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Review of Sustainability Accounting Terms

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Abstract: Sustainability accounting is considered a subcategory of financial accounting that focuses on the disclosure of non-financial information about a company's performance to external parties. Various definitions of sustainability accounting by different authors raise two research questions: RQ1: What is understood by sustainability accounting, as well as which terms are used in relation to sustainability accounting by different authors and organisations? RQ2: What is the relationship between sustainability accounting and the different names used for this term? The aim of this paper is to describe sustainability accounting, identify the terms that are used in relation to sustainability accounting by different authors and organisations, and identify the relationship between sustainability accounting and the different names used for this term. This study is based on information that was gathered through an extensive literature review (research publications and research studies (documents), using the Internet and research databases, and the author's own experience. Methods of analysis, comparison, selection, abstraction, induction, deduction, determination, and statistics were used. This study presents a comprehensive bibliometric analysis in the field of accounting terms. As a result of this study, the term sustainability accounting is defined, as well as its different interpretations and their synonyms, including identification of the relationship between sustainability accounting and the different names used for this term. Sustainability accounting is an essential part of the future of accounting; it includes the TBL quantification of the company's activities, products, and services and integrates sustainability metrics into financial reporting.

Keywords: sustainability; accounting; reporting; triple bottom line

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1. Introduction

Sustainability accounting is the branch of accounting that require organisations to pay attention to environmental, social, and governance matters by disclosing non-financial information about the organisation (Ozili 2021). According to Schaltegger et al. (2006), sustainability accounting and reporting, which serve collection, analysis, and communication functions for corporate sustainability-related information, become crucial triggers for management under corporate sustainability. Sustainability accounting is but one aspect of sustainability (Milne et al. 2009), and yet the term sustainability accounting offers so many different perspectives (Bebbington and Gray 2001; Gray 2010; Sharma 2013; Mistry et al. 2014; Lodhia 2018). This is reflected in the different names used for the term, such as social and environmental accounting, triple bottom line accounting, emissions accounting, and carbon accounting, amongst others (Lodhia, Sumit K., and Umesh Sharma. 2019 Sustainability accounting and reporting: Recent perspectives and an agenda for further research).

According to Schaltegger and Burritt (2010), four possible interpretations for the development of sustainability accounting and the ideas behind them can be distinguished (Table 1), as follows:

(1) An empty buzzword blurring the debate;

(2) A broad umbrella term bringing together existing accounting approaches dealing with environmental and social issues;
(3) An overarching measurement and information management concept for the calculation of corporate sustainability;
(4) A pragmatic, goal driven, stakeholder engagement process that attempts to develop a company-specific and differentiated set of tools for measuring and managing environmental, social, and economic aspects, as well as the links between them.

Table 1. An overview of different interpretations of corporate sustainability accounting according to Schaltegger and Burritt (2010).

Interpretation of Sustainability Accounting	Use Of Sustainability Accounting
It is an illusion and buzzword	Window dressing, "green-washing"
Broad umbrella term	Window dressing or expression of ignorance
Precise overarching measurement approach	One measure covering all aspects of sustainability
Process developing a set of pragmatic information management tools and information	Identification of relevant sustainability issues of the company, overall performance tracking, and measurement with respect to the specific characteristics of relevant sustainability issues

In general (Zvezdov and Schaltegger 2013), sustainability accounting can be understood as an umbrella term that covers various kinds of sustainability-oriented information management and communication, like environmental management accounting or social accounting. For example, according to Schaltegger et al. (2006), sustainability accounting and reporting may include accounting for corporate social responsibility (CSR), which not only covers the company's CSR performance and contributions but should also support participation processes and address the information and communication needs of the costs and benefits associated with stakeholder relationships.

Various definitions of sustainability accounting by different authors raise two research questions:

RQ1: What is understood by sustainability accounting, as well as which terms are used in relation to sustainability accounting by different authors and organisations?

RQ2: What is the relationship between sustainability accounting and the different names used for this term?

The aim of this paper is to describe sustainability accounting, to identify the terms that are used in relation to sustainability accounting by different authors and organisations, and to identify the relationship between sustainability accounting and the different names used for this term.

The paper is organized as follows: Section 2 offers a comprehensive analysis of the existing literature within a field of study, identifying current gaps and problems; Section 3 discusses the main findings, including the relationship between sustainability accounting and the different names used for this term; Section 4 presents the main findings and implications summarized, including recommendations for future research.

2. Literature Review

According to Ozili (2021), practitioners and academics have used several titles to describe sustainability accounting, such as environmental accounting (Gray et al. 1995; Larrinaga-Gonzalez and Bebbington 2001; Lamberton 2005; Jones 2010), environmental reporting (Sahay 2004; Clarkson et al. 2011), social accounting (Mathews 1984; Mathews 1993; Dillard 2014; Retolaza et al. 2016; Perkiss and Tweedie 2017), social and environmental accounting (Ball and Craig 2010; Cormier et al. 2011), corporate social reporting (Gray et al. 1995; Sotorrío and Sánchez 2010; Carnevale et al. 2012; Brennan and Merkl-Davies 2014), corporate social responsibility reporting (Bouten et al. 2011; Belal and Cooper 2011; Dhaliwal et al. 2011), and

non-financial reporting (Stolowy and Paugam 2018; La Torre et al. 2018; Dagilienė and Nedzinskienė 2018). Approaches to sustainability accounting according to selected authors are summarized in Table 2.

Gray (2002) perceived sustainability accounting as social accounting that takes a wide variety of forms and appears under various labels and is used as a generic term for convenience to cover all forms of "accounts which go beyond the economic", as well as for all the different labels under which it appears—social responsibility accounting, social audits, corporate social reporting, employee and employment reporting, stakeholder dialogue reporting, and environmental accounting and reporting. Schaltegger and Burritt (2010) are convinced that changes to conventional accounting have taken the form of environmental accounting as the foundation for external environmental reporting (Schaltegger and Burritt 2000; Yongvanich and Guthrie 2006); triple bottom line accounting, which introduces separate economic, social, and environmental foci for organisations (Elkington 1997; Elkington 1999; Gray and Milne 2002); and sustainability accounting with a main focus on the integration of the social, environmental, and economic facets of organisational activities (Lamberton 2005; Schaltegger and Burritt 2006; Thomson 2007). For example, Lamberton (2005) sees sustainability accounting as another term for environmental accounting or environmental reporting. Elkington (1993) considers sustainability accounting as the most evolved form of environmental accounting; Elkington (1999) describes a form of sustainability accounting referred to as triple bottom line (TBL), which aims to report on an organisation's economic, social, and environmental impacts. According to Schaltegger and Burritt (2010), environmental and triple bottom line accounting and reporting have emerged in this milieu; accountants have begun to consider the potential of new reporting models for business, which include non-financial information.

Table 2. Approaches to sustainability accounting according to selected authors.

Approach to Sustainability Accounting	Author	Definition
environmental accounting	Larrinaga-Gonzalez and Bebbington (2001)	Environmental accounting can be mobilized as a means of encouraging organisations to change in ways that will reduce their unsustainability (this position is described as "organisational change"). Environmental accounting is considered in the context of the environmental agenda and as a part of the process of enabling these organisational changes.
	Lamberton (2005)	According to Lamberton (2005), environmental accounting research has focused considerable attention on the valuation of environmental assets, liabilities, and costs in an attempt to account for the environment, using generally accepted accounting principles.
	Jones (2010)	According to Jones (2010), environmental accounting means the development and operationalisation of an accounting system to measure the environment. Environmental reporting means the reporting of environment accounting to external stakeholders. The authors developed a multilayered theoretical model to underpin environmental accounting and reporting.
environmental reporting	Gray et al. (1995)	Gray et al. (1995) generally consider "environmental reporting and disclosure" to be one facet of social reporting and disclosure.
	Sahay (2004)	Environmental reporting has become a sub-division of the larger area of corporate social reporting. According to Sahay (2004), it is a method of communicating environmental performance.
	Clarkson et al. (2011)	Clarkson et al. (2011) analyse environmental reporting and its relation to corporate environmental performance. The authors consider "environmental reporting" to be environmental disclosures (information).

Table 2. *Cont.*

Approach to Sustainability Accounting	Author	Definition
social accounting	Mathews (1984)	Mathews (1984) distinguishes four categories of social accounting. 1. Social responsibility accounting (SRA): Social responsibility accounting refers to disclosures of financial and nonfinancial, as well as quantitative and qualitative, information about the activities of an enterprise. This area also includes employee reports (ERs) and human resource accounting (HRA). Alternative terms in common use are social responsibility disclosures and corporate social reporting. 2. Total impact accounting (TIA): This term is used here to refer to the aggregate effect of the organisation on the environment. To establish this effect, it is necessary to measure both positive and negative externalities. Because of the origins of this area, it is often referred to as cost benefit analysis (CBA) or social accounting (thereby confusing the use of that term) and social audit. 3. Socio-economic accounting (SEA): Socioeconomic accounting is the process of evaluating publicly funded activities, using both financial and nonfinancial quantification. The entire activity is to be evaluated, with a view of making judgments about the value of expenditure undertaken in relation to the outcomes achieved. 4. Social indicators accounting (SIA): The term social indicators accounting is used to describe the measurement of macro social events, in terms of setting objectives and assessing the degree to which these are attained. The outcomes of this analysis will be of interest to national policy makers.
	Mathews (1993)	According to Mathews (1993), accounting for the organisation's social impact is variously referred to as social accounting, social responsibility accounting, and, here, socially responsible accounting. Social accounting is concerned with the preparation and presentation of "accounts"—not necessarily financial accounts—of an organisation's interaction with the community, environment, employees, and consumers.
	Dillard (2014)	According to Dillard (2014), the purpose of social accounting is grounded in the responsibility of organisations to act in the public's interest.
	Retolaza et al. (2016)	Retolaza et al. (2016) assume the fact that value generated or subtracted by organisations for their stakeholders is not just financial but also social, environmental, and emotional, at least. Social accounting is a system that can enable social value to be objectified, valued, and compared so that different organisations in particular and stakeholders can manage their actions in a way conducive to the optimizing of that value for the entire society in which organisations operate.
	Perkiss and Tweedie (2017)	Perkiss and Tweedie (2017) use the term social and environmental accounting, or social accounting, to broadly refer to "accounts" that extend beyond the conventional financial or economic focus. Hence, social accounting includes practices like social reporting, sustainability reporting, corporate social responsibility reporting, stakeholder dialogue reporting, and environmental reports. The paper analyses, and responds to, one aspect of perceived failures of social accounting to make societies more sustainable.

Table 2. *Cont.*

Approach to Sustainability Accounting	Author	Definition
social and environmental accounting	Ball and Craig (2010)	Ball and Craig (2010) assume the fact that a neo-institutional theory can increase the understanding of an organisation's general response to social and environmental issues and social activism. The purpose is to advance normative perspectives of social and environmental accounting.
	Cormier et al. (2011)	According to Cormier et al. (2011), social and environmental accounting is interpreted as social and environmental disclosures for investors. Social and environmental initiatives and activities are a part of a corporation's corporate social responsibility.
corporate social reporting (corporate social disclosure, social reporting, social report)	Gray et al. (1995)	According to Gray et al. (1995), corporate social and environmental reporting has many virtual synonyms, including corporate social (and environmental) disclosure, social responsibility disclosure and reporting, and even social audit. The principal terms used in their paper are corporate social reporting and corporate social disclosure.
	Sotorrío and Sánchez (2010)	According to Sotorrío and Sánchez (2010), corporate social disclosure or reporting covers a broad and diverse array of matters, including product information, the environmental impact of corporate operations, employment practices and relations, and supplier and customer interactions.
	Carnevale et al. (2012)	Carnevale et al. (2012) use the term social report, which is probably the most important and exhaustive document through which the company shows its commitment to CSR.
	Brennan and Merkl-Davies (2014)	Brennan and Merkl-Davies (2014) use the term corporate social and environmental reporting as a means of demonstrating that an organisation has realigned its practices, policies, and performance in line with the expectations of organisational audiences (retrospective focus).
corporate social responsibility reporting	Bouten et al. (2011)	Corporate social responsibility (CSR) reporting is interpreted as an important aspect of social and environmental accountability and as "comprehensive reporting", which requires companies to disclose three types of information for each disclosed CSR item: (i) vision and goals, (ii) management approach, and (iii) performance indicators.
	Belal and Cooper (2011)	According to Belal and Cooper (2011), organisations use CSR reporting to legitimize their relationship with society and various stakeholders. CSR reporting in the context of a lack of disclosure on three particular eco-justice issues includes child labour, equal opportunities, and poverty alleviation.
	Dhaliwal et al. (2011)	Dhaliwal et al. (2011) find that firms with a high cost of equity capital in the previous year tend to initiate a disclosure of CSR activities in the current year and that initiating firms with superior social responsibility performance enjoy a subsequent reduction in the cost of equity capital.

Table 2. *Cont.*

Approach to Sustainability Accounting	Author	Definition
non-financial reporting	Stolowy and Paugam (2018)	Stolowy and Paugam (2018) define "non-financial reporting" (NFR) and show that the concept of NFR involves dual heterogeneity: heterogeneity in the definitions of the underlying concepts and heterogeneity in the type of channels used for reporting non-financial information. They acknowledge the diversity in the terminology used to refer to this type of reporting, which is interchangeably called "non-financial information", "non-financial reporting" or a "non-financial statement". According to Protin et al. (2014), the following terms are used, in decreasing order of frequency: non-financial information, non-financial reporting, non-financial disclosure, and extra-financial information/disclosure/reporting. Stolowy and Paugam discuss the definitions of the main concepts relating to NFR (e.g., sustainability reporting, CSR reporting, integrated reporting).
	La Torre et al. (2018)	La Torre et al. (2018) consider non-financial reporting in the context of European Union Directive 2014/95 on non-financial and diversity information.
	Dagilienė and Nedzinskienė (2018)	Information disclosure is not only a presentation of significant financial information to investors but also sustainable information disclosure to various stakeholders. Dagilienė and Nedzinskienė explore the impact of different institutional factors on non-financial reporting.

B. Zyznarska-Dworczak (2020) explores how "the importance of sustainability accounting cannot be directly assessed from a trend in sustainability reporting; this is due to the fact that in many regions of the world, sustainability reporting is called differently, and it is prepared according to the various standards; at the same time, accounting used for the purposes of sustainability is also defined differently worldwide, and its significance in relation to sustainability reporting may also be determined variously". To reveal the differences in the development of research on sustainability reporting and sustainability accounting, Zyznarska-Dworczak (2020) conducted a comparative analysis based on bibliometric data about sustainability reporting and sustainability accounting research.

1. The first stage of research is based on three different sets of bibliometric data from 1945–2019 (the number of publications held as source items in the Web of Science; geographical origin of research; ranking of the publications by author). According to the author (Zyznarska-Dworczak 2020),
   - The first studies on sustainability reporting and accounting date back to the 1990s;
   - The beginnings of sustainability accounting developed in a mesoeconomic and macroeconomic approach (Gray 2002; Lodhia, Sumit K., and Umesh Sharma. 2019 Sustainability accounting and reporting: Recent perspectives and an agenda for further research) and provided accounts to society of their resource use;
   - The increase in research on reporting is more dynamic than that in accounting research, and it may be concluded that the role of sustainability accounting does not arise from sustainability reporting;
   - The diverse interest in sustainability accounting and sustainability reporting by country may indicate the different aspects of sustainability accounting and reporting and the difficulty in distinguishing between sustainability reporting and accounting (and their other different forms and terms); furthermore, the different interest in sustainability accounting and reporting can be also interpreted as a niche in sustainability accounting research in Europe.

2. The second stage of research reflects the most cited articles in the Web of Science database relating to sustainability accounting research from 1996–2019. According to the author (Zyznarska-Dworczak 2020), the publications with the highest citation rates (Gray 2002; Burritt and Schaltegger 2010; Wood et al. 2015; Schaltegger and Burritt 2006; Chen and Roberts 2010; Lehman 1999) differ in their approaches to sustainability accounting. These approaches are summarized in Table 3.

Table 3. Approaches to sustainability accounting according to authors with the highest citation rates.

Author	Term of Sustainability Accounting	Approach to Sustainability Accounting
Gray (2002)	social accounting	Social accounting is used here as a generic term for convenience to cover all forms of "accounts which go beyond the economic" and for all the different labels under which it appears—social responsibility accounting, social audits, corporate social reporting, employee and employment reporting, stakeholder dialogue reporting, and environmental accounting and reporting.
Burritt and Schaltegger (2010)	corporate sustainability accounting	From a critical perspective, corporate sustainability accounting is the cause and source of corporate sustainability problems. From a management-oriented path, corporate sustainability accounting is a set of tools that provides help for managers dealing with different decisions.
Wood et al. (2015)	global sustainability accounting	This is a system to operationalize a globally integrated accounting framework within the SEEA guidelines (System of Environmental-Economic Accounts) and to integrate accounting frameworks for the global mapping of environmental, economic, and social impacts.
Schaltegger and Burritt (2006)	sustainability accounting	Sustainability accounting describes a subset of accounting that deals with activities, methods, and systems to record, analyse, and report the following: first, environmentally and socially induced financial impacts; second, the ecological and social impacts of a defined economic system (e.g., the company, production site, nation, etc.); third, and perhaps most important, the interactions and linkages between social, environmental, and economic issues constituting the three dimensions of sustainability.
Chen and Roberts (2010)	social and environmental accounting	By applying these applicable theoretical frameworks to social and environmental accounting, it is possible to examine how firms manage their image when a social expectation is assumed and the targeted audience is not explicitly named (legitimacy theory); the adoption of a specific corporation structure, system, program, or practice that is commonly implemented by similar organisations (institutional theory); the dynamic interactions between two competing or complementary organisations (resource dependence theory); and unexpected social or environmental activities undertaken by corporations (stakeholder theory). There are two theoretical considerations that are important for future social and environmental accounting research. First, it must be acknowledged that some business entities initiate social activities based on direct interactions with stakeholders, whereas others may also undertake similar activities to manage their societal levels of legitimacy. Second, from analysing the perspectives of legitimacy theory, institutional theory, resource dependence theory, and stakeholder theory, it is possible to reach compatible interpretations of business social phenomena.
Lehman (1999)	social and environmental accounting	Social and environmental accounting is used as two interlocking social mechanisms that can be used to engage the hegemonic and destructive forces of the capitalist relations of production. For example, social accounting has been developed to measure and verify the effects of, among other things, the costs of plant closure and the levels of emission, waste, and pollution.

In the *Encyclopedia of Corporate Social Responsibility* (Idowu et al. 2013), in connection with the concept of accounting, there are terms like accounting for the environment, green accounting, social and environmental accounting, environmental financial account-

ing, environmental management accounting, triple bottom line accounting, sustainability management accounting, management accounting, natural resource accounting, ecological accounting, environmentally sensitive accounting, environmental accounting, sustainability accounting, and social accounting (including links to other terms—identified as synonyms). Through a detailed analysis of these terms and their contents, we have summarised an overview of different interpretations of accounting terms and their synonyms, presented in Table 4.

Table 4. An overview of different interpretations of accounting terms and their synonyms.

Term of Accounting	Synonyms	Definition
accounting for the environment	environmentally sensitive accounting	---
environmentally sensitive accounting	accounting for the environment; environmental financial accounting; environmental management accounting; green accounting; natural resource accounting	"Accounting with environmental considerations". (Pahuja 2013)
green accounting	environmental accounting; environmentally sensitive accounting	---
environmental accounting	ecological accounting; green accounting; sustainability accounting	"A branch of accounting that deals with (i) activities, methods and systems, (ii) recording, analysis and reporting, (iii) environmentally induced financial impacts and ecological impacts of a defined economic system". (Schaltegger and Burritt 2000)
social and environmental accounting	social accounting; sustainability accounting	---
social accounting	corporate social reporting; corporate social responsibility reporting; nonfinancial reporting; social and environmental accounting; sustainability accounting; triple bottom line accounting	"A tool of Corporate Social Responsibility: the identification and recording of an entity's activities in terms of its social responsibility". (Torrecchia 2013)
triple bottom line accounting	social accounting	"Triple bottom line accounting widens the conventional reporting structure to include ecological and social performance, in addition to economic performance". (Sitnikov 2013)
sustainability accounting	management accounting; social and environmental accounting; sustainability management accounting	"Sustainability accounting entails systems, methods, and processes of creating sustainability information for transparency, accountability, and decision making purposes. This includes the identification of relevant sustainability issues of the company, the definition of indicators and measures, data collection, overall performance tracking and measurement, as well as the communication with to internal and external information recipients". (Zvezdov and Schaltegger 2013)

Environmentally sensitive accounting, popularly known as environmental accounting or green accounting, refers to the preparation, verification, and disclosure of information relating to environmental activities and the performance of any organisation (government, public sector undertakings, private sector companies, or other entities). According to Pahuja (2013), at a national level, environmental accounting refers to natural resource accounting, which can entail statistics about a nation or region's consumption, extent, quality, and value of natural resources, both renewable and non-renewable. It is sometimes referred

to as "integrated economic and environmental accounting", which involves accounting for stocks and the flow of natural resources in both physical and monetary terms. At the corporate level, environmental accounting includes environmental financial accounting and environmental management accounting.

- Environmental financial accounting refers to the preparation of environmental financial reports for external audiences using generally accepted accounting principles (GAAP); it mainly includes the estimation and public reporting of all significant and financially material environmental information such as significant environmental costs, liabilities, and contingencies. The focus of environmental management accounting is internal.
- Environmental management accounting is the process of identifying, collecting, and analysing information about environmental costs and performance to help an organisation's decision making (Environmental Protection Agency 1995).

Internationally, the first impulse to establish "green accounting" came out of the conference held in Rio in 1992, in which Agenda 21 (work summarizing strategies and actions to promote sustainable development) was defined.

Environmental accounting is a crucial dimension in the process of measuring environmental performance. Although its definition and content are somewhat imprecise (Özmen 2013), environmental accounting provides a framework to analyse environmental costs, incurred in a period of time, on physical and monetary terms and to report them accurately. According to Schaltegger and Burritt (2000), it is "a branch of accounting that deals with (i) activities, methods and systems, (ii) recording, analysis and reporting, (iii) environmentally induced financial impacts and ecological impacts of a defined economic system". From a macro-based approach, environmental accounting can be basically defined as the measurement of environment-related issues and indicators as part of a national income account (Environmental Protection Agency 1995), whereas from a micro-based approach, environmental accounting is "the range of responses by companies to environmental issues in reviewing their environmental position, developing and implementing policies and strategies to improve that position and in changing management systems to ensure on-going improvement and effective management" (Gray et al. 1993). Modifying the study of Bartolomeo et al. (2000), Burritt et al. (2004) explained an integrative model of environmental accounting within a two-dimensional framework based on an early framework of conventional accounting. This model combines the monetary versus physical aspects on an internal–external dimension. In the study by Schaltegger and Burritt (2000), a framework of environmental accounting was introduced that included two accounting systems (Schaltegger and Burritt 2000; Burritt et al. 2004):

- "Environmentally differentiated conventional accounting" as a part of conventional accounting, measuring environmentally induced impacts on a company in monetary terms;
- "Ecological accounting" as an accounting system that refers to the physical impacts of a company on the environment.

In this framework, ecological accounting has three systems (Schaltegger and Burritt 2000):

- Internal ecological accounting systems are designed to collect information, expressed in terms of physical units, about ecological systems for internal use by management;
- External ecological accounting systems are designed to collect and disclose the data for external stakeholders interested in environmental issues;
- Other ecological accounting systems, which also measure data in physical units, provide a means for regulators to control compliance with regulations.

Social accounting is usually considered a subcategory of general accounting that focuses on the disclosure of nonfinancial information about an entity's performance to stakeholders and, in this way, fills the information gap in financial accounting. Social accounting has been defined in different ways. According to Torrecchia (2013),

- Some studies in the literature see social accounting in a broader sense and just assimilate it to CSR, considering them to be the same thing;
- Other scholars regard it from an ethical point of view (what an entity should do to be accountable);
- Others simply identify social accounting as aiming to help society by providing different facilities to entities and recording their activities;
- But there is also a part of the literature that supports a negative relationship between reporting and responsibility, regarding social practices.

Social accounting, in a narrow sense (Torrecchia 2013), can be defined as a "tool" of corporate social responsibility—the identification and recording of an entity's activities in terms of its social responsibility; therefore, it is a useful means of documenting an entity's achievements and building a historical record of its activities. According to Gray (2000), a broad definition of social accounting might be "the preparation and publication of an account about an organisation's social, environmental, employee, community, customer and other stakeholder interactions and activities and, where possible, the consequences of those interactions and activities. The social account may contain financial information but is more likely to be a combination of both quantified non-financial information and descriptive non-quantified information. The social account may serve a number of purposes but the accomplishment of the organisation's accountability to its stakeholders must clearly be the dominant of those reasons and the basis upon which the social account is judged".

Sustainability accounting entails (Zvezdov and Schaltegger 2013) "systems, methods, and processes of creating sustainability information for transparency, accountability, and decision making purposes. This includes the identification of relevant sustainability issues of the company, the definition of indicators and measures, data collection, overall performance tracking and measurement, as well as the communication with to internal and external information recipients". According to them, sustainability accounting can be seen as comprising three core elements: sustainability information generation and management, sustainability management control, and sustainability reporting (Table 5).

Table 5. The three core elements of sustainability accounting according to Zvezdov and Schaltegger (2013).

Core Element	Description
sustainability information generation and management	The aspects of information generation and management to be considered include the following: Who within the company is involved with the process of sustainability accounting? What kind of sustainability information is generated? Why is the sustainability information generated? Who uses sustainability information? How are data collection and information creation organized? What sustainability management accounting methods are applied?
sustainability management control	The central task is to "translate" strategies into strategic management action. One practice-oriented concept of sustainability management control is framed within the structure of the sustainability balanced scorecard (SBSC), which provides a framework for organizing sustainability management control and its orientation toward the effective and efficient implementation of a company's strategy. This allows for distinguishing between the following orientations: finance-oriented sustainability management control; market-oriented sustainability management control; process-oriented sustainability management control; knowledge- and learning-oriented sustainability management control; and non-market-oriented sustainability management control.
sustainability reporting	Sustainability reporting encompasses formal and official corporate communication, which provides information about corporate sustainability issues. This includes, in particular, information about the social, environmental, and economic performance and the relationships between these aspects of corporate performance.

3. Results

3.1. Defining the Keywords

In identifying the keywords used in a comprehensive bibliometric analysis, we relied on the terms that were used in relation to sustainability accounting by different authors and organisations (see Literature Review). We considered the research of authors such as Ozili (2021); Gray (2002); Schaltegger and Burritt (2010); Lamberton (2005); Elkington (1993); and Idowu et al. (2013). Each of the defined keywords was searched in the Web of Science (WoS) and Scopus databases according to the procedure described in Research Methodology. An overview of keywords in the field of sustainability accounting, including criteria for the first mention in individual databases and the number of articles in which a particular keyword appeared, is presented in Table 6.

Table 6. An overview of keywords in the field of sustainability accounting according to selection criteria.

Keywords in the Field of Sustainability Accounting	First Mention in WoS	Number in WoS	First Mention in Scopus	Number in Scopus
accounting for the environment	1991	30	1975	38
carbon accounting	1995	1277	1990	1561
corporate social reporting	1976	108	1977	162
corporate sustainability accounting	2006	3	2006	4
corporate social responsibility reporting or CSR reporting	2005	848	2004	927
ecological accounting	1997	65	1995	86
economic and environmental accounting	2000	10	2000	12
emissions accounting	1993	491	1985	404
employee reporting	1981	18	1977	25
employment reporting	2017	4	2020	1
environmental accounting	1987	1189	1976	1618
environmental accounting and reporting	1993	38	1991	58
environmental financial accounting	2009	5	2010	6
environmental management accounting	2003	276	2000	314
environmental reporting	1979	715	1976	1118
environmentally sensitive accounting		0	2022	1
global sustainability accounting	2015	1	2015	1
green accounting	1992	210	1992	277
management accounting	1951	3634	1954	4327
natural resource accounting	1986	45	1986	74
nonfinancial reporting or non-financial reporting	2003	542	1999	656
social accounting	1923	1181	1946	1567
social and environmental accounting	1992	201	1992	325
social audits	1978	60	1977	102
social responsibility accounting	1976	27	1982	29
stakeholder dialogue reporting		0		0
sustainability accounting	2003	323	1999	389
sustainability management accounting	2006	26	2006	29
sustainability reporting and accounting	2008	5	2008	5
triple bottom line accounting or TBL accounting	2004	25	2000	27

3.2. Relationships between Keywords

The relationships between keywords in the field of sustainability accounting were illustrated by a keyword co-occurrence map based on exported bibliographic data and created using the program VOSviewer_1.6.20. The creation of the maps consisted of two phases:

1. From the data, based on the analysis of the co-occurrence of keywords, we generated a set of all keywords identified by VOSviewer in the data; from WoS data, it was a set of 22,801 keywords, and from Scopus data, it was a set of 10,325 keywords. From the given files, we created a VOSviewer thesaurus file, which was used to merge different variants of a keyword and also to ignore irrelevant terms (see Tables 7 and 8).
2. We created two keyword co-occurrence maps (see Figures 1 and 2) based on exported bibliographic data under the condition that the minimum number of occurrences of a keyword was set at five and the total link strength was at least 1 (52 keywords met the threshold for bibliographic data from WoS and 49 met the threshold for bibliographic data from Scopus).

Table 7. Occurrences and total link strength of WoS keywords.

WoS Keyword	Occurrences	Total Link Strength
corporate social responsibility	1086	1384
management accounting	877	126
sustainability	803	945
environmental accounting	627	321
carbon accounting	416	64
governance	394	594
sustainability reporting	333	580
social accounting matrix	308	9
csr reporting	306	454
quality	265	383
nonfinancial reporting	262	334
environmental reporting	234	198
social accounting	158	123
global reporting initiative	141	276
sustainability accounting	117	142
green accounting	104	71
social and environmental accounting	93	109
social reporting	88	117
corporate sustainability	83	141
ethics	74	103
social and environmental reporting	52	66
competitive advantage	46	36
environmental	45	78
social	39	68
environmental sustainability	38	37
success	34	16

Table 7. *Cont.*

WoS Keyword	Occurrences	Total Link Strength
emissions accounting	33	7
business ethics	27	32
ecology	27	21
ecological accounting	24	10
social audits	20	18
competitiveness	18	15
natural resources accounting	15	3
sustainability management	14	24
water accounting	13	13
social sustainability	12	14
esg reporting	11	28
social responsibility accounting	11	4
voluntary reporting	11	24
corporate environmental responsibility	10	22
social responsibility reporting	10	14
sustainability accounting and reporting	9	13
environmental accounting and reporting	8	12
social and environmental accounting and reporting	8	8
ethical decision making	7	9
sustainability management accounting	7	7
environmental audit	6	5
gri reporting	6	15
tbl accounting	6	9
biodiversity reporting	5	7
economic sustainability	5	5
ecosystem accounting	5	4

Table 8. Occurrences and total link strength of Scopus keywords.

Scopus Keyword	Occurrences	Total Link Strength
management accounting	1583	64
environmental accounting	753	277
carbon accounting	549	24
environmental reporting	546	200
corporate social responsibility	482	325
social accounting matrix	438	8
sustainability	436	357
social accounting	392	111
green accounting	210	89
ecology	144	117
social reporting	122	95

Table 8. *Cont.*

Scopus Keyword	Occurrences	Total Link Strength
global reporting initiative	96	148
sustainability reporting	77	147
environmental audit	75	62
ethics	63	53
csr reporting	62	51
corporate sustainability	50	81
natural resource accounting	50	43
social and environmental accounting	49	31
sustainability accounting	45	77
business ethics	42	45
social and environmental reporting	37	32
ecological accounting	34	13
competitive advantage	32	26
governance	28	8
social audits	27	15
nonfinancial reporting	26	21
sustainability management	23	23
water accounting	18	30
economic sustainability	17	17
competitiveness	16	17
sustainability management accounting	16	27
quality	15	9
ecological social accounting matrix	12	12
tbl accounting	12	26
corporate environmental responsibility	11	18
emissions accounting	11	7
social and ecological accounting matrix	10	5
tbl reporting	10	20
employee reporting	9	7
accounting for sustainability	6	6
environmental social accounting matrix	6	1
social and environmental accounting and reporting	6	12
voluntary reporting	6	6
environmental accounting and reporting	5	5
environmental and ethical reporting	5	5
ethical responsibility	5	10
social management accounting	5	10
stakeholder reporting	5	5

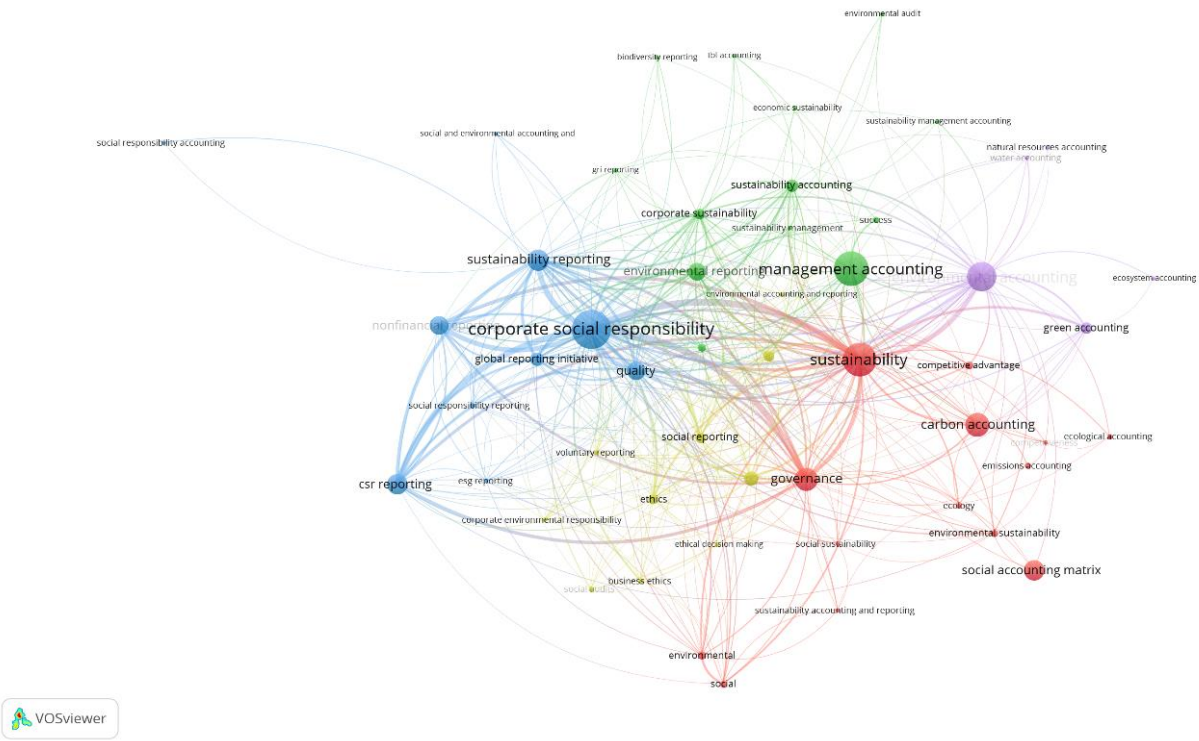

Figure 1. VOSviewer network visualisation of association strength in the field of accounting terms—WOS data (for clustering, the minimum cluster size was set at five, and the five clusters were created by VOSviewer; each cluster contains a combination of keywords in a specified colour).

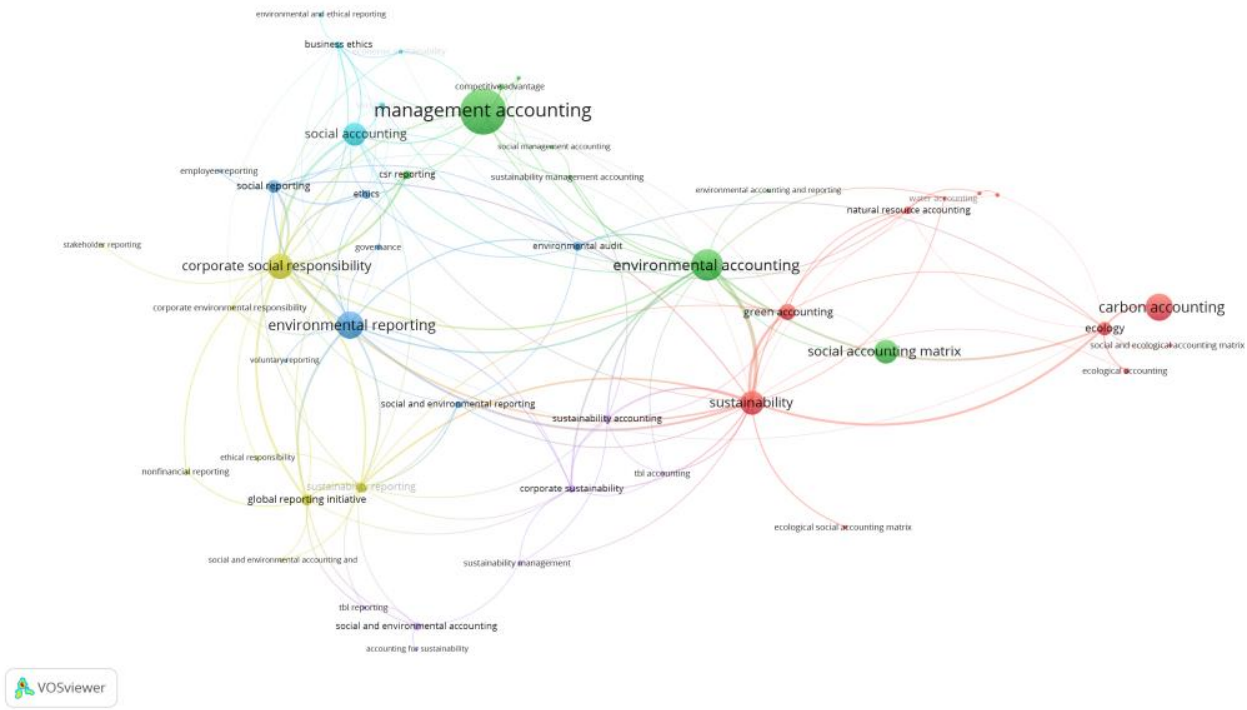

Figure 2. VOSviewer network visualisation of association strength in the field of accounting terms—Scopus data (for clustering, the minimum cluster size set at five, and the six clusters were created by VOSviewer; each cluster contains a combination of keywords in a specified colour).

Figure 1 consists of 52 keywords that are grouped into five clusters, with the strongest cluster according to the occurrences and total link strength of the keywords being the blue

cluster. The size of each circle determines the importance of the keyword. The top five most significant keywords are corporate social responsibility; management accounting; sustainability; environmental accounting; and carbon accounting. Figure 2 consists of 49 keywords that are grouped into six clusters, with the strongest cluster according to the occurrences of the keywords being the green cluster and the strongest cluster according to the total link strength of the keywords being the red cluster. The size of each circle determines the importance of the keyword. The top five most significant keywords are management accounting; environmental accounting; carbon accounting; environmental reporting; and corporate social responsibility. The following keywords are among the top five most significant, regardless of the chosen database (WoS, Scopus): management accounting; environmental accounting; carbon accounting; environmental reporting; and corporate social responsibility.

4. Research Methodology

This current study presents a comprehensive bibliometric analysis in the field of accounting terms and uses the VOS viewer to present visualisations of the bibliographic data, including the co-occurrence of keywords. Different interpretations of accounting terms and their synonyms were analysed on the basis of their occurrences in articles indexed in the WoS and Scopus databases. All analyses were carried out as of 16 January 2024. We proceeded as follows:

- We defined keywords in the field of accounting (see Table 6).
- We had each of the defined words searched first in the given database (WoS, Scopus).
- When searching the WoS database, we used WOS Field Tags Topic (TS), which searches the title, abstract, author keywords, and Keywords Plus. To find documents that contained an exact phrase, we enclosed the phrase in quotation marks (example for accounting for the environment: "accounting for the environment"; query link: https://www.webofscience.com/wos/woscc/summary/b11bd265-d94f-4f55-b4c3-61b59f4fca52-caea992e/date-ascending/1 (accessed on 16 January 2024)).
- For the terms, we also considered the possibilities of different wording and use of abbreviations, e.g., "Triple bottom line accounting" or "TBL accounting"; in this case, the search was focused on the occurrence of one or the other term (query link: https://www.webofscience.com/wos/woscc/summary/b99fd232-4e25-4691-b1c1-611830e8ef2c-62a07416/relevance/1 (accessed on 16 January 2024)).
- When searching the Scopus database, we used search field tags TITLE-ABS-KEY, which search the title, abstract, and keywords. To find documents that contained an exact phrase, we enclosed the phrase in braces (example for accounting for the environment: {accounting for the environment}); the rest of the procedure was the same as for the WoS database.
- In the next step, we included all keywords in the field of accounting in the search and found the total number of articles where any of the terms appeared; for the WoS and Scopus databases, the total was 10,238 and 12,656 records, respectively.
- Then, we used the export records function.
    a. In the case of WoS, we exported the records as a plain text file. We chose custom export selections and marked, on export, author(s), title, source, abstract, and keywords; due to the fact that WoS does not allow for exporting more than 1000 records at a time, we exported a total of 11 files.
    b. In the case of Scopus, we exported the records as a CSV file, etc. As for WoS, we marked, for export purposes, author(s), document title, source title, abstract, author keywords, and indexed keywords; it is possible to export up to 20,000 documents in CSV format, so our export contained only one file.
- Consequently, in the program VOSviewer_1.6.20, we created a map based on exported bibliographic data. We chose this option to create a keyword co-occurrence map; as the type of analysis, we chose the co-occurrence of keywords.

- The overall map creation in VOSviewer_1.6.20 consisted of several phases; maps were created on the basis of bibliographic data (11 plain text files from WoS and 1 CSV file from Scopus) separately for WoS and Scopus (due to the capabilities of the software).
  a. In the initial phase, we generated a set of all keywords identified by VOSviewer in the data; based on the analysis of the co-occurrence of keywords from WoS data, it was a set of 22,801 keywords, and from Scopus data, it was a set of 10,325 keywords. From the given files, we created a VOSviewer thesaurus file, which was used to merge different variants of a keyword and also to ignore irrelevant terms.
     i. For example, for the terms corporate responsibility reporting (csr); CSR reporting; corporate social responsibility ('csr') reporting; corporate social responsibility (csr) reporting; and corporate social responsibility reporting, the term CSR reporting was used.
     ii. For the terms non financial reporting; non- financial reporting; non-(financial) reporting; non-financial reporting; non-financial reporting (nfr); non-financial reporting; non/financial reporting; and nonfinancial reporting, the term nonfinancial reporting was used.
  b. Then, we created two keyword co-occurrence maps based on exported bibliographic data and created thesaurus files; the minimum number of occurrences of a keyword was set at five, and the total link strength was at least one. In total, 52 keywords met the threshold for bibliographic data from WoS, and 49 met the threshold for bibliographic data from Scopus.

5. Discussion and Conclusions

5.1. Interpretation of Research Question 1

RQ1: What is understood by sustainability accounting, as well as which terms are used in relation to sustainability accounting by different authors and organisations?

The answer to this question arises from the research of authors such as Ozili (2021), Gray (2002); Schaltegger and Burritt (2010); Lamberton (2005); Elkington (1993); and Idowu et al. (2013) (see Literature Review). Different interpretations of accounting terms and their synonyms were analysed based on their occurrences in articles indexed in the WoS and Scopus databases as of 16 January 2024 (see Table 6). The following research findings were obtained from the comprehensive bibliometric analysis performed:

- Sustainability accounting as a separate term occurs in articles registered in the WoS database at a number of 323 and, in the Scopus database, at a number of 389.
  Ultimately, the lower frequency of occurrence of this concept in the identified databases reflects the fact that sustainability is not looked at comprehensively (while maintaining the TBL principle) but in many cases only through an environmental or social sphere.
- The term sustainability accounting occurs in different interpretations and their synonyms. With regard to the frequency of occurrence, these are terms such as management accounting, carbon accounting, environmental accounting, social accounting, CSR reporting, environmental reporting, non-financial reporting, and emissions accounting, with a lower incidence (less than 300) of interpretations in the form of environmental management accounting, green accounting, social and environmental accounting, and corporate social reporting.
  Ultimately, the term sustainability accounting can be seen on two levels, namely environmental and social (Figure 3). Differences in the perception of this concept are related to the individual opinions of the authors themselves (experts from industry and academia) on the meaning and characteristics of the concept of sustainability. The intersection between the environmental and social spheres is social and environmental accounting, which highlights two areas of sustainability, and management accounting, which appears in three basic positions: as a synonym for sustainability accounting, as a traditional tool for the gathering and presenting of financial information to busi-

ness managers and other stakeholders within an organisation, and as a guideline for businesses in environmental and social fields.

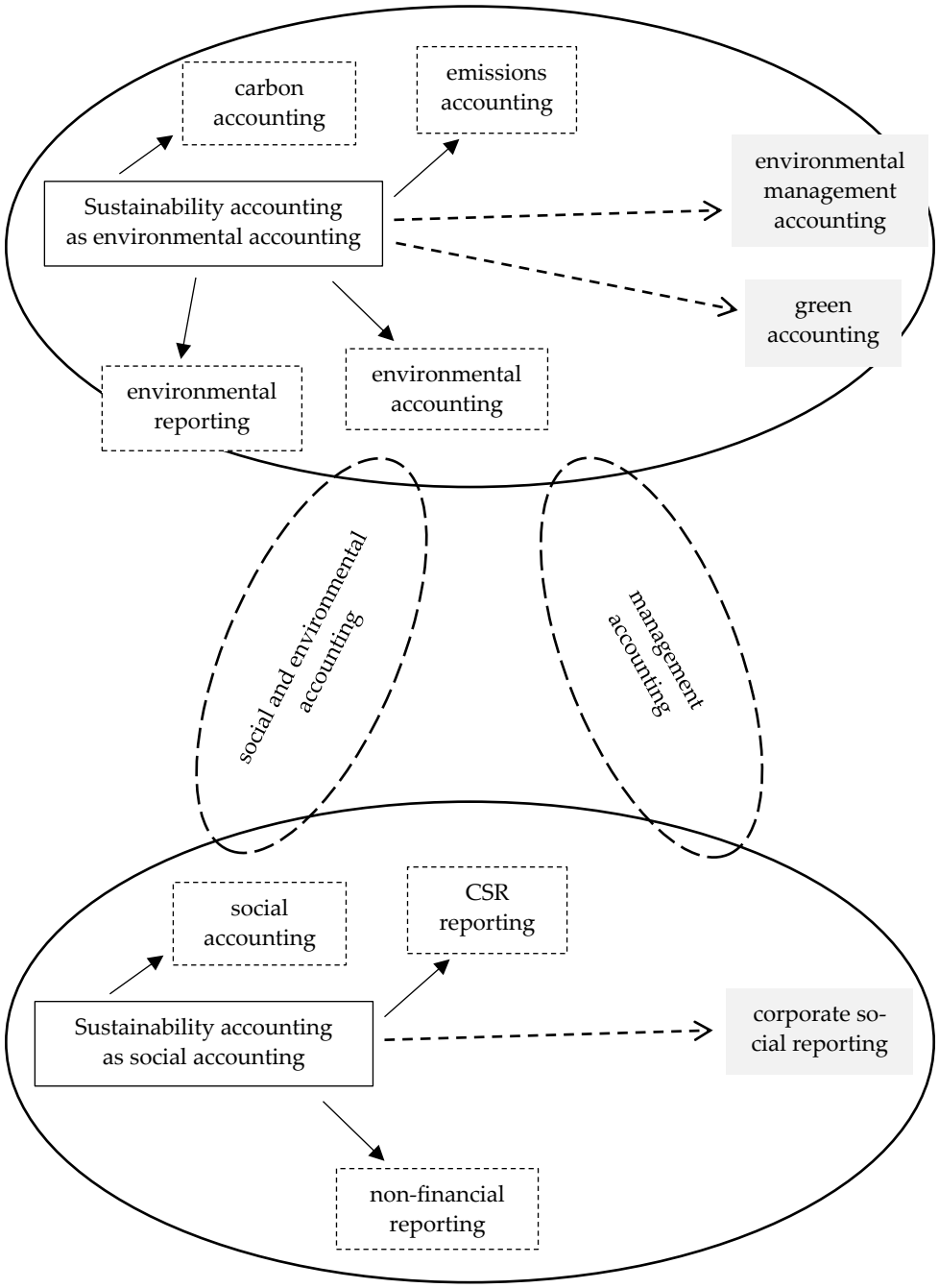

Figure 3. Terms in relation to sustainability accounting.

5.2. Interpretation of the Research Question 2

RQ2: What is the relationship between sustainability accounting and the different names used for this term?

The answer to this follows from the analysis of two keyword co-occurrence maps based on exported bibliographic data from articles indexed in the WoS and Scopus databases (see Figures 1 and 2). The outputs of clustering created by the VOSviewer are presented in Table 9.

Table 9. Clustering created by the VOSviewer of WoS keywords.

Cluster	WoS Keyword	Occurrences	Total Link Strength
Cluster RED (14 items)	sustainability	803	945
	carbon accounting	416	64
	governance	394	594
	social accounting matrix	308	9
	competitive advantage	46	36
	environmental	45	78
	social	39	68
	environmental sustainability	38	37
	emissions accounting	33	7
	ecology	27	21
	ecological accounting	24	10
	competitiveness	18	15
	social sustainability	12	14
	sustainability accounting and reporting	9	13
Cluster GREEN (13 items)	management accounting	877	126
	environmental reporting	234	198
	sustainability accounting	117	142
	corporate sustainability	83	141
	social and environmental reporting	52	66
	success	34	16
	sustainability management	14	24
	sustainability management accounting	7	7
	gri reporting	6	15
	environmental audit	6	5
	tbl accounting	6	9
	biodiversity reporting	5	7
	economic sustainability	5	5
Cluster BLUE (10 items)	corporate social responsibility	1086	1384
	sustainability reporting	333	580
	csr reporting	306	454
	quality	265	383
	nonfinancial reporting	262	334
	global reporting initiative	141	276
	esg reporting	11	28
	social responsibility accounting	11	4
	social responsibility reporting	10	14
	social and environmental accounting and reporting	8	8
Cluster SAND (10 items)	social accounting	158	123
	social and environmental accounting	93	109
	social reporting	88	117
	ethics	74	103
	business ethics	27	32
	social audits	20	18
	voluntary reporting	11	24
	corporate environmental responsibility	10	22
	environmental accounting and reporting	8	12
	ethical decision making	7	9
Cluster PURPLE (5 items)	environmental accounting	627	321
	green accounting	104	71
	natural resources accounting	15	3
	water accounting	13	13
	ecosystem accounting	5	4

Following the identification of clusters, we found a link between the term sustainability accounting and other concepts. The term is linked with 27 other terms (see Figure 4), as follows:

- Sustainability; carbon accounting; governance; ecology (from the red cluster);
- Corporate social responsibility; sustainability reporting; CSR reporting; quality; global reporting initiative; ESG reporting (from the blue cluster);
- Social accounting; social and environmental accounting; ethics; social audits; environmental accounting and reporting (from the sand cluster);
- Environmental accounting; green accounting; water accounting (from the purple cluster);
- Management accounting; corporate sustainability; social and environmental reporting; success; sustainability management; sustainability management accounting; GRI reporting; TBL accounting; economic sustainability (from the green cluster).

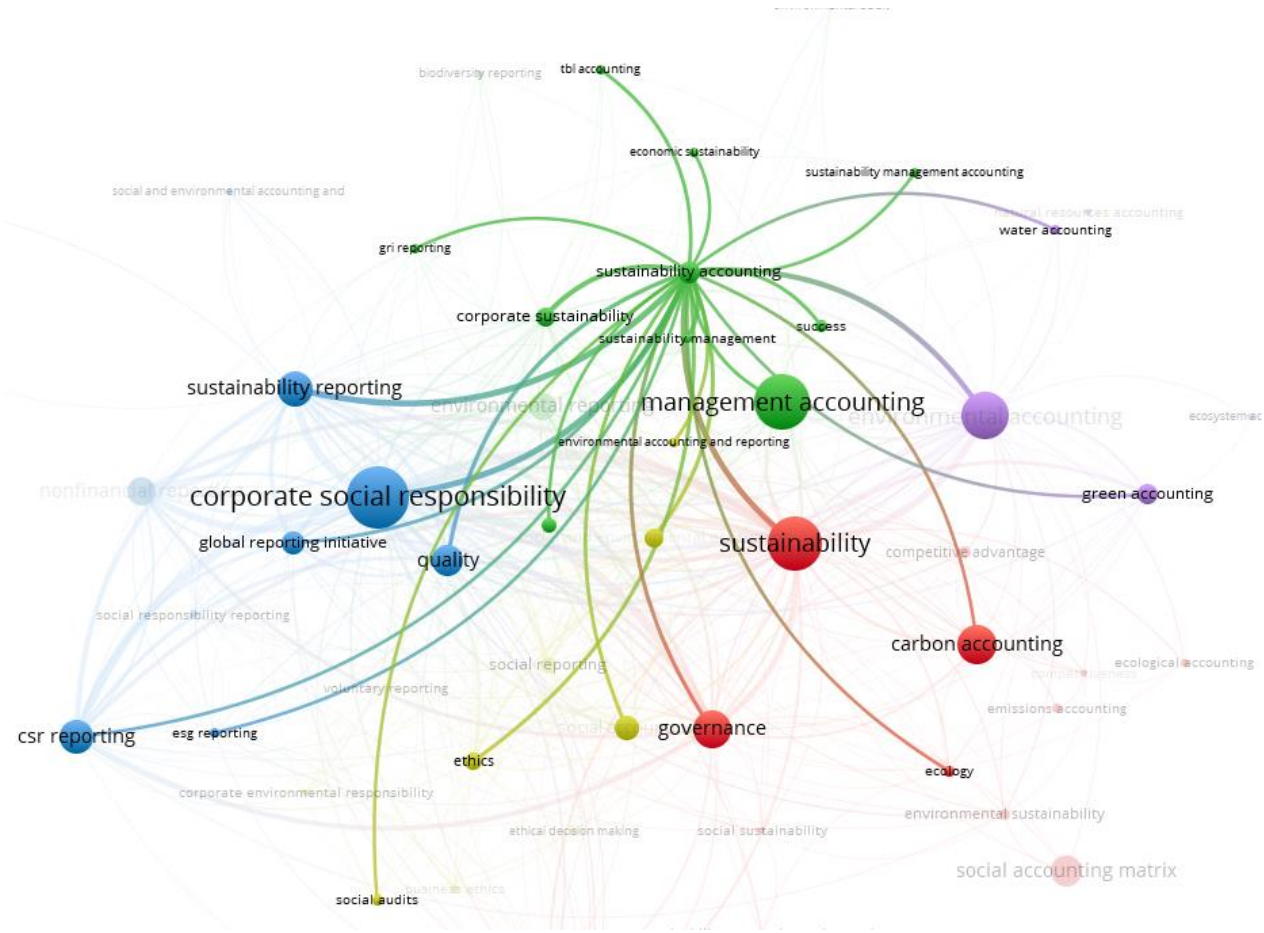

Figure 4. The link between the term sustainability accounting and other concepts (WoS keywords).

We followed a similar approach when identifying clusters in the keyword co-occurrence map based on exported bibliographic data from articles indexed in the Scopus database (see Table 10).

Following the identification of clusters, we found a link between the term sustainability accounting and other concepts. The term is linked to eight other terms (see Figure 5):

- Sustainability; green accounting (from red cluster);
- Environmental accounting; sustainability management accounting (from green cluster);
- Sustainability reporting (from sand cluster);
- Corporate sustainability; sustainability management; TBL accounting (from purple cluster).

Table 10. Clustering created by the VOSviewer of Scopus keywords.

Cluster	Scopus Keyword	Occurrences	Total Link Strength
Cluster RED (11 items)	carbon accounting	549	24
	sustainability	436	357
	green accounting	210	89
	ecology	144	117
	natural resource accounting	50	43
	ecological accounting	34	13
	water accounting	18	30
	competitiveness	16	17
	ecological social accounting matrix	12	12
	emissions accounting	11	7
	social and ecological accounting matrix	10	5
Cluster GREEN (10 items)	management accounting	1583	64
	environmental accounting	753	277
	social accounting matrix	438	8
	csr reporting	62	51
	competitive advantage	32	26
	sustainability management accounting	16	27
	quality	15	9
	environmental social accounting matrix	6	1
	social management accounting	5	10
	environmental accounting and reporting	5	5
Cluster BLUE (8 items)	environmental reporting	546	200
	social reporting	122	95
	environmental audit	75	62
	ethics	63	53
	social and environmental reporting	37	32
	governance	28	8
	employee reporting	9	7
	voluntary reporting	6	6
Cluster SAND (8 items)	corporate social responsibility	482	325
	global reporting initiative	96	148
	sustainability reporting	77	147
	nonfinancial reporting	26	21
	corporate environmental responsibility	11	18
	social and environmental accounting and reporting	6	12
	ethical responsibility	5	10
	stakeholder reporting	5	5
Cluster PURPLE (7 items)	corporate sustainability	50	81
	social and environmental accounting	49	31
	sustainability accounting	45	77
	sustainability management	23	23
	tbl accounting	12	26
	tbl reporting	10	20
	accounting for sustainability	6	6
Cluster BRIGHT CERULEAN (5 items)	social accounting	392	111
	business ethics	42	45
	social audits	27	15
	economic sustainability	17	17
	environmental and ethical reporting	5	5

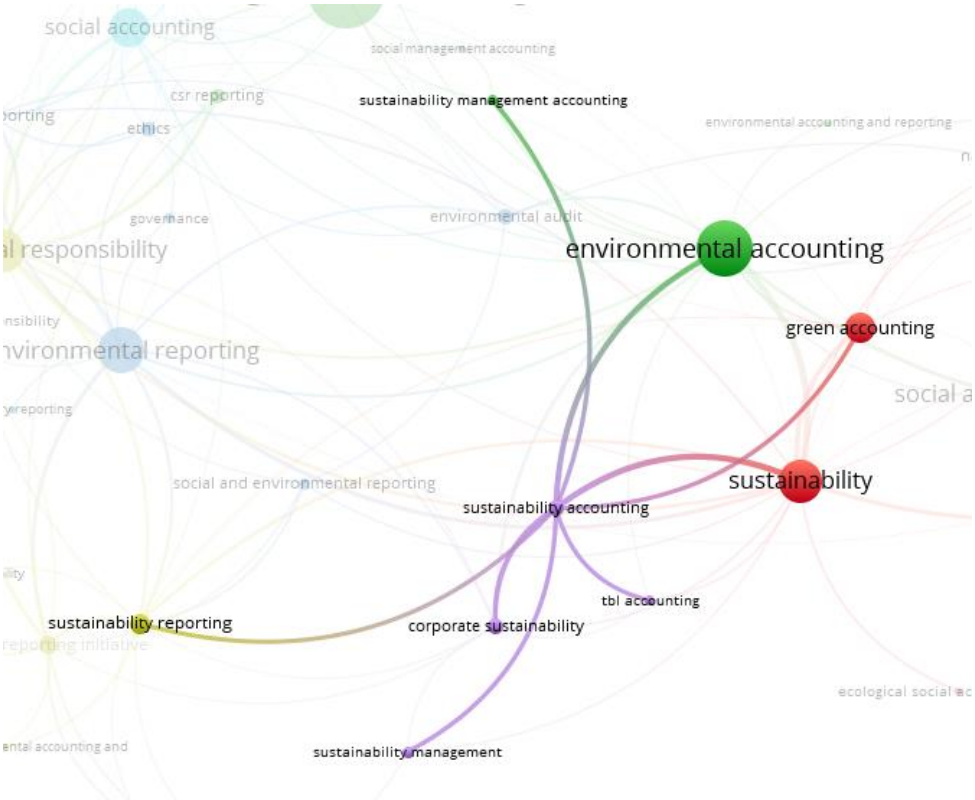

Figure 5. The link between the term sustainability accounting and other concepts (Scopus keywords).

5.3. Research Limitations and Contributions of This Study

In the context of the research carried out and the results presented, using only WoS and Scopus databases for searching articles based on defined keywords, the following limiting factors should be highlighted:

- Due to the fact that the databases do not include the full texts of the indexed articles, the search results are only sources, where the keywords defined by us in the field of accounting (see Table 6) were found in title, abstract, and in the indexed keywords (author keywords (WoS), Keywords Plus (WoS), keywords (Scopus)). In this way, sources where the keywords we defined were in the full text but were not part of the title, abstract, or indexed keywords of the article could be omitted from the output.
- Not all sources indexed in the databases have listed author keywords (WoS), Keywords Plus (WoS), keywords (Scopus), and abstract.
  Also, for this reason, there may have been unidentified sources that dealt with keywords as defined by us.
- The time of generating outputs, as the frequency of occurrences of resources containing given keywords, changes over time.

Despite these limitations, the contribution of the research lies primarily in the following aspects:

1. Defining the term sustainability accounting, its different interpretations, and their synonyms (such as green, environmental, economic, cost, financial, etc.) including the identification of the relationship between sustainability accounting and the different names used for this term.
   Explanation: Sustainability accounting is an essential part of the future of accounting; it includes the TBL quantification of the company's activities, products, and services and integrates sustainability metrics into financial reporting. Accountants who want to build a successful career in accounting must understand the difference between sustainability accounting and sustainability reporting. That means communicating a

business's sustainability performance and practices to external stakeholders (London Premier Centre 2023). Similar opinions have also been studied (Schaltegger et al. 2006). According to them, the zenith of accounting and reporting at present is sustainability accounting and reporting, with its conceptual emphasis on accounting for ecosystems and for communities and the consideration of eco-justice, as well as more conventional issues of effectiveness and efficiency. Under this view (Schaltegger et al. 2006), the term sustainability accounting is used to describe new information management and accounting methods that aim to create and provide high-quality information to support a corporation in its movement towards sustainability.

Distinguishing the differences between the terms not only arises from the need for accounting practice (Çalışkan 2014; Politzer 2021; ACCA 2024) and the need to implement the concept of sustainability into a company's strategy (Ameer and Othman 2012; Shad et al. 2019; Breu et al. 2021; Tarnovskaya 2023) but also from understanding the content of the analysed terms, which helps us understand the meaning of the increasing number of reporting regulations, government pressures, international verification, and accounting standards, as well as changing stakeholder strategies and demands. Evidence of this is also found in the findings on perceptions of the expressions of sustainable accounting.

2. Emphasising the importance and position of sustainability accounting in the internal and external environment of the company.

   Explanation: There are three objectives of sustainability accounting (Ozili 2021): The first objective is to prepare accounts concerning organisations' interactions with society and the natural environment; the second objective of sustainability accounting is to disclose financial and non-financial information about an organisation's performance in relation to society and the environment; and the third objective is to extend traditional financial accounting to take into account a wide range of monetized information, covering environmental, social, and economic impacts, on which organisational decisions are made. The importance of sustainability accounting and its implications for accountants has been the subject of analysis in several studies (KPMG 2021; Joseph 2023; Low 2023; Westford Uni Online 2023). Schaltegger and Burritt (2010) identified six reasons that may encourage managers to establish an accounting system that provides information for assessing corporate actions on sustainability issues, such as greenwashing; mimicry and industry pressure; legislative pressure, stakeholder pressure, and ensuring the "licence to operate"; self-regulation; corporate responsibility and ethical reasons; and managing a business case for sustainability.

   Recently, there has been significant legislative pressure, which started to manifest itself, first of all, from 2013 onwards in connection with the adjustment of the reporting of financial and non-financial information. What, for many companies, was initially on a voluntary basis (Non-financial Reporting Directive) is gradually becoming a statutory requirement (the Corporate Sustainability Reporting Directive). However, this does not mean that other companies will avoid reporting ESG data altogether in the near term. Many of them will be approached in supply chains or when being considered by banks in lending processes (e.g., KPMG 2023).

   The importance of sustainability accounting is also recognised by many consultancies, such as KPMG, PWC, and EY. Their regular surveys highlight the importance and necessity of linking sustainability to accounting, with the need to consider the interests and requirements of stakeholders, including the challenges that many businesses continually face in this area. As an example, we refer to the following surveys:

   - The international accounting firm KPMG releases the 2024 Corporate Sustainability Disclosure Report (Today ESG 2024), which aims to analyse the development of corporate sustainability disclosure and the differences between disclosure and sustainable strategies. KPMG believes that with the development of global regulatory policies, companies need to disclose more environmental, social, and governance-related information. Companies are also recognising that sustainable

disclosure will become a tool to improve financial performance. However, most companies still have a gap between sustainable strategy and execution.

- The report "Anchoring ESG in governance" (KPMG 2024), based on in-depth interviews with 50 chief sustainability officers and managers in 10 countries, examines how group sustainability units operate within corporate structures, what makes them successful, and how they plan to develop in the future. It finds that sustainability has become a board-level responsibility but that sustainability-focused organisations are still developing in maturity, including in response to new ESG reporting requirements, such as the European Union's Corporate Sustainability Reporting Directive (CSRD).
- KPMG's report "KPMG ESG Assurance Maturity Index 2023" (Tyson 2023) reveals that as many as 75 percent of companies globally feel they have a long way to go to be ready to have their ESG data assured and meet new regulatory requirements. Those most ready for ESG assurance tend to have boards more engaged on ESG issues, conduct regular ESG training, and have controls in place for ESG data.
- Almost two-thirds (59%) of Slovak companies are unaware that they will be required to collect data and subsequently perform non-financial ESG reporting starting in 2024, according to a representative survey of 130 companies and executives conducted by consultancy RSM (TASR 2023). Only 8% of respondents said they were aware of the new obligation and knew the details. A further 28% say they have heard of the news but do not know the details. "It is important to note that major trading partners such as Germany, France and the Netherlands are already in the process of implementing the directive and there is pressure on suppliers in other countries to consider an ESG strategy even without a legislative framework".
- The survey from the US audit, tax, and advisory firm KPMG LLP "Addressing the Strategy Execution Gap in Sustainability Reporting" explores addressing the strategy execution gap in sustainability reporting. Speaking on the results and the trends that emerged, KPMG US Climate Data & Technology leader Tegan Keele said (ESG Mena 2024), "Artificial intelligence and machine learning technologies can help organisations gain valuable insights from disparate data and make more informed decisions, but AI and ML are not a silver bullet for sustainability reporting or for setting a strategy that adds value to the business".

Sustainability accounting outputs are often linked to the process of business value creation and to a way of measuring a company's contribution to sustainability called sustainable value added (Figge and Hahn 2004; Jankalová and Kurotová 2020). According to the *Financial Analysts Journal* (Tähtinen 2018), "earnings no longer reliably reflect changes in corporate value and are thus an inadequate driver of investment analysis". In other words, much of a company's value is not actually captured on its balance sheet. This fact can distort investment opportunities and risks.

The subject of future research should be the analysis of sustainable accounting in the context of strengthening the competitiveness of enterprises. We start from the fact (Európska Komisia 2020) that the notion of competitiveness is moving closer and closer to the notion of sustainability, as it encompasses a whole set of concepts such as circularity, sustainability, viability, digitalisation, skills and well-paid jobs, and society's satisfaction with goods and services and with the quantity, price, and quality of goods and services being determined by consumer demand. Competitiveness means sustainability, and sustainability means competitive ability. This fact is also recognised by reputable companies, which carry out surveys to identify the link between the manifestations of sustainable accounting and the benefits for the company itself (Rahi et al. 2022; Ociti 2023; SAP 2024a, 2024b, 2024c, 2024d).

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