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REVIEW ARTICLE

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Towards a definition of sustainable banking - a consolidated approach in the context of guidelines and strategies

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Abstract

Sustainable development efforts, initiated by the SDGs and the Paris Agreement on climate change, are bringing banking to the center of the debate, which calls for, among other things, sustainable banking. In the current academic discussion, sustainable banking is described as a terminological jungle that is subject to change over time. Using Webster and Watson's conceptual model, this review analyzes the definitions and conceptual descriptions used in academia to present a consolidated result. The definition analysis conducted in this paper shows that definitions used mostly refer to the implementation of social, environmental aspects in the respective business strategies and / or to the offering of sustainably labeled products. This paper also shows that the various forms of the definition have a purely descriptive character and that measurability and comparability are hardly possible due to the lack of a generally accepted sustainability index.

Keywords Sustainability, Green banking, Banking industry, Social banking, Sustainable banking

Introduction

Sustainability has become a maxim in the twenty-first century. The concept promises a social development towards awareness of a fair treatment of our environment, which is also important for future generations (Dyllick & Hockerts, 2002, S. 131). Sustainability and sustainable development terminology, has gained prominence over the past decade (Nájera-Sánchez, 2020, S. 1) and is becoming one of the most important topics in management due to the growing global awareness of environmental, social and financial aspects (Glavič & Lukman, 2007, S. 1875; Paiva et al., 2021, S. 2).

At the heart of the discussion on sustainability is the use of both non-renewable and renewable resources, which are subject to increasing depletion as a result of the economic development of recent decades. In order to protect and conserve them, measures are needed to establish a bio-economic balance and to moderate human intervention so that the natural balance is maintained (Neumann, 1994, S. 77–87).

Sustainability in itself describes the handling of non-renewable resources, which should only be depleted to the extent that renewable substitutes grow back (Daly, 1990, S. 47).

Elkington (1997, S. 20) likewise views sustainability as the principle that ensures that our actions today do not limit the economic, social, and environmental opportunities of future generations. Ultimately, the concept of sustainability includes a temporal dimension (intergenerational equity), a spatial dimension (equity between different regions), and different target dimensions (usually ecology, social, economy) (Koch & Belmann, 2019, S. 5). But the scientific discussion of sustainability has evolved over time.

One of the most widespread and frequently quoted statements comes from the 1987 Brundtland Report,

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which first formulated the concept of sustainable development (Glavič & Lukman, 2007, S. 1884; Lenk & Bessau, 1997, S. 5; Oriade et al., 2021, S. 2; Paiva et al., 2021, S. 2) The concept explains that sustainable development meets the needs of the present generation in a way that does not compromise the ability of future generations to meet their own needs (United Nations, 1987, S. 37).

While scientific research until the 1990s tended to focus on environmental impacts resulting from industrial process chains (Aracil et al., 2021, S. 5), sustainable development today represents an ideal convergence of economic, social, and environmental concerns working together to achieve optimal, inclusive growth and developmentoperations (Shah et al., 2019) (Da Silva Inácio & Delai, 2021, S. 6) (Pathak & Tewari, 2017, S. 110) (Nosratabadi et al., 2020, S. 10–14).

Despite the evolution of the sustainability concept, the core idea of balancing needs and constraints in terms of sustainable development remains (Hannan, 2015, S. 12).

Another important concretization of the understanding of sustainability was presented at the UN Conference on Environment and Development in Rio de Janeiro in 1992. At this conference, an international model was recognized for the first time, which provided the impetus for a number of initiatives. Most recently, the international community of states concretized the guiding principle of global sustainable development (Bundesverband deutscher Banken e.V., 2014, S. 5). As a result, sustainable development is being proposed by governments and business leaders as a solution to a variety of problems that need to be addressed with a higher priority (Elkington, 1997, S. 20).

With the adoption of the Paris Climate Agreement and the UN 2030 Agenda for Sustainable Development, the world's governments decided in 2015 to embark on a more sustainable path. At the heart of the agenda are the 17 Sustainable Development Goals (SDGs) (European Commission, 2018, S. 2). In this context, both the SDGs and the Paris Agreement on climate change put the financial sector at the center of the sustainability debate (Bruhns et al., 2020, S. 1).

The basis for the link between sustainable development and the financial sector can be traced back to 1990, when banks were seen as having a potentially enormous promotional impact because of their intermediary role in the economy (Bouma et al., 2017).(Jeucken & Bouma, 1999, S. 22).

Banks represent the backbone of an economy and have both a direct and an indirect impact on the maintenance and development of the economy through their capacity as stewards of capital flows (Zhixia et al., 2018, S. 572). Through this intermediary role (Yip & Bocken, 2018, S. 153) (Kumar & Prakash, 2019), they have an impact on other industries and can thus be central to achieving the SDGs (Zimmermann, 2019), by directly participating in projects to protect the environment, directing funds according to the environmental risk of the target companies, or promoting socially responsible products (Nájera-Sánchez, 2020, S. 1) (Gangi et al., 2019). From this position, they can promote or hinder (non-)sustainable behavior by states, companies and individuals and even trigger structural changes in society (Louche et al., 2019).

The 2019 European Green Deal also highlights the transformation of all sectors of the economy and concretizes the need to direct capital flows towards green and more sustainable investments (European Comission, 2020) (Hecker, 2015, S. 61), so a sustainable banking approach is becoming increasingly important. Studies around the role of financial institutions in sustainable development are steadily increasing in the literature in recent years (Aras et al., 2018) (Aracil et al., 2021, S. 5), but it has not yet been possible to find a uniform definition of sustainable banking that is accepted in the scientific community (Da Silva Inácio & Delai, 2021, S. 7) instead, sustainable banking is a terminological jungle, which includes many topics (Nájera-Sánchez, 2020, S. 2) and various terms are used to describe it.

The growing importance of sustainability in business and the strong increase in academic interest (Raut et al., 2017) make it necessary to analyze the different aspects of sustainable banking in the literature.

As there is no universally accepted definition of sustainable banking, it is particularly necessary to examine research papers from different journals to get an overview of the current manifestations of definitional approaches in order to present a consolidated result.

To the best of knowledge, there is no study to date that addresses the various concepts and definitions of sustainable banking, categorizes them and analyzes the focus of each dimension and sub-dimension.

The aim of this paper is to analyze the definitions and concept descriptions used in the literature by means of a concept matrix following Webster and Watson (2002) in order to present a consolidated result of the definition analysis.

For this purpose, this paper is organized into five different sections, which are shown in Fig. 1.

Section 1 begins by clarifying how academic research on sustainable banking has changed over time. The second section shows the implications of sustainable banking practices, followed by the guardrails and determinants of the topic in the third section. Section four presents strategic levels and dimensions. The following section five provides a summary of the definitions and descriptions of the concept of sustainable banking

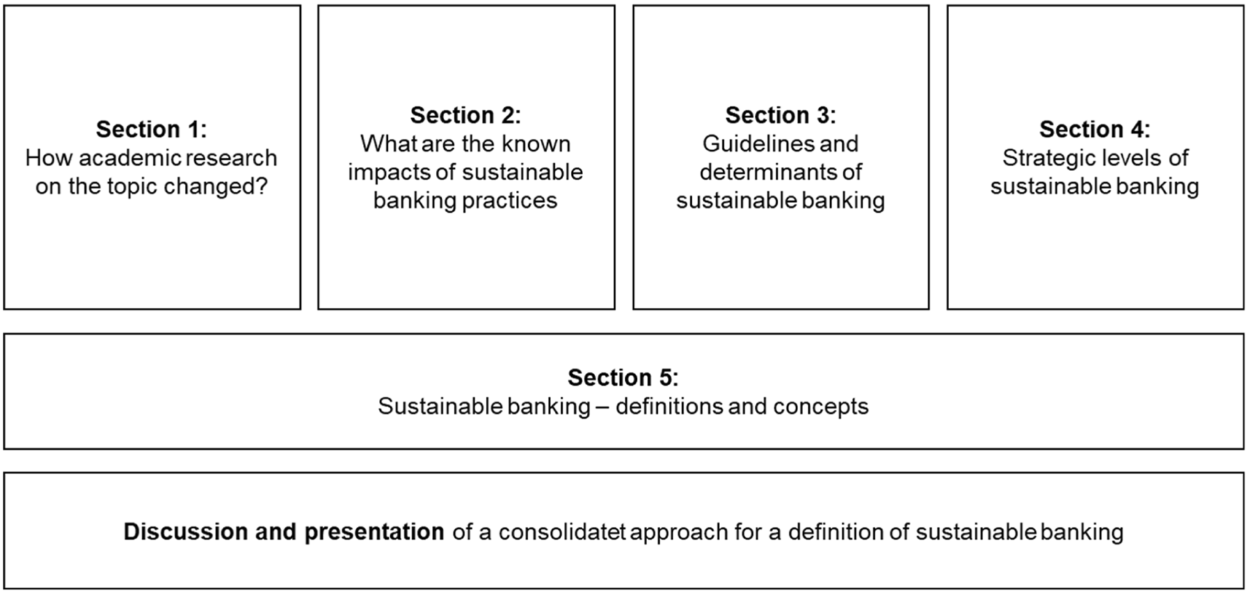

Fig. 1 Sections of the literature search

applied in the literature review, using Webster and Watson's (2002) concept model. The concept matrix develops a coding scheme that assigns content attributes to the definitions that emerge from the review in order to develop a classification of each focus to provide a better overview (Webster & Watson, 2002). The following discussion summarizes the findings of the literature review and presents a consolidated approach to a definition of sustainable banking.

Method

In order to obtain a systematic overview of the current literature, a database analysis of the Web of Science, ECONBIZ and SCOPUS databases is performed for publications from 2017 to 2022 by searching for the keywords "sustainability" and "banking". Subsequently, using the PRISMA flow diagram, the identified, included and excluded publications are presented (Page et al., 2021). An overview of the research framewok can be found in Table 1.

In the next step, the selected works were screened and duplicates within the databases as well as works based on the title were removed. Studies focusing only on CSR, ethics, Islamic banking, or sustainability reporting were excluded for this analysis. Similarly, only studies published in Q1 to Q4 rated journals according to SJR were included. Publications whose contents make no reference to concepts or definitions of sustainable banking were also excluded.

The remaining 234 papers were included or excluded for further analysis based on abstract. Remaining 91 studies were read in their entirety, with 63 excluded due to a lack of reference to sustainable banking. Twenty-eight studies were intensively screened to derive the definition

Table 1 Overview of research framework

Database	Web of Science	ECONBIZ	SCOPUS
Topic	Sustainability AND Banking		
Publication Year	2017–2022	2017–2022	2017–2022
Document Type	Articles or Review Articles	Article in journal	Article OR Conference Paper
Search Term	Sustainability (All Fields) and Banking (All Fields) Refined By: Document Types: Articles or Review Articles, Research Areas: Busines Economics or Environmental Sciences Ecology; Publication Years: 2022 or 2021 or 2020 or 2019 or 2018 or 2017; Document Types: Artivles or Review Articles	Sustainability (All Fields) AND Banking (All Fields) Theme: all Publication form: all, Article in Journal Speach: all Published in: all	(TITLE-ABS-KEY (sustainability) AND TITLE-ABS-KEY (banking)) AND PUBYEAR > 2016 AND (LIMIT-TO (SUBJAREA, "BUSI") OR LIMIT-TO (SUBJAREA, "ECON"))

question for the review. In addition to summarizing the scientific findings, a further identification of studies was carried out from these works using a citation search. In this process, the respective primary sources, which contain a reference to a definition or a concept description of sustainable banking, were screened.

After removing the duplicates, or papers with a lack of reference to the topic, an additional 18 papers were added. Towards a definition of sustainable banking, a total of 36 papers were included in this research (Fig. 2). A summary identification of relevant sources are presented in Table 2.

The following Fig. 3 visualizes the corresponding citation relationships. It shows which relevant sources from the database search refer to which sources of the citation search.

Findings

Sustainable banking should not be interpreted as a static concept (Jeucken, 2001, S. 71) but can be used to describe the counterpart of conventional banking (Bayer et al., 2019, S. 658). Aras and Crowther argue that sustainability itself is a controversial topic because it means different things to different people or is poorly understood (Aras & Crowther, 2009). The introduction of sustainable banking and in particular its integration into business activities represents a major challenge for banks (Nwagwu, 2020, S. 1). Necessary skills and especially expertise around the topic are often missing (Weber & Chowdury, 2020, S. 4). In the current academic discussion, sustainable banking is viewed from many different angles. For this reason, the first section addresses the question of how research priorities are changing.

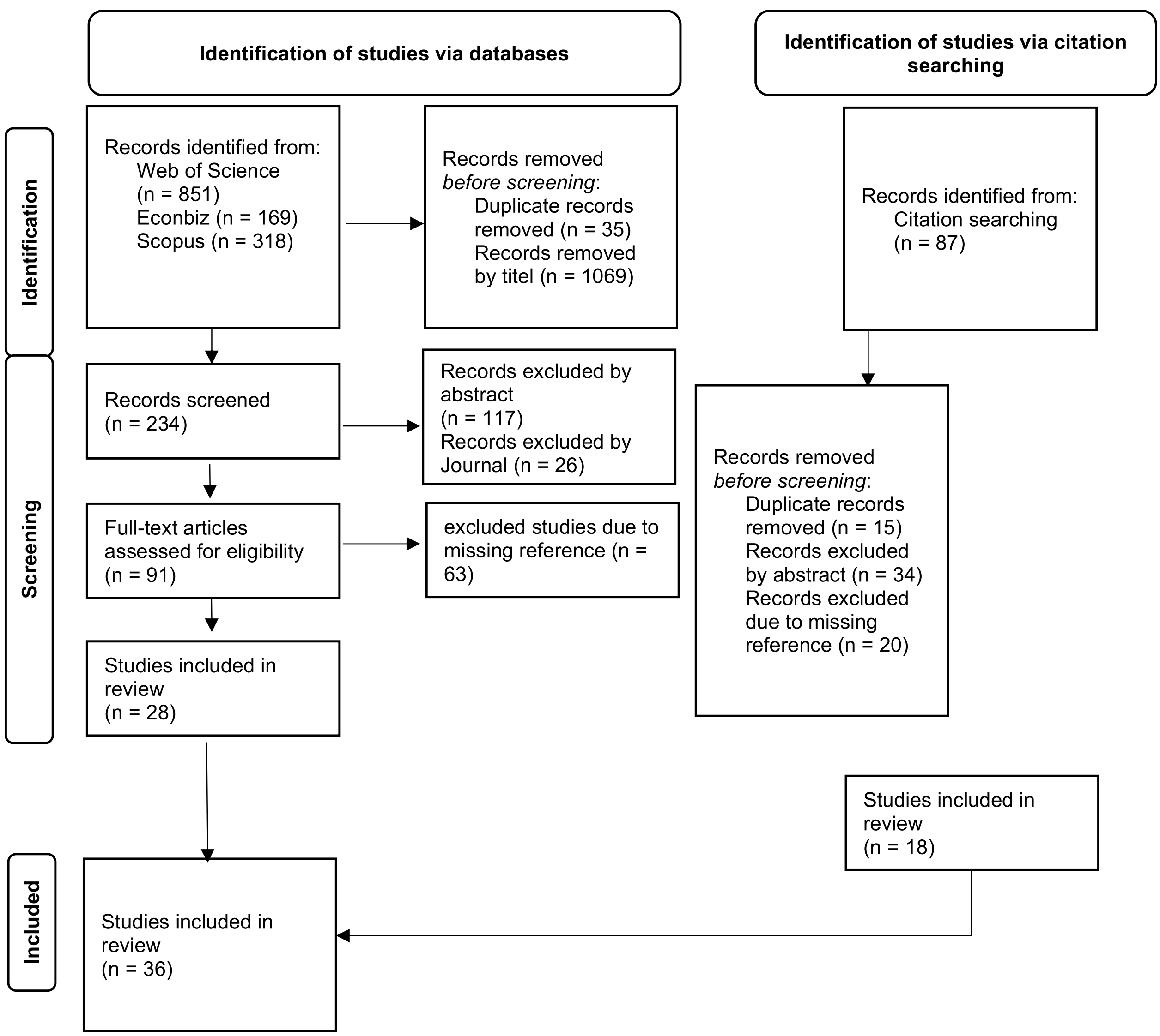

Fig. 2 PRISMA flow diagram (Page et al., 2021)

Table 2 Summary identification of relevant sources from database search and citation search

Identification of studies via databases				Identification of studies via citation searching		
No.	**Author**	**Year of Publication**	**Reference of studies via citation searching**	**[No.]**	**Author**	**Year of Publication**
1	(Pathak & Tewari, 2017)	2017	[39], [71], [74],	[39]	(Jeucken & Bouma, 1999)	1999
2	(Raut et al., 2017)	2017		[12]	(Bouma et al., 2001)	2001
3	(Tan et al., 2017a, S. 240)	2017	[12], [35], [66],	[12]	(Bouma et al., 2001)	2001
4	(Tan et al., 2017b)	2017	[12], [35], [39], [66],	[35]	(Jeucken, 2001)	2001
5	(Aras et al., 2018)	2018	[4],	[4]	(Aras & Crowther, 2009)	2009
6	(Carlucci et al., 2018, S. 1303)	2018	[12], [39], [51],	[51]	(Rebai et al., 2012)	2012
7	(Climent, 2018, S. 2)	2018	[54],	[16]	(Collevecchio Declaration, 2003)	2013
8	(Costa-Climent & Martinez-Climent, 2018)	2018	[12], [28],	[54]	(Salzmann, 2013)	2013
9	(Heinemann et al., 2018, S. 8–11)	2018		[66]	(Stankeviciene & Nikonorova, 2014)	2014
10	(Igbudu et al., 2018)	2018		[82]	(Weber et al., 2014)	2014
11	(San-Jose et al., 2018)	2018		[11]	(Bollas Araya et al., 2014)	2014
12	(Tharkanova, 2018, S. 81)	2018	[71],	[83]	(Weber, 2016)	2016
13	(Yip & Bocken, 2018, S. 151)	2018	[16], [28], [39],	[18]	(Deloitte, 2017)	2017
14	(Zhixia et al., 2018)	2018		[63]	(Shamshad et al., 2018)	2018
15	(Bayer et al., 2019)	2019	[35], [83],	[21]	(European Commission, 2018)	2018
16	(Korzeb & Samaniego-Medina, 2019)	2019	[12],		(GABV, 2012, S. 5)	2012
17	(Kumar & Prakash, 2019)	2019	[35], [39], [71], [83],	[28]	(GABV, 2021, S. 1–9)	2021
18	(Zimmermann, 2019)	2019	[35], [83],	[71]	(UNEP Finance Initiative, 2021a)	2021
19	(Nájera-Sánchez, 2020, S. 1)	2020	[12],	[74]	missing	
20	(Nosratabadi et al., 2020)	2020	[35],			
21	(Nwagwu, 2020, S. 2)	2020	[12], [18], [28], [63],			
22	(Tan & Tsionas, 2020, S. 1)	2020				
23	(Weber & Chowdury, 2020)	2020	[39], [82]			
24	(Aracil et al., 2021)	2021	[35],			
25	(Paiva et al., 2021)	2021				
26	(Torre Olmo et al., 2021)	2021	[28], [71],			
27	(Úbeda et al., 2021)	2021				
28	(Venanzi & Matteucci, 2021, S. 13–15)	2021	[11], [21],			

Section 1: how has academic research on the topic changed?

The concept of sustainable banking is developing rather slowly (Salzmann, 2013, S. 2),has not yet fully established, (Climent, 2018, S. 2), and is still subject to debate in the academic literature (Rebai et al., 2012, S. 363). Bouma et al. (2001, S. 20) point out that it is less of a single definition, but describes a dynamic concept that changes over time. In the literature, the terms “ethical,” “sustainable,” “social,” and “green” are used with similar basic meaning (Pathak & Tewari, 2017, S. 111). Starting from the concept of “social banking”, which places non-monetary aspects at the center of action, the concept is evolving in research towards “ethical banking”. Building on “social banking,” the principles of charity ethics are integrated into business operations, whereupon “green banking” emerges, which incorporates ecology (Mendez & Houghton, 2020, S. 2) (Climent, 2018, S. 2). Aracil et al. (2021) analyzed publications from 1995 and 2019 and confirmed, that over time, the literature changed from customer-focused topics to an emphasis on banks’ contribution to environmental protection (Aracil et al., 2021). In this context, Úbeda et al. (2021) notes that academic interest in the topic of sustainability has increased, especially in the period following the 2008 financial market crisis (Úbeda et al., 2021, S. 1), but that studies immediately following the crisis tended to focus on related issues such as reputational damage (Torre Olmo et al., 2021). From 2015 to 2019, research focused more on the topics of CSR performance of products (Da Silva Inácio & Delai, 2021, S. 8), CSR reporting, followed by ethical issues and Socially Responsible Investment (Nájera-Sánchez, 2020, S. 16).

Section 1 shows that research on sustainable banking is subject to constant adjustments and shifts in focus, such as those brought about by the financial market crisis.

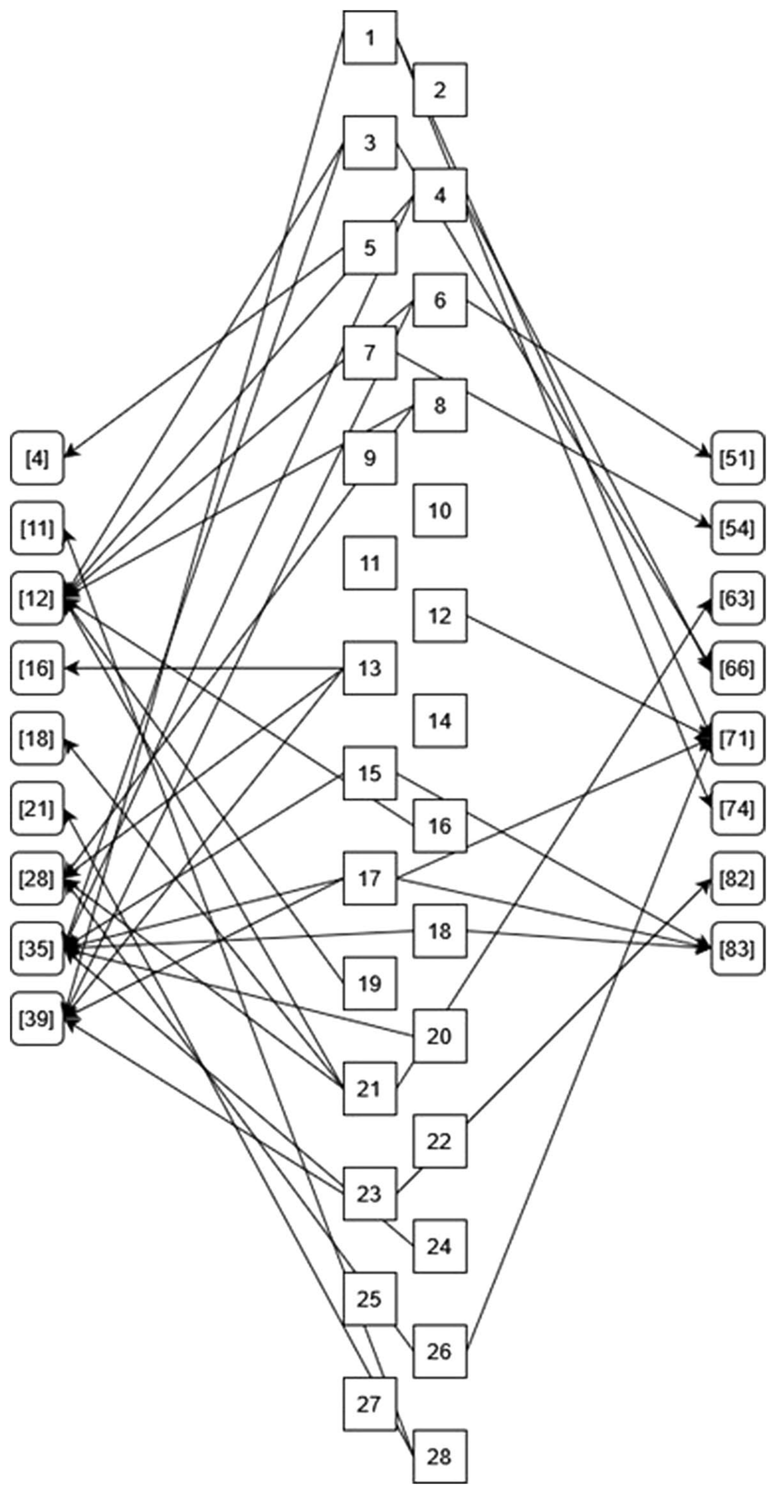

Fig. 3 Own representation of the citation contexts

Recently, research has focused on issues related to product performance and sustainability reporting by banks. Building on the research focus, the following Section 2 deals with the research findings derived from it, around the implications of sustainable banking discussed from the literature.

Section 2: what are the known impacts of sustainable banking practices?

From the customer-focused topics, it is known that sustainable practices of a bank can have a positive impact on the respective corporate image (Igbudu et al., 2018), which can lead to an increase in customers and an expansion of lending and savings business (Climent, 2018) (Carlucci et al., 2018, S. 1304) or prevent social, societal ostracism and rejection (Tharkanova, 2018, S. 78). However, customers continue to prefer conventional banks over banks with an ethical approach, which can be attributed to limited pressure from the social environment and low moral intensity (Bayer et al., 2019).

However, image enhancement and customer growth do not necessarily lead to improved profitability. Torre Olmo et al. (2021) found that sustainable banking practices can steadily increase profitability, but the market power of conventional banks is an important factor. Climent uses two banks to compare ethical banking with conventional banking and concludes that a pure focus on social investment is less profitable (Climent, 2018).

In contrast, Carlucci et al. (2018, S. 1304) show that integrating sustainability into decision making often results in better financial ratios compared to conventional banks, but refer here to growth increases in lending and deposit business without addressing profitability. Stankeviciene & Nikonorava conclude that a bank's sustainable value is the most important driver of sustainable wealth and growth (Stankeviciene & Nikonorova, 2014).

However, the level of institutional quality is critical to overall financial performance (Úbeda et al., 2021). Weber and Chowdury compare the relationship between sustainability performance and financial performance and find that higher sustainability performance can lead to higher financial performance, but conversely, higher financial performance does not lead to higher sustainability performance (Weber & Chowdury, 2020).

In addition to the customer and growth focus, the literature is also concerned with banks using resources responsibly and sparingly. Thus, their activities have both internal and external impacts on the environment, with internal resource use (paper, energy, water, and waste) being very low compared to other industries. The external activities in how funds are managed or to whom loans are made can have an impact on the environment through third parties (Tharkanova, 2018, S. 78) and thus represent the most important impacts to economic development, poverty reduction, financial inclusion, promotion of social well-being, and prevention of environmental risks through environmental protection (Da Silva Inácio & Delai, 2021, S. 18).

Therefore, research is concerned with models and attributes to measure the sustainable commitment of a financial institution. Due to a lack of general understanding on sustainable banking, research also does not provide a universally accepted model to measure banks' sustainability performance. Rebai et al. (2012) developed a multi-stakeholder approach back in 2012 and identified the sustainable interests of customers, regulators, shareholders, civil society, managers, and employees to measure sustainable performance from a stakeholder perspective (Rebai et al., 2012). Recent research is concerned with multidimensional models for measuring corporate sustainability with the main dimensions of (a) economic sustainability disclosure, (b) financial sustainability disclosure, (c) environmental sustainability disclosure, (d) social sustainability disclosure, and (e) governance disclosure (Aras et al., 2018). Unlike Rebai et al.'s external approach or Aras et al.'s disclosure determinants approach, practitioners likewise take their own approaches to measuring activities.

For example, GLS Bank, as one of the leading sustainable banks, is developing its own set of criteria to measure its own impact. On the basis of specially defined key figures, this looks at the meaning of the business model, the attitude of doing business, as well as the socio-ecological and economic impact, and the contributions to social change (GLS, 2021). In practice as well as in science, different approaches from an internal and external perspective are developed to calculate and assess the sustainable value of a bank. Due to conflicting approaches and institution-specific models, comparability and general acceptance are not available.

The current literature shows that the effects of a sustainable approach in banking may well be a competitive advantage due to a customer-oriented focus, without drawing a compelling conclusion on an improvement in banks' profitability, as sustainability performance depends on the quality of institutional performance. The literature review clearly shows the externalities of sustainable activities of banks. Here, the literature review seems to show that investment and lending criteria aimed at promoting social welfare and avoiding investment in environmentally harmful activities have an important impact. In the research area of measuring banks' sustainability performance, no universally accepted model or standardized criteria has yet emerged. Various approaches from both internal and external perspectives are being developed both in academia and in practice. Due to conflicting approaches and institution-specific models, comparability or general acceptance is not available. Both the practical and model-based academic approaches do not provide clear insights into what can be understood by sustainable banking, so the following section three focuses on the guardrails and determinants of sustainable banking that are most frequently cited in the literature.

Section 3: guidelines and determinants of sustainable banking

Regardless of the type of bank, the strategy, or the size of the institution, the UNEP FI program has brought together global financial actors in a global partnership to create a sustainable financial sector and push for economic aspects such as improving profitability in addition to integrating social and environmental aspects (Torre Olmo et al., 2021, S. 5). In doing so, this partnership between the United Nations Environment Programme and the private financial sector establishes six principles for responsible banking that banks can commit to in order to become part of sustainable finance (UNEP Finance Initiative, 2021b).

At the European level, the European Commission's Sustainable Finance Action Plan articulates efforts that connect the specific needs of business for the benefit of the planet and society (European Commission, 2018, S. 2–3). In addition to policy efforts, other NGOs organizations also formulate recommendations for key principles of sustainable finance. The Colleveccio Declaration, published in 2003, identifies six approaches to be considered as strategic guidelines (Collevecchio Declaration, 2003). Another international network of organizations and representatives of the banking sector has emerged with the Global Alliance for Banking on Values (GABV, 2012). This association puts finance at the service of people and the environment. GABV members base their business decisions on identifying people's needs and then determining how to meet them from a sustainable (environmental, social, and economic) perspective. In doing so, the network is equally guided by six principles whose commitment participating banks should make (GABV, 2021, S. 1–9).

The following Table 3 shows the respective determining factors, principles and commitments of the publishers listed above, which are in the context of sustainable banking. Derived from the respective core statements, the individual factors are categorized as follows:

- Commitment to sustainability and alignment of a sustainable business model
- Promotion / prevention of environmentally friendly / environmentally harmful activities and measures.
- Assumption of the caused risks from the effects of the activity
- Cooperation with stakeholders in the sense of sustainable development
- Accountability and transparency obligation to demonstrate sustainable activities
- Governance commitment in terms of improving sustainable aspirations

The result in Table 4 shows that the category "Commitment to sustainability and alignment of a sustainable business model" and "Accountability and transparency obligation to demonstrate sustainable activities" have the most frequent mentions. This means that most of the individual principles and obligations of the respective publishers refer to a business policy commitment to sustainability as well as accountability and transparency obligations as the main criteria. The evaluation further shows that the categories "Promotion / prevention of environmentally friendly / environmentally harmful activities and measures" and the category "Accountability and transparency obligation to demonstrate sustainable activities" are used by all organizations.

However, none of the principles under consideration provide any concrete details on how to implement them. Rather, it is a commitment to the implementation of overriding principles.

In addition to the individual assessment models and the determining factors and principles from science and practice, the literature on sustainable banking also deals with various strategic stages of a sustainable transformation of banks. As already known from the previous sections, this is a conceptual jungle of different approaches that can be bundled into certain categories but lack concrete details, which is why the integration of sustainability into banking operations represents a major challenge for the entire banking sector (Carlucci et al., 2018, S. 1303). Therefore, the following Section 4 deals with the different business policy strategy levels of sustainable banking.

Section 4: strategic levels of sustainable banking

This integration has essentially taken two forms: socially and environmentally responsible initiatives (e.g. support for cultural events, charitable donations, recycling programmes and improvements in energy efficiency); and the integration of environmental and social considerations into product design, mission and business strategies (e.g. the integration of environmental criteria into investment and lending strategies) (Jeucken & Bouma, 1999).

In the literature, a strategic implementation sees various stages of transformation toward sustainable banking operations. Weber describes a four-stage model of sustainability in banks. The first stage is only about integration for compliance purposes. In the second stage, banks already offer sustainable products and services, implement sustainability aspects in risk management strategies, and take initial measures to save waste and energy. The third stage integrates banks' social responsibility in the sense that CSR activities go beyond existing regulations and banks promote measures that help

Table 3 Categorization of key statements from the guidelines and determinants of sustainable banking

	Commitment to sustainability and alignment of a sustainable business model	**Promotion / prevention of environmentally friendly / environmentally harmful activities and measures.**	**Assumption of the caused risks from the effects of the activity**	**Cooperation with stakeholders in the sense of sustainable development**	**Accountability and transparency obligation to demonstrate sustainable activities**	**Governance commitment in terms of improving sustainable aspirations**
UNEP FI						
Alignment: Aligning business strategies with the SDGs and the Paris Climate Agreement	x					
Impact & Target Setting: continuous assessment of the impact of one's activities on people and the environment. Publication of the greatest impacts of actions, including target alignment					x	
Clients & Customers: working responsibly with clients and customers to promote sustainable practices and enable economic activities to create shared prosperity for current and future generations		x		x		
Stakeholders: proactive and responsible consultation with stakeholders to achieve societal goals				x		
Governance & Culture: implementing a commitment to the UNEP Principles through effective governance and a culture of responsible banking	x					x
Transparency & Accountability: regular review of individual and collective implementation of the principles, including public, transparent accountability for positive and negative impacts					x	

Table 3 (continued)

	Commitment to sustainability and alignment of a sustainable business model	Promotion / prevention of environmentally friendly / environmentally harmful activities and measures.	Assumption of the caused risks from the effects of the activity	Cooperation with stakeholders in the sense of sustainable development	Accountability and transparency obligation to demonstrate sustainable activities	Governance commitment in terms of improving sustainable aspirations
European Commission						
Redirect capital flows towards sustainable investments to achieve sustainable, inclusive growth		x				
Manage financial risks arising from climate change, resource scarcity, environmental degradation, and social problems			x			
Promote transparency and long-termism in finance and business					x	x
Colleveccio Declaration						
Commitment to Sustainability: a commitment to sustainability and respect for environmental limits and social and economic equality is required	x					
Commitment to Do No Harm: financial intermediaries commit to do no harm by financing or promoting environmentally and/or socially harmful activities		x				
Commitment to Responsibility: financial intermediaries are accountable for the environmental and social impacts of their activities. In doing so, they bear a full share of the risks caused			x			

Table 3 (continued)

	Commitment to sustainability and alignment of a sustainable business model	Promotion / prevention of environmentally friendly / environmentally harmful activities and measures.	Assumption of the caused risks from the effects of the activity	Cooperation with stakeholders in the sense of sustainable development	Accountability and transparency obligation to demonstrate sustainable activities	Governance commitment in terms of improving sustainable aspirations
Accountability Commitment: FIs are accountable to stakeholders. In addition, stakeholders have a weighted say in financial decisions that impact their environment and quality of life				x	x	
Commitment to transparency: stakeholders can inform themselves through regular, standardized disclosures as well as more in-depth information					x	
Commitment to sustainable markets and governance: FIs should support policy and regulatory market mechanisms that promote sustainable development						x
GABV						
Principle 1: Social and environmental impact and sustainability are central to the business model	x					
Principle 2: Anchoring in communities, supporting the real economy, and enabling new business models that meet the needs of both		x				
Principle 3: Long-term relationships with customers and a direct understanding of their economic activities and associated risks		x		x		

Table 3 (continued)

	Commitment to sustainability and alignment of a sustainable business model	Promotion / prevention of environmentally friendly / environmentally harmful activities and measures.	Assumption of the caused risks from the effects of the activity	Cooperation with stakeholders in the sense of sustainable development	Accountability and transparency obligation to demonstrate sustainable activities	Governance commitment in terms of improving sustainable aspirations
Principle 4: Long-term, self-sustaining, and resilient to external disruption	x					
Principle 5: Transparent and inclusive governance					x	
Principle 6: Anchoring in the bank's culture	x					

Table 4 Mention of the categories from the key statements

	Commitment to sustainability and alignment of a sustainable business model	Promotion / prevention of environmentally friendly / environmentally harmful activities and measures.	Assumption of the caused risks from the effects of the activity	Cooperation with stakeholders in the sense of sustainable development	Accountability and transparency obligation to demonstrate sustainable activities	Governance commitment in terms of improving sustainable aspirations
UNEP FI	2	1	0	2	2	1
European Commission	0	1	1	0	1	1
Colleveccio Declaration	1	1	1	1	2	1
GABV	3	2	0	1	1	0
	6	**5**	**2**	**4**	**6**	**3**

improve social, cultural and environmental issues. The fourth level, on the other hand, describes the model of a sustainable bank. All sustainable development principles are implemented in the core business, the board of directors is composed of women and men, compensation is transparent, and employee relations are highly valued. The bank has a well-developed sustainability reporting framework, and all products and services comply with sustainable development principles. In addition, all bank buildings have been renovated to the latest environmental standards (Weber, 2016).

Jeucken & Bouma confirm in their publication that strategic implementation can be described in terms of four different levels of integration into business operations. They differentiate the phases (a) defensive banking, (b) preventive banking, (c) offensive banking and (d) sustainable banking. In the defensive banking phase, the bank is not active and delays new environmental legislation because it sees its own interests directly or indirectly affected. In the preventive banking phase, institutions begin to integrate environmental issues into their internal day-to-day operations, but interpret these measures in the context of cost reduction. The measures are initiated as a result of external pressure. In offensive banking, banks see opportunities in the process of sustainable development. Through sustainable product management, they see potential in the development of new markets or financing solutions. Sustainability issues are addressed both internally and externally. In the final phase, sustainable banking is seen as the full integration of all banking activities into sustainable and environmentally friendly, social and economic activities, with sustainability taking priority over maximizing financial returns (Jeucken & Bouma, 1999, S. 29–31) (Jeucken, 2001). Tan et al. also differentiate between different phases of integration on the basis of a modular strategic step-by-step plan. Unlike Jeucken & Bouma, they describe five levels of categorization of sustainable banking. At level one, non-focused business activities take place that merely sponsor environmental issues. In level two, isolated business practices already take place, such as an expanded product offering. Stage three, the systemic business practices describe social and environmental principles that underlie much of the banks' product and service offerings. The strategic ecosystem innovation stage describes that economic, social, and environmental sustainability go beyond individual transactions and require ecosystem innovation. The fifth level of intentional ecosystem innovation is driven by the importance of social and environmental purposes of sustainability at the overall system level (Tan & Tsionas, 2020).

Zimmermann likewise examines the ways in which financial institutions contribute to achieving the SDGs and identifies five different types of sustainable development strategies. She distinguishes between narrow, peripheral, balanced and integrative strategies, which differ in the extent of sustainable integration. Depending on the strategy chosen, either a low level of sustainable business practices is implemented, or all business activities are fully aligned. In the first level, banks consider sustainability as a non-relevant issue and have not anchored any defined criteria. The peripheral strategy is similar to the first stage, but already has its first sustainable investment products on offer and a framework for granting donations. These are granted exclusively to non-profit projects. Initial commitments have been made to environmental protection measures and social cohesion, but business management motives dominate. The balanced strategy is characterized by an advanced integration of sustainable criteria. Customers can already benefit from terms and conditions advantages when fulfilling positive environmental projects. Banks exclude financing for environmentally harmful measures. Sustainable practices are not granted without regard to financial benefits, yet more weight is given to social and environmental motives. The fourth stage focuses on social added value. Banking products are designed with multiple social and environmental exclusion criteria in mind. Microcredits are increasingly granted, and donations are consistently used for social purposes. Furthermore, the company has implemented its own advanced environmental management system for its own operations. The fifth stage is similar to the previous one, but in addition to social concerns, it places a greater emphasis on the ecological aspect. A large number of strict positive and negative criteria are applied to every investment decision, whether in the securities business or in the granting of loans. Banks have a high level of expertise and support stakeholders in sustainable projects. The bank's own operations are climate-neutral and the creation of a viable natural environment is pursued (Zimmermann, 2019).

Yip and Bocken take a different approach to strategic analysis. They developed and validated eight different sustainable business model archetypes for banks which, unlike the previous archetypes, do not provide for a step-by-step sequential system. Yip and Bocken's archetypes represent a set of sustainable business models. The first archetype, Maximizing Material and Energy Efficiency, aims to reduce the extraction of natural resources through digitization or reduction of office space, thereby achieving cost savings while delivering a positive impact on the environment. The second archetype pursues reducing environmental impact and increasing business resilience in terms of speed, convenience, cost, and accuracy through the use of electronic means in the service delivery process.

The third archetype promotes sufficiency. Solutions are devised to reduce demand by correctly assessing customer needs, preventing mis-buying of financial products, and preventing moral hazard in lending. Adopting a stewardship role aims to work sincerely and proactively with stakeholders to enable long-term well-being. Value creation is focused on environmental and social benefits. By archetype five, Inclusive Value Creation, the authors mean inclusive value creation through product and service innovation that contributes to reduced risk

Table 5 Assignment of the strategic levels according to the key statements

	No implementation	**Commitment to sustainability and alignment of a sustainable business model**	**Promotion / prevention of environmentally friendly / environmentally harmful activities and measures.**	**Assumption of the caused risks from the effects of the activity**	**Cooperation with stakeholders in the sense of sustainable development**	**Accountability and transparency obligation to demonstrate sustainable activities**
Weber (2016)		first level				
		second level (starting)				
		third level				
		fourth level (very extensive)				
Jeucken and Bouma (1999)	defensive banking	preventive banking				
		offensive banking				
		sustainable banking (very extensive)				
Tan and Tsionas (2020)	Level 1	Level 2 (starting)				
		Level 3 (extensive)				
		Level 4 (very extensive)				
		Level 5 (all levels pronounced)				
Zimmermann (2019)	narrow strategie	peripheral strategie (starting)				
		balanced strategie (extensive)				
		integrative strategie (very extensive)				
Yip and Bocken (2018)		Archetyp 1				
		Archetyp 2				
				Archetyp 3		
					Archetyp 4	
		Archetyp 5				
		Archetyp 6				
			Archetyp 7			
		Archetyp 8				

Table 6 Overview of terminologies used in the literature on sustainable banking

No.	Author	Year	Definition
1	(Jeucken & Bouma, 1999, S. 28)	1999	Sustainable banking involves the integration of two key manifestations: socially and environmentally responsible initiatives and integration of environmental and social considerations into business strategies and product design. Incorporating environmental criteria into investments and lending may involve price differentials for customers.
2	(Bouma et al., 2001)	2001	Sustainable banking provides financial capital and risk management that is provided to products, projects and organizations that promote (or at least do not harm) economic prosperity, social equity and environmental protection.
3	(Alsina, 2002)	2002	Ethical banks are those that seek to finance profitable economic activities that also have a positive social impact. Ethical banking is part of the solidarity enterprise movement.
4	(Sasia & De la Cruz, 2008)	2008	Ethical banks consist of a heterogeneous group of banking institutions that specialize in financing the most disadvantaged groups, social economy enterprises, non-governmental organizations and companies that behave responsibly towards their human, social and natural environment.
5	(Earhart et al., 2009, S. 4–5)	2009	Sustainable banks have implemented policies and practices that reflect corporate social responsibility (CSR) and have incorporated environmental, social and governance (ESG) principles into their regular business operations. Profitability comes from focusing on explicitly sustainable businesses that provide social, environmental and cultural benefits and enable true economic growth by financing only those businesses and projects that serve sustainability.
6	(Jeucken, 2001)	2001	Sustainable banks are those that offer sustainable products to their customers and promote socially responsible investments. They are assessed by stakeholders based on economic and social performance. Green financial institutions refer to the financial institutions whose external and internal operations, — strategic goals, day-to-day activities, products and services, investment policies, and risk management – the process of decision-making and selection process of stakeholders show respect to the components and the environment, and the society's interests.
7	(GABV, 2012)	2012	Sustainable banks deliver products, services and social, environmental and financial returns to support the real economy. They have decades of experience and can demonstrate a consistent commitment to productive economic activity.
8	(Polonskaya & Babenko, 2012)	2012	Sustainable banking provides an opportunity for the creation of innovative products and services that brings positive social and environmental advantages, such as renewable and more efficient energy, cleaner production processes and technologies, microfinance, biodiversity conservation, provision of financial services for marginalised groups (such as for youths and women), low-income housing, and agency banking.
9	(Singh & Singh, 2012)	2012	Green banking is when normal banking operations take into account additional social and environmental factors to ensure environmental sustainability and proper use of natural resources.
10	(Salzmann, 2013, S. 11)	2013	A sustainable bank – also known as ethical, social, alternative, or civic bank – attends to the social and environmental effects of its investments and loans.
11	(Bundesverband deutscher Banken e.V, 2014, S. 7)	2014	Sustainable banks are economically successful in the long term and at the same time act ecologically and socially.
12	(Rebai, 2014)	2014	Sustainable banking is defined as "a trustworthy banking system that takes into account all internal and external stakeholders, taking into account financial and non-financial factors. It ensures an intermediation activity that takes into account, in particular, social and environmental aspects with short, medium and long term time horizons. It creates ethical values and contributes to the stability and soundness of the financial system by appropriately managing various risks and striving for a continuous and optimal balance between the interests of its stakeholders.
13	(Stankeviciene & Nikonorova, 2014)	2014	Sustainable banking can be seen as a value system that ensures that banks' business is not only beneficial to their employees and shareholders, but also to customers and the economy as a whole. In addition, through concrete action, harmful effects on society and the environment are avoided or reduced to a minimum.
14	(Bouma et al., 2017)	2017	Sustainable banking can be defined as that which provides financial capital and risk management for projects and institutions that promote environmental protection, economic progress and social justice. It is about letting the bank's strategy, projects, operations, products, and services be guided by the principles of sustainability to achieve positive social, environmental, and economic impacts to promote sustainable development. For example, innovative products and services that promote financial inclusion by targeting specific groups (e.g., women, the poor, etc.), support education financing, or encourage the purchase of environmentally friendly products (e.g., green credit cards) can significantly accelerate the achievement of the SDGs.

Table 6 (continued)

No.	Author	Year	Definition
15	(Bouma et al., 2017)	2017	Sustainable banking includes the areas, environmental policies of banks, the importance of transparency and communication between banks and their stakeholders, and the key role of governments, non-governmental organizations and multilateral banks in achieving sustainability. The concept of sustainability is divided into three key factors: environmental, social and governance.
16	(Deloitte, 2017, S. 4–5)	2017	Sustainable banking is the integration of environmental, social and governance (ESG) into traditional banking operations. As of today, it is assumed that the operational and business activities of banks are carried out with conscious consideration of environmental and social impacts. Banking institutions implement sustainable banking both in their internal day-to-day operations (in terms of how they manage their physical branches/locations, human capital, costs, opportunities and risks) and in their activities related to external interactions with their customers and the projects they finance.
17	(Pathak & Tewari, 2017, S. 110–111)	2017	Through the support of governments around the world, banks have begun to play a prominent positive role in the process of sustainable development. Through innovative and more sustainable financial products, on the one hand, their own business activities are made more environmentally friendly, and on the other hand, financial flows are managed in the sense of positive impact finance. As a result, through their actions, banks have the opportunity to reduce income inequality, increase savings rates, boost farmers' yields and alleviate hunger among the population. Banks can also contribute to gender equality and access to clean water.
18	(Raut et al., 2017, S. 551)	2017	A trustworthy banking system accounting for all its internal and external stakeholders considering financial and non-financial factors. It ensures intermediation activities that care in particular about social and environmental aspects with short, medium and long-term horizons. It establishes ethical values and contributes to the stability and soundness of the financial system by adequately managing various risks as well as seeking continuous and optimal trade-off among its stakeholders' interests.
19	(Bose et al., 2018)	2018	"Green banking" includes implementing, supporting and promoting environmentally friendly practices and reducing the carbon footprint in banks' internal and external activities.
20	(Shamshad et al., 2018)	2018	Sustainability in banks describes three spheres - environmental, economic and social. Accordingly, environmental sustainability involves the bank restructuring its activities to promote environmental friendliness by minimizing water consumption, using less paper, using renewable energy, and ensuring that lending is only done to support environmentally friendly projects, such as investing in green funds, green bonds, etc. Economic sustainability addresses the aspects of a bank's operations and support of the economy. This includes corporate philanthropy, consideration of sustainability parameters, clarity of banking operations, governance and standards, and making economically viable investments.
21	(Climent, 2018, S. 4)	2018	Sustainable banking is an alternative form of banking in which ecological, sustainable, ethical and social values are central components of the business strategy. By ethical banking, he means banking institutions that specialize in financing the most disadvantaged groups, social economy enterprises, non-governmental organizations and companies that behave responsibly towards their human, social and natural environment. Furthermore, they strive to finance profitable economic activities that also have a positive social impact.
22	(San-Jose et al., 2018)	2018	The sustainability of banks can be described as the ability to balance their own development and contribution to society with available resources. Dapei economic efficiency reflects the ability of banks to use available resources to generate profits.
23	(Zhixia et al., 2018, S. 573)	2018	Green banking is a form of banking activity where the banks take initiative to do its daily activates as a conscious being in the society by considering in-house and external environmental sustainability. The banks who do such type of banking activities is termed as socially responsible and a sustainable bank or green bank or ethical bank. Such type of banking is not only limited its in-house green activities rather it helps to make the environment green and viable through facilitating green financing.
24	(Costa-Climent & Martinez-Climent, 2018, S. 6)	2018	A sustainable bank promotes stakeholder sustainability in its internal and external activities. It does this by using environmental, social or cultural concerns when selecting ethical investments and by supporting community improvement activities. This requires a view of the environment, the company's purpose, and its desired role in society. In doing so, sustainable banks accept lower profit margins and take more risks, provided the activities undertaken are worthwhile from a sustainable perspective.

Table 6 (continued)

No.	Author	Year	Definition
25	(Costa-Climent & Martinez-Climent, 2018, S. 6)	2018	Sustainable banks have a willingness to forgo maximizing margins and are generally willing to take higher risks to promote certain activities. In doing so, they apply risk-independent premium differentiation - which is not applied in the current system because the risk is too high and the earnings too low.
26	(Yip & Bocken, 2018, S. 150)	2018	Sustainable banking is defined as the delivery of "financial products and services, which are developed to meet the needs of people and safeguard the environment while generating profit.
27	(Bayer et al., 2019, S. 659)	2019	An ethical bank explicitly promotes socially responsible investment strategies, for example, by excluding specific harmful industries such as the arms, gambling, pornography, tobacco, alcohol, and nuclear energy industries, as well as firms that violate labor legislation or human rights, contribute to environmental pollution or destruction, or are involved in corruption.
28	(Kumar & Prakash, 2019)	2019	Sustainable banking implies carrying out banking business by incorporating environmental social and ethical considerations into business strategy and promoting sustainable development. "Sustainability in banking can be adopted by banks in two ways; first through the adoption of environmental and social responsibility in a bank's day to day operations by undertaking environmental consideration initiatives (i.e. zero waste, paperless banking, energy efficiency techniques, etc.) and social development initiatives (e.g. financial inclusion efforts, financial literacy, community welfare programme, etc.). Second, by incorporating environmental and social considerations into the bank's core strategy (i.e. environmental and social impact criteria into financing activities, development of sustainable financial products, etc.).
29	(Kumar & Prakash, 2019, S. 4)	2019	Sustainable banking means incorporating environmental, social and ethical considerations into business strategy when conducting banking operations and promoting sustainable development.
30	(Bayer et al., 2019)	2019	Unlike conventional banks, social banks conduct their business with the aim of creating positive social, environmental or sustainable benefits." This includes incorporating moral principles into the overall business strategy and creating a corporate culture in which investments, customers and employees are treated ethically and with care.
31	(European Comission, 2020)	2020	In the EU's policy context, sustainable finance is understood as finance to support economic growth while reducing pressures on the environment and taking into account social and governance aspects. Sustainable finance also encompasses transparency when it comes to risks related to ESG factors that may have an impact on the financial system, and the mitigation of such risks through the appropriate governance of financial and corporate actors.
32	(Nwagwu, 2020, S. 4)	2020	Sustainable banking combines profit maximization with social and environmental concerns in business operations, credit risk management, and investment decisions to create positive value for society. It is based on the principles of responsible business practices, shared value, and the triple bottom line of environmental, social, and governance (ESG) to address negative footprints and contribute to the transformation of society while remaining profitable.
33	(Nwagwu, 2020, S. 5)	2020	Sustainability in the banking sector can be said to mean the overall development of environment, economy and society with the help of innovative methods such as green finance, green credits, less paper consumption, green service counters, unique financial inclusion products and services, education and health care packages for the poor, etc.
34	(Tan & Tsionas, 2020, S. 4)	2020	Sustainability at banks describes the ability to strike a balance between their own development and contribution to society with the available resources.
35	(Tan & Tsionas, 2020, S. 2)	2020	In the banking sector specifically, we argue that sustainability development mainly concerns the issue of selfdevelopment, as well as contributing to the development of social welfare. Self-development mainly involves performance and stability. Therefore, less volatility of non-performing loans ratios will contribute to the selfdevelopment of banks and further improve sustainability development.
36	(Xu, 2020)	2020	Sustainable banking provides financial products and services that allow incorporating the poorest people into the financial market. Sustainable banking also generates trust, necessary for developing financial markets. Both elements improve financial inclusion, which increases financial development, especially in developing countries.
37	(Da Silva Inácio & Delai, 2021)	2021	Sustainable finance is the inclusion of short-, medium- and long-term environmental, social and governance issues in project financing products, services and practices of any financial organisation.

Table 6 (continued)

No.	Author	Year	Definition
38	(Da Silva Inácio & Delai, 2021, S. 18)	2021	A sustainable bank can generate several positive impacts, both in the economic, social and environmental spheres. The main impacts that can be cited are contribution to economic development, poverty reduction, financial inclusion, promotion of social well-being and prevention of environmental risks through preservation.
39	(wbcsd, 2021, S. 51)	2021	Sustainable finance is when all capital and financial products and services are mobilized in a way that helps support sustainable development
40	(Da Silva Inácio & Delai, 2021, S. 10)	2021	We propose that a sustainable bank is a bank that offers products, services and practices that contribute to sustainable development, benefiting the environmental, social and economic dimensions in the short, medium and long term.
41	(Venanzi & Matteucci, 2021, S. 2)	2021	As an expanded and operationalized sustainability concept, sustainable banking is defined as incorporating lending in green/ethical sectors but also on other broader attributes such as, Ensuring financial stability, reducing systemic risk, supporting the real economy, reduction of business risk, accurate and rigorous assessment of the creditworthiness of borrowers, Long-term horizon in strategies/policies, ensure best practices in corporate governance and incorporating ESG risks into their risk management systems.

in lending. Reuse for society/environment represents the sixth archetype and ensures banking services of high social and environmental value. Banks are experts in this segment and achieve economies of scale. The seventh archetype describes resilience in the lending business and integrates sustainability criteria in the lending process to exclude unsustainable business and minimize sustainability risks. The eighth archetype aims at a consistent offering of active and passive products for savers and investors describes the range of product solutions in general, but also includes crowdfunding and impact investment (Yip & Bocken, 2018).

The following overview (Table 5) breaks down the respective strategic levels according to the categories of the sustainability guidelines developed in Section 3.

In section 3 of this thesis, guidelines and determinant factors of sustainable banking were elaborated and categorized. In comparison, section 4 examined the approaches of a strategic implementation of sustainable banking in business operations. With the exception of the authors Yip & Bocken, the literature deals with a phased approach in the context of a transformation of banking operations. Both Weber, Jeucken & bouma, Tan et al. and Zimmermann describe a modular structure, which starts in the scaling up from a mature implementation to a full integration. These works provide an overview of the minimum requirements that must be strategically integrated into banking operations at each stage and the measures that must be implemented for the next stage. It is noticeable that the strategic levels can essentially be assigned to "Commitment to sustainability and alignment of a sustainable business model" and "Promotion/avoidance of environmentally friendly/environmentally harmful activities and measures" and differ in the various levels in terms of the intensity of implementation. Categories such as risk management, special emphasis on cooperation with all (especially external) stakeholders, or the issue of accountability and transparency obligations are not included in the strategic levels.

Section 5: sustainable banking – definitions and concepts

Sustainable banking is a complex decision problem in which the determinant factors depend heavily on different stakeholders with different, often conflicting, values and preferences (Carlucci et al., 2018, S. 1307). The concept of sustainable banking is a philosophy based on the fundamental belief of Elkington (1997) (Costa-Climent & Martinez-Climent, 2018, S. 6), that the economic, social and environmental opportunities of future generations should not be compromised by today's actions (Elkington, 1997, S. 20). The following section provides an overview of the approaches used in the literature (Table 6) before categorizing them according to Webster and Watson's conceptual model and presenting a further approach towards a definition of sustainable banking.

Following Kumar and Prakash, the sustainable banking framework can be categorized based on different measures (Kumar & Prakash, 2019). For further consideration, a coding scheme was developed for Webster and Watson's conceptual model to elaborate the focus of the definitions.

Based on the terms presented in Table 3, keywords were elaborated to enable categorization. For this purpose, the following dimensions and sub-dimensions were used (Table 7).

To present a consolidated result, the next step was to examine the terminologies used in Table 6 and assign the respective mentions to the dimensions and sub-dimensions shown in Table 7.

Table 7 Dimensions and sub-dimensions of sustainable banking

Dimension	Social, environmental, economic or cultural aspects				sustainable products and services			Funding and financing	Consideration and support of the interests				Resource management / ecological footprint	Sustainability code of conduct, strategy or ESG indexing		
Subdimension	Social / society	Ecological	Economic	Cultural	Price-differentiation	Risk assessment	Sustainability products	Projects / Measures / Activities	Customers	Specific issues (e.g. poverty, women's quotas)	Stakeholder	Gouvernance	Resource use and utilization / environmental protection	Business strategy	ESG	Stability and solidity

Table 8 Consolidated result of the definition analysis on sustainable banking

Citation No.	Social, environmental, economic or cultural aspects				sustainable products and services			Funding and financing	Consideration and support of the interests of different groups			Resource management / ecological footprint		Sustainability code of conduct, strategy or ESG indexing			n=
	Social / society	Ecological	Economic	Cultural	Price-differentiation	Risk assessment	Sustainability products	Projects / Measures / Activities	Customers	Specific issues (e.g., poverty, women's quotas)	Stakeholder	Gouvernance	Resource use and utilization / environmental protection	Business strategy	ESG	Stability and solidity	
1	x	x			x		x							x			5
2	x	x	x			x	x	x									6
3	x		x					x									3
4	x	x						x		x							4
5	x	x	x	x				x						x	x		7
6	x		x			x	x	x	x		x			x			8
7			x				x										2
8	x	x					x			x							4
9	x	x	x				x										4
10	x	x															2
11	x	x	x														3
12	x	x				x					x					x	5
13	x	x						x	x		x						5
14	x	x	x			x	x	x		x				x			8
15											x				x		2
16	x	x						x	x						x		5
17							x			x							2
18	x	x				x					x					x	5
19		x											x				2
20	x	x	x					x					x	x			6
21	x	x						x		x				x			5
22	x		x										x				3
23	x						x										2
24	x	x		x	x	x			x		x						7
25					x	x		x									3
26	x	x	x				x										4
27	x						x										2
28	x	x					x	x		x			x	x			7
29	x	x												x			3
30	x	x							x					x			4
31	x					x						x			x		4

Table 8 (continued)

Citation No.	Social, environmental, economic or cultural aspects				sustainable products and services			Funding and financing	Consideration and support of the interests of different groups			Resource management / ecological footprint		Sustainability code of conduct, strategy or ESG indexing			n=
	Social / society	Ecological	Economic	Cultural	Price-differentiation	Risk assessment	Sustainability products	Projects / Measures / Activities	Customers	Specific issues (e.g., poverty, women's quotas)	Stakeholder	Gouvernance	Resource use and utilization / environmental protection	Business strategy	ESG	Stability and solidity	
32	x	x	x									x	x		x		6
33							x			x			x				3
34	x												x				2
35	x		x														2
36							x			x							2
37	x	x					x					x					4
38	x	x	x	x						x			x				6
39							x										1
40	x	x	x				x										4
41						x	x							x	x		4
n=	32	25	15	3	3	9	18	12	5	9	6	3	8	10	6	2	

The following Table 8 shows the consolidated result of the definition analysis in the form of all occurrence frequencies. In all individual definitions, multiple classifications of the subdimensions are present.

The analysis shows that the dimension "social, environmental, economic or cultural aspects" is mentioned most frequently in the definitions, followed by "sustainable products and services" and "consideration and support of the interests of different groups". The dimension "resource management / ecological footprint" is considered least frequently, with eight mentions (Table 9).

The analysis of the subdimensions shows that an average of 4.049 subdimensions per definition are used to describe sustainable banking.

In the subcategories, consideration of social ($n = 32$), followed by ecological ($n = 25$) aspects receive the most frequent attention. Sustainable banking is often described in the literature to the effect that banks favor social, ecological and cultural projects and measures through their own initiatives (e.g. donations, sponsoring) ($n = 12$), but also, when granting loans by means of risk differentiation ($n = 9$) and price differentiation ($n = 3$), place a greater burden on non-sustainable financing objects in terms of conditions than on those that meet certain sustainability criteria. In addition to differentiation in the lending business, the offer of sustainable investments (e.g. sustainability funds, etc.) in the customer investment business is an essential component of sustainable banking ($n = 18$). Likewise, especially in developing countries, the promotion of initiatives in favor of disadvantaged groups or marginalized groups (e.g. people suffering from poverty, hunger, or also the role of women) falls under the ($n = 9$). However, sustainable banking also includes the economic performance of the banks themselves, the profitability and sustainability of the banks through solid economic performance ($n = 15$). Furthermore, a consistent orientation of the respective overall bank strategy also falls under the concept ($n = 10$). A consistent alignment of the strategy according to social, ecological and economic aspects or even the introduction of ESG principles into regular business operations counts as sustainable banking, in addition to the definition of sustainable, strategic goals.

In summary, the descriptive description of sustainable banking is the combination of strategies and instruments that consistently align daily activities with social, ecological and economic concerns in order to improve the ecological footprint. In doing so, banks make an active contribution to improving the environment and society by, on the one hand, optimizing resources themselves and, on the other, differentiating between sustainable and non-sustainable financing objects through appropriate lending conditions, offering a consistent range of sustainably rated investment products, and promoting social, ecological and socially beneficial initiatives through direct financial benefits. Transparent, non-financial reporting enables measurement and creates comparability for all stakeholders.

Discussion

Research on sustainable banking is still in its initial stages. The development of research has already evolved and continues to place different emphasis (Aracil et al., 2021).

The fundamental trigger for the discussion on sustainable banking can be found in the demand and necessity for sustainable development. Various action plans, NGO movements or reporting measures already enshrined in law have been implemented through environmental policies for CO2 reduction, improved use of renewable and non-renewable resources and thus a more responsible approach to our planet. SDGs, the Paris Climate Agreement or the European Commission assign a high importance to the financial sector through its intermediary role to achieve the set goals (Yip & Bocken, 2018, S. 150) (Bruhns et al., 2020, S. 1) (European Comission, 2020) (Hecker, 2015, S. 61).

Many publications in academia deal with partial aspects of sustainable banking, but to date no work exists that deals with summarizing and comparing findings of the current state of scientific knowledge.

Therefore, a key objective of this study was to present a consolidated result by categorizing the descriptions of sustainable banking used in academia in order to gain a better understanding of the terminology. The definition analysis conducted in this paper shows that the

Table 9 Consolidated result of the definition analysis on dimensions of sustainable banking

Dimension	n
Social, environmental, economic or cultural aspects	$n = 75$
Sustainable products and services	$n = 30$
Funding and financing	$n = 12$
Consideration and support of the interests of different groups	$n = 23$
Resource management / ecological footprint	$n = 8$
Sustainability code of conduct, strategy or ESG indexing	$n = 18$

definitions used predominantly refer to the implementation of social, environmental aspects in the respective business strategies and / or the offering of products with sustainability labels (Table 5). The result confirms earlier findings that sustainable banking is a complex construct with different preferences (Bouma et al., 2001, S. 20) for various stakeholders (Carlucci et al., 2018, S. 1307) (Aras & Crowther, 2009, S. 281).

In the literature, the construct is discussed as a combination of strategies and instruments to make an active contribution to improving the environment and society by optimizing one's own resources and directing capital flows to sustainably labeled products as part of the intermediary role, differentially pricing financing projects according to sustainable and non-sustainable use, and making one's own donation volume available exclusively for social or ecological measures.

This is in line with the findings from sections 3 and 4 of this paper. Thus, the guidelines and determinant factors from regulatory and NGO movements are equally aligned with the core statements that banks should commit to sustainability, promote measures, minimize sustainability risks, and ensure improved collaboration with stakeholders. In this context, the publication of measures is essential from the point of view of the aforementioned organizations, but this cannot be confirmed in the strategic review.

The article also shows that the various forms of definitions, as well as the findings from determinant factors and strategy currently have a purely descriptive character and measurability and comparability is hardly possible due to the lack of a generally accepted sustainability index. Current scientific research on sustainable banking describes possibilities and opportunities for credit institutions, provided that they implement the claim of a sustainable orientation, but still cannot provide a measurable approach for the actual benefit of preserving the natural balance, as Neumann already described in 1994 (Neumann, 1994, S. 77–87).

This is confirmed, among other things, when considering the dimension of sustainable products. Here, the literature shows deficits, as real sustainability impacts on the environment are not captured in any way (Popescu et al., 2021). Shamshad et al. identify sustainable products and services as one of the main determinants of sustainable banking, without referring to a separable assessment code (Shamshad et al., 2018). Also, the fact that dozens of labels and criteria for sustainable products with different characteristics have been developed in recent years prevents clear and consistent information about the environmental benefits of these assets (Megaeva et al., 2021).

In discussing social aspects, studies similarly limit themselves to descriptions of content, without any standardized measurement. San-Jose et al. confirm that due to the lack of standardized indicators, the measurement of the social value of organizations is hardly possible (San-Jose et al., 2018, S. 2). Empirical studies deal with environmental and social aspects of credit institutions, leaving aside careful considerations (Tan & Tsionas, 2020, S. 1).

Frequently cited guidelines, frameworks and determinants for sustainable banking, such as those published by Carlucci et al. (2018), Tan and Tsionas (2020) Shamshad et al. (2018) or Paiva et al. (2021), GABV (2021) or the Collevecchio Declaration (2003), provide guidance on the strategic positioning and commitments that can be used to promote sustainable banking, but also do not provide universally applicable models that allow for standardized comparability.

Until there are universally applicable models for standardized comparability, sustainable banking will remain more conceptual in nature, focusing on efforts and actions to promote and improve life on the planet. Therefore, for a future universally valid classification of sustainable banking, regulatory initiatives such as the EU Sustainable Finance Regulation and the EU Taxonomy Regulation are necessary to enable a uniform understanding and a standardized and comparable representation of the sustainable orientation of finance (Megaeva et al., 2021).

In practice, these findings indicate that it is imperative for banks of the future to push for a sustainable business model transformation, both as an ideological and regulatory perspective. This paper offers consolidated findings from the current scientific literature, which can be used for the own sustainable commitment as well as for own strategic measures.

Conclusion and limitation

The results of this paper contribute to a better understanding of the scientific discussion around sustainable banking. Triggered by the discussions on a more sustainable development on our planet, this literature review shows that finance can make an essential contribution through its intermediary function. The societal change and political aspirations, will transform conventional banking into sustainable banking in the future (Costa-Climent & Martinez-Climent, 2018, S. 8). Even though today the market power of conventional banks is stronger, (Torre Olmo et al., 2021) there will be greater pressure for banks to align their organizational focus more with sustainability issues in order to generate future business opportunities (Carlucci et al., 2018, S. 1306). The financial system is challenged not only to maximize profits but also to take into account ecological limits, social equality and economic justice (Yip & Bocken, 2018) to be implemented on an equal footing in the respective corporate strategies (Collevecchio Declaration, 2003).

It examined how research on the topic has evolved over time, what impact sustainable banking can have, what frameworks and what strategic levels are used in the literature. Various guidelines and determinants already provide a framework for the sustainable transformation of banks' business models.

The main part of this paper analyzes the definition of sustainable banking used in academia and breaks it down into a conceptual model according to different dimensions and sub-dimensions, which allows a representation of the respective focus areas. The analysis shows that "social, environmental, economic or cultural aspects" is most frequently mentioned in the definitions, followed by "sustainable products and services" and "taking into account and supporting the interests of various groups." The dimension "resource management/ecological footprint" is least frequently included, with eight mentions.

A consolidated definition of sustainable banking was derived from the definitions used in the academic community.

The study also shows that the concept of sustainable banking is descriptive in nature and that generally applicable, clear-cut criteria catalogs are absent. Academics are working on various models for assessing and measuring sustainable banking, but a standard will only be achieved through legal regulatory requirements.

This study has several limitations. The literature review is limited to publications published in the databases Web of Science, ECONBIZ and SCOPUS under the topic Sustainable Banking. Another limitation is the focus on publications in Q1, Q2, Q3 and Q4 rated journals. Publications exclusively related to CSR, reporting or risk management were excluded from the analysis. For the analysis, the definitions used in the publications considered as well as the primary sources referenced in each case were included.

Abbreviations

SDG	Sustainable Development Goals
UN	United Nations
IGO	International governmental organization
NGO	Non-governmental organization
CSR	Corporate Social Responsibility
UNEP	United Nations Environment Programme
GABV	Global Alliance for Banking on Values

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Author's contributions
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