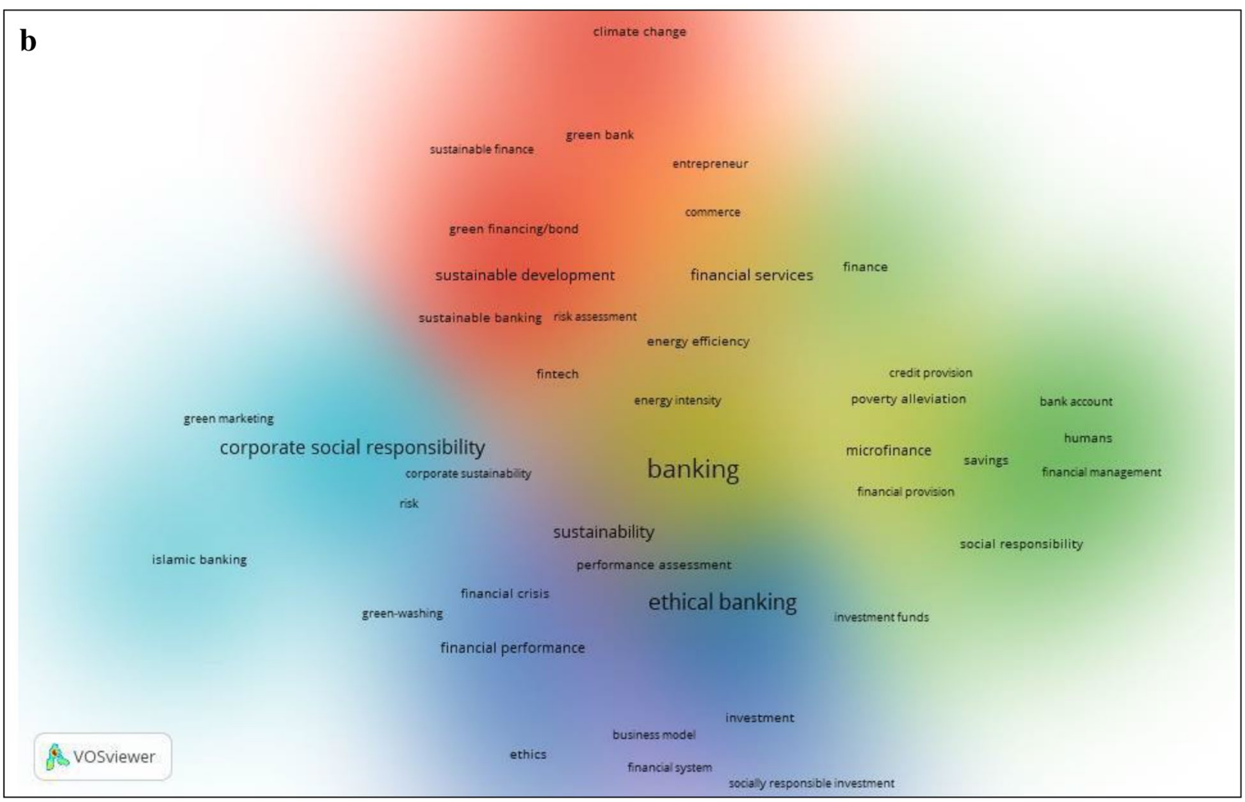


Fig. 6 **a** Overlay visualization (keywords). **b** Density visualization (keywords). **c** Overlay visualization (text data—title and abstract). **d** Density visualization (text data-title and abstract)

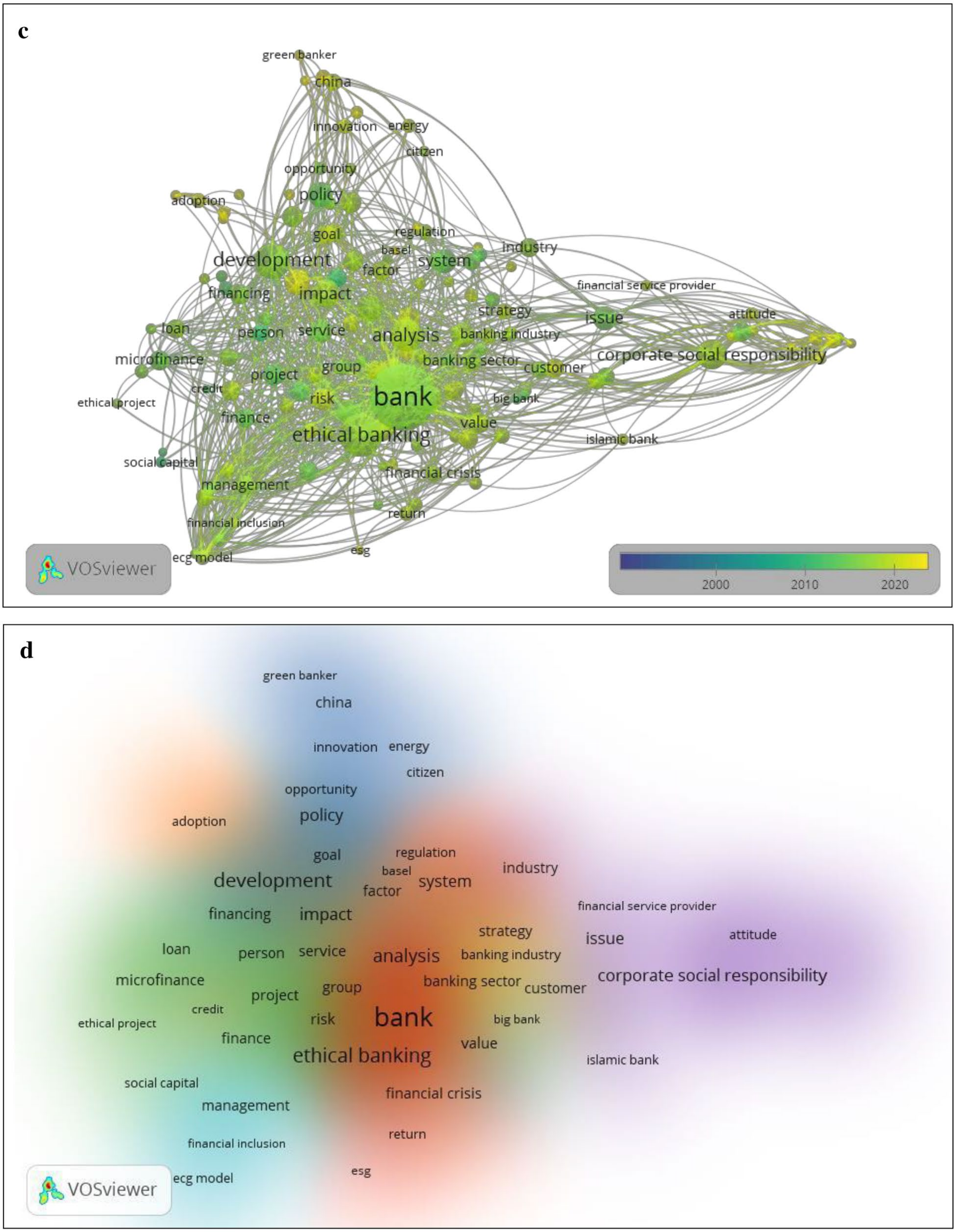
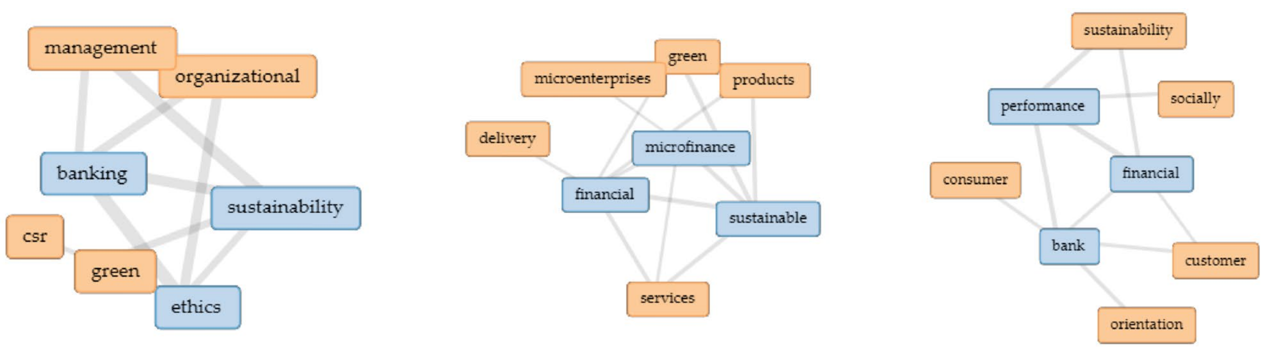


Fig. 6 (continued)

Table 6 Sustainable financial services cluster matrix

Cluster	Total documents	Percentage document	Most frequent words in the corpus
(A) Sustainability foundations	51	49%	ethics (36); sustainability
Supervision and regulation			(29); banking (26);
Organizational ethics focus			management (21);
Corporate governance			organizational (18)
Sustainability management			
(B)Sustainable financial services	25	24%	sustainable (14);
Sustainable products			financial (8);
Sustainable services delivery			microfinance (8); green
Sustainable marketing			(7); services (7)
(C) Sustainability implications	27	27%	performance (18);
Sustainability-firm performance Sustainability-consumer orientation			financial (13); bank (12); orientation (8); customer
Sustainability-stakeholders management & risk reduction			(6)

Most frequent words in the corpus are performed using https://voyant-tools.org/



a Sustainability foundations **b** Sustainable financial services **c** Sustainability implications

Fig. 7 Term links identified using text analyzer; https://voyant-tools.org/

on providing microcredit to rural poor, dealing with the ethical project using social capital (i.e., lending to women with a group guarantee). Research advanced to uncover more about ethical banking and responsible banking in recent years. Financial crises have been popularly associated with financial services sustainability research efforts. Noted that there is a renewed interest in old banking principles, corporate social responsibility, and Islamic banking with emphasis on Islamic social finance instruments as a type of sustainable financial instrument. Country-wise, there has been a notable higher sustainable finance-related research in China with an identified common theme focusing on innovation in green finance/banking, policy, opportunity, and adoption to address energy-related sustainability risk. Figure 6b presents the network visualization of the closely linked terms grouped into four blocks: ethical banking, green finance in China, CSR, and microfinance.

Content analysis

Content analysis was performed using text analyzer tools in the qualitative analysis mode. The content analysis was guided by a predetermined sustainable financial services cluster matrix as summarized in Table 6. This is extended from the sustainable banking integrative framework identified in Aracil et al. (2021). Table 6 summarizes the analysis framework with three clusters. Research related to sustainable foundations scored higher research outputs with 51 documents (49%). Research related to sustainability implications recorded the second highest research output with 27 documents (27%). Sustainable financial services focus ranked lower with 25 documents (24%). The most frequent words in Table 6 are analyzed together with terms linkages, as illustrated in Figure 7. In (A) sustainable foundations, research has been emphasizing bank's sustainability foundation at the

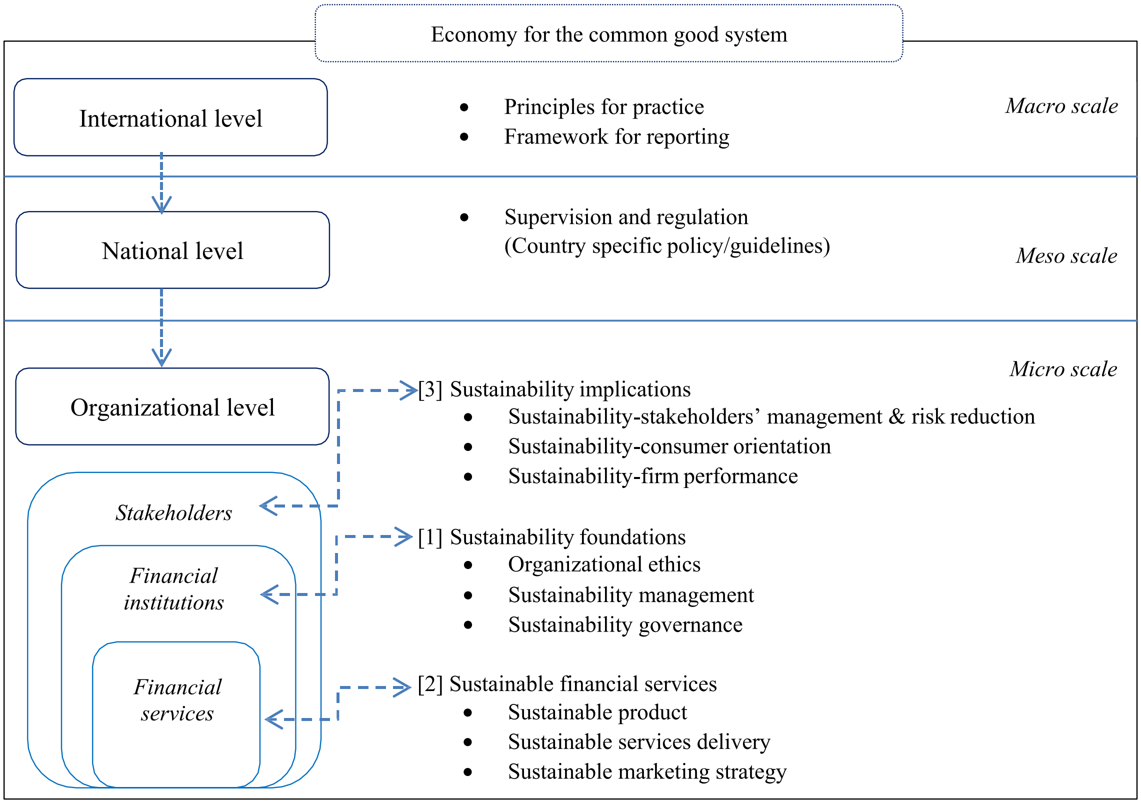


Fig. 8 Macro–meso–micro-sustainability analysis framework for financial services

organization and management level, suggesting CSR, green, and ethics principles. In (B) sustainable financial services, sustainable financial products are associated with the green concept and microfinance for microenterprises and the rural poor, and sustainable financial services to be capitalized is the Fintech. In (C) sustainability implications, research focus on the sustainability performance impacts on financial and social benefits. Another area is on banks and consumer orientations toward sustainable financial services.

Discussions

Research reflections

Global sustainability practices across industries and societies are the key ingredients in the "Economy for the Common Good" model (Palacio and Climent, 2018), which defines a sustainable ecosystem. At the firm level, sustainability practices influence micro, meso- and macro-factors (Moltan-Hill et al., 2020). Guided by this analytical framework, this research extended the integrative framework proposed by Aracil, (2021) to develop a general framework for analyzing the influencing factors in developing sustainable financial services, as illustrated in Figure 8.

On the organizational level, sustainability practices comprise sustainability foundations, sustainable financial services, and sustainability implications. First and foremost, a sustainable business model is required to integrate sustainability concerns into a firm's policies, strategies, products, and services (Yip and Bocken, 2018; Mendez-Suarez, 2020; Sachs and Sachs, 2021). More recent evidence suggests integration of the firms' ESG and TQM (Lim, 2022).

Sustainability foundations are important in the business model to drive and guide the firm to practice sustainability that can be grouped into organizational ethics, sustainability governance, and sustainability management. In the earlier part, faith-based ethical principles have been guiding ethical banking conduct (Weber, 2012). Later, the Principles for Responsible Banking was introduced in the 1990s to guide responsible banking practices (Weber, 2012; Usher, 2020). The latest principle is value-based banking, introduced by the Global Alliance for Banking on Values in 2009.[14] In practice, various sustainability management strategies have been employed. In earlier days, CSR was used as a popular strategy. Later, corporate governance was enhanced by

[14] https://www.gabv.org/about-us/

incorporating attention to sustainability governance and the ESG expansion. In addition, sustainability reporting has been introduced to document practice and impacts.

Sustainable financial services are innovative providers with responsible concerns to combine profit motive with responsible conduct (Bavoso, 2018). However, sustainable financial services are not well identified in the financial services literature. In fact, in reality, the financial services industry has made limited attempts to define or recognize sustainability (Jones, 2017). This research advances this discussion. Here, sustainable financial services have been conceptualized as comprising sustainable financial products, sustainable financial services delivery, and sustainable marketing strategies for financial services. The Global Alliance for Banking on Values defines sustainable products and services developed to meet the needs of people and safeguard the environment. Popular sustainable financial products available in the market include socially responsible investment (SRI), sustainable financing (i.e., green/environmental loans and bonds, green finance), social finance (social bonds, microcredit), and Islamic social finance (wakaf and zakat). Mejia-Escobar et al. (2020) reviewed sustainable financial products in the Latin American banking industry and noted that the development of financial products is still limited with a focus on ESG matters in credit products. Sustainable insurance products and services have attracted discussion during the COVID-19 period. Regarding the insurability of pandemic risk urging, insurance protection against the impact of future pandemics needs to be considered (Richter and Wilson, 2020). However, some Insurance firms have introduced new COVID-19 travel insurance plans. Another discussion concerning retirement security in a post-pandemic world (Atkins, 2020) has sparked the need to consider offering retirement or emergency savings account as a financial product that allows withdrawal after retirement and /or during pandemics and other emergency situations in life. On the microfinance side, environmental disaster has been identified to impact microenterprise sustainability (Kot and Imran, 2019) and this prompt the need for microinsurance and emergency micro-savings covering future social and environmental risks. Sustainable financial services delivery concern delivery channels. The limited research in this area informed the utilization of financial technology to deliver financial products. This includes but is not limited to the use of mobile financial services, online financial services, cryptocurrency (Vincent and Evans, 2019; David-West et al., 2020), and others more to be identified like to use of robotic and artificial intelligence technologies. Building sustainable financial services systems for the rural poor is a big concern in microfinance service delivery innovation considering many obstacles, including IT infrastructure and IT literacy (Bennett and Cuevas, 1996). Sustainable marketing of financial services is concerned with the sustainable promotion of financial products. Various marketing terms are related to sustainable marketing (Gordon et al., 2011), including ethical marketing (Laczniak and Murphy, 1991), responsible marketing (Laczniak and Shultz, 2021), social marketing (Dann, 2010), green marketing (Lymperopoulos et al., 2012; Papadas et al., 2017), ecological marketing (Katrandjiev, 2016). All of these articles provide discussion about theoretical foundations and conceptual framework but not the practical or empirical aspects of sustainable marketing of financial services.

Sustainability implications group the sustainability practices impact on firm performance and implications to consumer orientations as well as stakeholders' management and risk reduction. The limited evidence has emphasized more on examining the financial performance and customer adoption.

Future perspectives

The world is facing a sustainability crisis. According to Stephens and Skinner (2013),

> *"We all have created this... Out of the environmental, social and economic crisis of today, we need, painfully but creatively, and very urgently, to construct a new world from meltdown, to protect our planet, its peoples and environment, now and for the future"*

In this section, future perspectives on sustainable financial services are drawn in reference to; (i) research reflection performed and (ii) Ongoing research and policy debate. Research reflection documented in the previous section reflected that full sustainable transformation of the financial services sector is critical globally and reminds us that five years have passed without sufficient progress while the target deadline of 2030 is less than eight years now. Sustainability innovations are required in the following aspects: technology (maximizes material and energy efficiency, substitute with digital processes), social (encourage sufficiency, adopt a steward role, inclusive value creation), and organizational (purpose for society and environment, resilience in loan granting, sustainable financial products) (Yip and Bocken, 2018). Ideally, sustainable financial services promise the benefits of positive effects on the reputation and financial performance of financial institutions as well as the effective and behavioral responses of customers (Zimmermann, 2019). Financial services sustainability transformation initiatives are still slow, not comprehensive and inclusive despite such positive implications. In addition, little has been uncovered (Aracil et al., 2021) and opens opportunities for innovation discovery to inform theory, practice, and policy of sustainable financial services. Although awareness is growing, sustainable financial products, service delivery, and marketing strategies remain low. There is a need to

Table 7 Sustainable financial services innovation ideas triggered by digital revolution and pandemic crisis

Sustainable financial services pillar		Sustainability problems	Sustainability opportunity	References
Financial products	Financial inclusion	Lack of access for financial services in rural area	Digital financial services	Tay, (2022)
	Rural finance	Lack of access and support to microenterprises	Digital microfinance	Brickell et al. (2020)
	Entrepreneurial financing	Lack of financing access for SME, and Start-ups	Digital-based venture capital, private equity	Zutshi et al., (2021); Gompers, Kaplan and Mukharlyamov (2022);
	Wealth management and financial advisory service	Lack of product offerings and access	Digital wealth management and financial advisory service; Robo advisory; Tele-financial planning and advisory; Financial advisory and counselor	Phoon and Koh (2017); Fox and Bartholomae (2020); Sensening et al. (2020); Archuleta et al (2021); Dziawgo (2021); Gan et al. (2021); Rabbani et al. (2021)
	Risk management	Lack of insurance product covering pandemic risk	Insurance covering pandemic risk	Hartwig et al. (2020)
	Social finance	Lack of product offerings and access	Renewed interest on Islamic social finance	Hassan, Muneeza and Sarea (2021);Kuchler and Stroebel (2021);
Service delivery	Digital finance	Digital revolution; Lack of access for financial services; Service deliver misaligned with sustainability agenda	Internet-based Mobile-based Application system- based Artificial intelligence and machine learning application in financial services industry	Agur et al. (2020); Clements, (2022); Tay, (2022); Murinde et al. (2022); Goodell et al. (2021)
Marketing strategy	Digital marketing	Marketing strategies misaligned with sustainability agenda Envisioning a sustainable financial consumers	New service marketplace Digital market reach	Lozano(2008); Aitken et al., (2019); Sheth (2021), Clements, (2022); Rosenbaum; Russell- Bennett, and Conteras- Ramirez (2022)

Source: Summarized by the author from the referred articles

innovate new financial products, service delivery, and marketing strategies that care about social and environmental risks in addition to economic benefits to the firm and financial consumers. An important guideline for the product, services, and marketing innovations—the sustainable product and service development method, is provided by Maxwell and Van der Vorst (2003). Digital-based transformations in large parts of the world will be challenged by barriers to access due to the expensive cost of Internet access, unaffordable Internet-connected devices, and the lack of IT-related skills (United Nations 2021). Currently, too many principles and guidelines have caused confusion in practice. Tackling this problem, the International Organization for Standardization is working on a new ISO/DIS 32210 Sustainable finance—Principles and guidance ISO/DIS 32210[15] that aim to provide standardization to integrate sustainability considerations in all fields of financial services. Worth to consider the non-bank financial institutions' sustainability have been under-researched and need to be explored further to assist sustainability transformation in all sub-sectors of financial services.

The COVID pandemic crisis shifted innovation research to focus on sustainability issues (Wang et al. 2022). In similar vein, the financial services industry is scaling up efforts for sustainable financial services (Quatrini, 2021). The ongoing digital revolution and pandemic experience prompted for more sustainable financial services as self-explanatorily summarized in Table 7. Briefly, in addition to new sustainable financial products is required, key innovation needed in the financial services industry related to digitalization of financial services, service deliver marketing strategies which are currently misaligned with sustainability agenda (Clements, 2022).

Conclusions

This study provides a systematic analysis of the past and future of the research into sustainable financial services. Review of past research undertaken has led to the development of sustainability analysis framework for financial

[15] https://www.iso.org/standard/77776.html. Draft is available at; https://www.iso.org/obp/ui/#iso:std:iso:32210:dis:ed-1:v1:en

services in firm-level analysis with three key domains: sustainability foundations, sustainable financial services, and sustainability implications. The present study is distinct from the existing evidence and contributes to the advancement of sustainable financial services research in the following two aspects. First, the framework contributes to the extension of limited understanding of sustainability financial services research. Second, the framework can be used to guide future research concerning the sustainability of financial services' theory, policy, and practice.

Appendix 1: Sample database - 103 articles

No.	Authors	Year	Sustainability foundations
Panel A: Articles evidence—sustainability foundations			
1	World Bank	1991	Supervision and regulation
2	Haiss, P. R	1992	Organizational ethics focus
7	Missbach, A	2004	Supervision and regulation
8	Carrasco,	2006	Organizational ethics focus
11	Sierra González J.H., Londoño Bedoya D.A	2008	Organizational ethics focus
12	Keating B., Quazi A., Kriz A., Coltman T	2008	Corporate governance
14	Salvador-Carulla L., Solans J., Duaigues M., Balot J., García-Gutierrez J.C	2009	Organizational ethics focus
16	Goodland R	2010	Supervision and regulation—green project financing
17	Paulet E., Relano F	2011	Organizational ethics focus
18	Dietz T	2011	Supervision and regulation—risk control under Basel II
21	San-Jose L., Retolaza J.L., Gutierrez-Goiria J	2011	Organizational ethics focus
22	Paulet E	2011	Organizational ethics focus
23	Rayman-Bacchus L., Relano F., Paulet E	2012	Organizational ethics focus—philosophy of sustainable finance
25	Paulet E., Relano F	2012	Organizational ethics focus
26	Tischer D	2013	Organizational ethics focus
29	Housby E	2013	Organizational ethics focus
32	Caldarelli A., Fiondella C., Maffei M., Spanò R., Zagaria C	2014	Organizational ethics focus
33	Maklan S., Knox S., Antonetti P	2014	Sustainability strategies—sustainability leadership
36	Thi Thanh Tu T., Thi Hoang Yen T	2015	Sustainability strategies—green banking best practices
37	Paulet E., Parnaudeau M., Relano F	2015	Organizational ethics focus—banks focus on ethics after major banking crisis
39	Yu J.E	2015	Sustainability management
40	Roux M	2015	Corporate governance—socially responsible banks
42	Serrano Pérez M.E	2017	Organizational ethics focus—social and ethical banking index
43	Orbach T., Busch T	2017	Sustainable strategies
44	García-Sánchez I.-M., García-Meca E	2017	Sustainability management—CSR engagement
45	Tan L.H., Chew B.C., Hamid S.R	2017	Sustainability management
48	Eshet A	2017	Sustainability management—adoption of the Equator principles influence credit decisions
49	Almandoz J., Lee M., Marquis C	2017	Sustainability management—sustainability leadership
50	Costa-Climent R., Martínez-Climent C	2018	Sustainability management
53	Carè R	2018	Sustainability management—sustainable banking practice
54	Vallet G	2018	Organizational ethics focus
56	Palacio J.R.S., Climent V.C	2018	Organization ethics focus

No.	Authors	Year	Sustainability foundations
59	Barbu T.C., Boitan I.A	2019	Organizational ethics focus—ethical banks included in the membership of the European Federation of Ethical and Alternative Banks
62	Hundt R	2019	Supervision and regulations—the US National Climate Bank Act is a boost for green banks worldwide (see http://go. nature. com/33anbt1)
64	Thiam M.E.B., Liu J., Aston J	2019	Organizational ethics focus—professional ethics is integrated within the banking culture
66	San-Jose L., Cuesta J	2018	Organizational ethics focus—Islamic banks
67	Lenz S., Neckel S	2019	Organizational ethics focus—ethical banks between moral self-commitment and economic expansion
71	Bowers B., Boyd N., Mcgoun E	2020	Sustainability management—banks engaging in green washing for looking better
76	Usher E	2020	Supervision and regulation—principles for Responsible Banking
77	Phuong N.A	2020	Sustainability strategies—bank green banking adoption
78	Diener F., Špa?ek M	2020	Sustainability strategy—sustainable reporting
79	Karkowska R	2019	Sustainability management—concept of sustainable banks—business models

No.	Authors	Year	Sustainability foundations
82	Fenwick M., Vermeulen E.P.M	2020	Supervision and regulation—to establish an environment for successful and sustainable "ecosystems", regulators need to become active participants in these more open forms of business organization
83	Valls Martínez M.C., Martín-Cervantes P.A., Peña Rodríguez S	2021	Sustainability strategy—ethical banking business model
88	Bukhari S.A.A., Hashim F., Amran A	2021	Sustainable management—green Banking Adoption in congruence with the NRBV capabilities, i.e., pollution prevention, product stewardship, and sustainable development
92	Miroshnichenko O.S., Brand N.A	2021	Sustainability strategies—sustainable banking concepts—bank financing green economy
94	Johnson D., Rodwell J., Hendry T	2021	Supervision and regulation—sustainable financial services
98	da Silva Inácio L., Delai I	2021	Sustainability strategy—sustainable banking concept
99	Liu T., Li Z., Zhang C., Xia Q	2022	Sustainability strategies
100	Zhang W., Liu X., Liu J., Zhou Y	2022	Sustainability strategies—green finance- green bankers can boost the supply of such growth based on bankers' spirit and green feelings
101	Kong F	2022	Sustainable strategies—green finance-carbon neutrality policy

No.	Authors	Year	Sustainability financial services
Panel B: Articles evidence—sustainable financial services			
3	Marguerita, B., Bernardo, G	1996	Microfinance
4	Ledgerwood, J	1998	Microfinance
10	Jones, L., Pasricha, N	2007	Microfinance
13	Weimin C	2008	Green banking
14	Salvador-Carulla L., Solans J., Duaigues M., Balot J., García-Gutierrez J.C	2009	Ethical banks-healthcare financing
15	Maclean K	2010	Microfinance
19	Becchetti L., Garcia M.M., Trovato G	2011	Sustainability services—credit rationing in ethical bank
24	Lymperopoulos C., Chaniotakis I.E., Soureli M	2012	Sustainable marketing strategies
27	Geobey S., Weber O	2013	Social financing
28	Adler M., Waldschmidt S	2013	financial services delivery—microfinance
31	Ciobanu G., Negrea A., Andreica R	2014	Green banking
34	Marquis C., Almandoz J	2014	Sustainable products—green lending
35	Meyer R.L	2014	Microfinance—rural financial services
38	Barigozzi F., Tedeschi P	2015	Ethical banks—green financing
55	Nguyen N.T.H., Nguyen D.T.N	2018	Sustainable marketing strategy—green brand image
57	Simkhada N.R	2018	Sustainable financial services—microfinance
61	Barigozzi F., Tedeschi P	2019	Sustainable products—entrepreneurs investing in ethical projects financed by ethical banks
68	Wakwabubi E., Ahmed Y., Omware S	2019	Financial inclusion—the communities' preference for ethical financial products and services
69	Bennett L., Goldberg M., Von Pischke J.D	2019	Microfinance
74	Forrester S.P., Reames T.G	2020	Sustainable products—energy efficiency financing for moderate-income household
80	Ajina A.S., Roy S., Nguyen B., Japutra A., Al-Hajla A.H	2020	Sustainable marketing—CSR to enhance brand value
93	Khan A.A., Khan S.U., Fahad S., Ali M.A.S., Khan A., Luo J	2021	Microfinance—providing sustainable financial services to the poor
95	Ehlers T., Packer F., de Greiff K	2022	Carbon risk impacting credit decision—the loan risk premium related to CO 2 emission intensity is apparent across industries
97	Ning Y., Cherian J., Sial M.S., Álvarez-Otero S., Comite U., Zia-Ud-Din M	2022	Sustainable products—green bonds
102	Che Nawi N., Mamun A.A., Hayat N., Seduram L	2022	Sustainable product—eWallet

No.	Authors	Year	Sustainability implications
Panel C Articles evidence—sustainability implications			
5	O'Hara, P.A	2002	Financial performance and innovation
6	Dufhues T.B., Dung P.T.M., Hanh H.T., Buchenrieder G	2002	Financial inclusion
9	Scholtens, B	2007	Financial performance and innovation
15	Maclean K	2010	customer orientation—women social capital
20	Ebo Hinson R	2011	Sustainability strategies
30	Perlegkas P., Sofianopoulou S., Psychoyios D	2014	Financial performance—environmental efficiency
41	Alharthi M	2016	Efficiency -sustainability
46	Manolas E., Tsantopoulos G., Dimoudi K	2017	Customer orientation—use of bank green products

No.	Authors	Year	Sustainability implications
47	Halamka R., Teplý P	2017	Financial performance sustainability
51	Amuakwa-Mensah F., Klege R.A., Adom P.K., Amoah A., Hagan E	2018	Financial performance sustainability
52	Climent F	2018	Financial performance sustainability: ethical bank is less profitable compared to conventional banks
58	Patterson Z., McEachern M.G	2018	Consumer orientation—consumers and their ethical banking practices
60	Chamorro-Mera A., Palacios-González M.M	2019	Consumer orientation—consumer preference to socially responsible investment
63	Bayer S., Gimpel H., Sarikaya S	2019	Customer orientation—bank customers' decision-making process in choosing ethical banking
65	Shah A.A., Wu D., Korotkov V	2019	Financial performance sustainability
70	Ajina A.S., Roy S., Nguyen B., Japutra A., Al-Hajla A.H	2020	Stakeholders management and risk reduction—employees' perceptions of socially responsible financial services brands
72	Adom P.K., Appiah M.O., Agradi M.P	2020	Impacts
73	Palacios-González M.M., Chamorro-Mera A	2020	Customer orientation—intention to invest in a socially responsible manner
75	del Carmen Valls Martínez M., Rambaud S.C., Oller I.M.P	2020	Financial performance and sustainability
81	Liu Z., Wang Z	2020	Impacts—environmental ecological efficiency of green financial services
84	Bolibok P	2021	Impacts—The impact of social responsibility performance on the value relevance of financial data
85	Bialowolski P., Weziak-Bialowolska D., McNeely E	2021	Customer orientation—sustainable bank enhance consumer well-being
86	Olmo B.T., Saiz M.C., Azofra S.S	2021	Impacts—sustainable banking practices affect the profitability and the insolvency risk of banks
87	Moudud-Ul-Huq S	2021	Impacts -socially responsible banks have been characterized as risk-averse and better stabilized (in terms of solvency and efficiency), more efficient and profitable
89	Chiaramonte L., Dreassi A., Girardone C., Piserà S	2021	Impacts—ESG enhance bank stability during turmoil
90	Naranova-Nassauer A	2021	Stakeholders management—the Global Alliance for Banking on Values
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Declarations

Conflict of interest We, the co-authors, hereby confirm that we have no conflicts of interest to declare that are relevant to the content of this article.

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Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

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