Sustainable financial services: reflection and future perspectives

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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

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
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 issues1 (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 solutions2 to address these sustainability risks are formalized in the UN Paris Agreement3 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 TWI20506 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.

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

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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.unsd.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/twiTWI2050.html
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.
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(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). Value-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.
5. 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, 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, 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 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
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 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 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.

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, 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. 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 delivery” OR “SDG financial services marketing”)

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9 https://susba.org/pdfs/report-2020.pdf
10 https://www.bankingbook.com/pages/banks_in_asia/List_of_banks_in_Asia.php
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<sup>a</sup> |
|----|---------|------|-------|---------|-------------------------------|
| 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, Man- nan, and Lumentut | 2021 | Sustainable finance | Bibliometric analysis | Financial services industries, Finance, Environmental education, Information science, Text analytics |
| 6  | Chiţimiea, Minciu, Manta, Cioccoi, 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, 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, Economic crises, 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.

<sup>a</sup>Identified from text analyzer using https://www.jstor.org/analyze/ analyzer

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”)

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”)
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.

**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”)

**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. 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, 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.

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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)
Sustainable financial services: reflection and future perspectives

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

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 (29); banking (26); management (21); organizational (18) |
| Supervision and regulation | | | |
| Organizational ethics focus | | | |
| Corporate governance | | | |
| Sustainability management | | | |
| (B) Sustainable financial services | 25 | 24% | sustainable (14); financial (8); microfinance (8); green (7); services (7) |
| Sustainable products | | | |
| Sustainable services delivery | | | |
| Sustainable marketing | | | |
| (C) Sustainability implications | 27 | 27% | performance (18); financial (13); bank (12); orientation (8); customer (6) |
| Sustainability-firm performance | | | |
| Sustainability-consumer orientation | | | |
| Sustainability-stakeholders management & risk reduction | | | |

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

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.
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

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14 [https://www.gabv.org/about-us/](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 (Lymeropoulos 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
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 3221015 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).

| Sustainable financial services pillar | Sustainability problems | Sustainability opportunity | References |
|--------------------------------------|-------------------------|---------------------------|------------|
| Financial products                   | Financial inclusion     | Digital financial services | Tay, (2022) |
| Rural finance                        | Lack of access for financial services in rural area | Digital microfinance | Brickell et al. (2020) |
| Entrepreneurial financing            | Lack of access to microenterprises | Digital-based venture capital, private equity | Zutshi et al., (2021); Gompers, Kaplan and Mukharlyamov (2022); |
| Wealth management and financial advisory service | Lack of financing access for SME and Start-ups | Digital wealth management and financial advisory service; Robo advisory; Tele-financial planning and advisory; Financial advisory and counselor | Phoone and Koh (2017); Fox and Bartholomae (2020); Sensening et al. (2020); Archuleta et al. (2021); Dziajwo (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 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                   | Marketing strategies misaligned with sustainability agenda | New service marketplace | Lozano (2008); Aitken et al., (2019); Sheth (2021), Clemens, (2022); Rosenbaum; Russell-Bennett, and Contreras- Ramírez (2022) |

Source: Summarized by the author from the referred articles

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

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
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 |
|-----|---------|------|---------------------------|
| 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., Par
  naudeau 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 strategy—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                    |
| 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 Rodriguez 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—green finance- green bankers can boost the supply of such growth based on bankers’ spirit and green feelings |
| 100 | Zhang W., Liu X., Liu J., Zhou Y| 2022 | Sustainability strategies—green finance-carbon neutrality policy                           |
| 101 | Kong F                       | 2022 | Sustainability strategies—green finance-carbon neutrality policy                           |
## Panel B: Articles evidence—sustainable financial services

| No. | Authors | Year | Sustainability 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., Garcia-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  | Lymeropoulos 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 |

## Panel C Articles evidence—sustainability implications

| No. | Authors | Year | Sustainability implications |
|-----|---------|------|------------------------------|
| 5   | O’Hara, P.A | 2002 | Financial performance and innovation |
| 6   | Dufhues T.B., Dung P.T.M., Hanh H.T., Bachenrieder 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., Sofianopoulos 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 |

| No. | Authors | Year | Sustainability implications |
|-----|---------|------|------------------------------|
| 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-Nasauer A | 2021 | Stakeholders management—the Global Alliance for Banking on Values |
| 91  | El Khoury R., Nasrallah N., Alareeni B | 2021 | Impacts—nonlinear ESG–FP relationship |
| 96  | Subanidja S., Sorongan F.A., Legowo M.B | 2022 | Fintech as an antecedent of sustainable bank |
| 103 | Dias S.V., Al Mamun A., Alam M.K., Zainol N.R | 2021 | Customer orientation |

**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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