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A bibliometric analysis of the social return on investment

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This paper presents a thorough bibliometric analysis of the Social Return on Investment (SROI), an innovative method for measuring social impact. Using data from the Web of Science and the VOSviewer tool, we offer a comprehensive overview of the research evolution on SROI, analyzing it from citation, co-occurrence, and co-citation perspectives. The number of publications for the research topic has notably risen in recent years, and we delve into the evolution of research lines. The analyses disclose trends in SROI research, offering insights for researchers to comprehend the current state of the art of the field.

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Introduction

According to the Royal Spanish Academy's dictionary (RSA, 2023), "to evaluate" is defined as "to determine the value of something." In our context, evaluation refers to the measurement of the outcomes of an initiative, problem, action, measure, or regulation. Our evaluation focus encompasses both financial and social aspects. Assessing financial impact may initially appear straightforward since it involves deriving new numbers and ratios from existing ones, assuming we have a clear set of measures in mind. However, measuring social impact introduces complexity. Starting with the definition, there is limited consensus on what constitutes Social Impact Assessment (SIA), as observed in Burdge's work (2003). For instance, Becker (2001) defines SIA as the process of identifying the future consequences of an action on individuals, organizations, and broader social systems. In a simpler vein, the European Commission defines SIA as the social benefits derived from the activities of socially-oriented organizations (European Commission, 2019). Various standards have emerged within SIA. The Triple Bottom Line offers a framework to measure and report corporate performance using economic, social, and environmental parameters, see Elkington (1997). The Global Reporting Initiative (GRI) stands as the most widely adopted global sustainability reporting framework, aligning with the Triple Bottom Line approach (GRI, 2023). While GRI is utilized by organizations of all sizes, sectors, and locations, it faces criticism for its perceived arbitrariness (Moneva et al. 2006). No ISO standard exists for Social Impact Assessment. Balkenhol (2018) states that there is controversy in the selection of variables, measurement tools, dimensions, impact levels, and evaluation methodologies.

An innovative method for measuring social impact is the Social Return on Investment (SROI). SROI seeks to quantify the impact of actions on the lives of individuals and their communities (Flockhart, 2005; Hall, 2014). Through the utilization of the SROI methodology, the socioeconomic value is assessed by quantifying the components that constitute the social value of an activity and then assigning monetary values to them (Emerson, 2003). Expressed as a ratio (Kara, 2013), SROI incorporates the social and environmental value created. The Roberts Enterprise Development Fund initially developed SROI to measure the economic value of job creation through its programs in San Francisco (REDF, 2001). This framework is rooted in cost-benefit analysis and aims to translate social objectives into financial measures through the use of proxies (Nicholls et al. 2009). Following Nicholls (2017), although social impact is generally about outcomes, in SROI, outcomes are changes in people's lives, either direct or indirect. The SROI is recognized as one of the most prominent methods for assessing social impact (Farr and Cressey, 2019).

Despite the increasing acknowledgment of SROI as a Social Impact Assessment (SIA) model in both academic and professional realms, enabling legitimation and more efficient and effective resource allocation (Mook et al. 2003; Millar and Hall, 2013; Maier et al. 2015), SROI has faced significant scrutiny within the academic community due to its practical and conceptual limitations (Maier et al. 2015; Farr and Cressey, 2019; Green, 2019).

The scholarly output on the SROI has seen substantial growth in the past decade. Despite this increasing interest, few articles comprehensively review this practice, providing a solid foundation for future research. As part of the literature review methodology, bibliometric tools utilize statistical techniques to analyze a research topic based on bibliographic resources (Zupic and Čater, 2015; Abuhassna et al. 2022a, 2022b; Qi et al. 2025). Therefore, this article aims to offer a comprehensive bibliometric and content analysis of SROI focusing on terms. The new perspective of

this study is based on a citation, co-occurrence, and co-citation approach, utilizing scientific maps and text data generated with VOSviewer software.

As part of the bibliometric tools, scientific maps will aid in monitoring the configuration of the SROI literature network to better understand its structure, evolution, and key participants. These scientific maps will be based on various elements, such as terms, documents, authors, journals, countries, organizations, or cited references. Following this methodology, the study addresses four main research questions:

(1) What is the research domain of the SROI literature?
(2) What are the influential aspects of the literature concerning documents, authors, sources, countries, and organizations?
(3) Which terms are most frequently used, and how do they perform?
(4) What is the citation pattern in the literature?

This study makes several contributions to the literature. It aids in identifying influential aspects, such as documents, authors, sources, countries, and organizations. Additionally, it assists in identifying citation patterns in the literature, tracking temporal evolution, and evaluating the performance of terms related to SROI. The analyses reveal trends in SROI research, and the findings can assist researchers in obtaining a comprehensive understanding of the current state of the field.

The rest of the paper is structured as follows: Section "The social return on investment" presents the social return on investment. Section "Empirical study" includes the methodological design, data and bibliometric tools used in the analysis. Section "Results of the analysis" presents the main results of the bibliometric analysis. Section "Discussion" discusses the implications. Finally, the section "Conclusion" presents the conclusions.

The social return on investment

SROI has been defined in various ways, with multiple approaches to its calculation. The following definition is sourced from the Guide to SROI (Nicholls et al. 2009), authored by the SROI Network, and remains the definition endorsed by Social Value International. This definition encompasses the fundamental elements of SROI (Nicholls, 2017, p. 127):

"Social Return on Investment (SROI) is a framework for measuring and accounting the concept of value; it seeks to reduce inequality and environmental degradation and improve wellbeing by incorporating social, environmental and economic costs and benefits. SROI measures change in ways that are relevant to the people or organizations that experience or contribute to it. It tells the story of how change is being created by measuring social, environmental and economic outcomes and uses monetary values to represent them. This enables a ratio of benefits to costs to be calculated. For example, a ratio of 3:1 indicates that an investment of £1 delivers £3 of social value. SROI is about value, rather than money. Money is simply a common unit and, as such, is a useful and widely accepted way of conveying value. In the same way that a business plan contains much more information than the financial projections, SROI is much more than just a number. It is a story about change, on which to base decisions, that includes case studies and qualitative, quantitative and financial information. An SROI analysis can take many different forms. It can encompass the social value generated by an entire organization, or focus on just one specific aspect of the organization's work."

SROI has evolved since its inception in 1996 by the Roberts Enterprise Development Foundation (REDF) in the United States (Emerson and Twersky, 1996). Nicholls (2017) traces the

temporal evolution of SROI and describes that REDF originally began work with Cost Benefit Analysis (CBA) but found the need for a new approach to address questions that expanded the scope of who received returns and what those returns constituted. In 2004, the Hewlett Foundation provided support for a small working group of SROI practitioners from the United States and Europe. This group updated the guidance and further broadened the scope, incorporating work by AccountAbility, which had developed various standards for accountability (AccountAbility, 2018). According to Nicholls (2017), these principles introduced two important developments. The first emphasized the importance of involving stakeholders, the individuals who experience the effects of the activities, in determining relevant and significant issues. The second highlighted the significance of assuring reports, which naturally involved judgments made when applying the principles.

From 2004, the New Economics Foundation (NEF) led the development of SROI practice and methodology, producing numerous guides (New Economics Foundation, 2007) and reports. Simultaneously, a European SROI Network was established to facilitate the sharing of experiences among practitioners across Europe. Membership grew worldwide, and SROI networks were established in various other countries. Nicholls (2017) affirms that members span public, private, and civil society organizations, as well as investors, advisors, policy makers, and businesses delivering goods and services. The Network issued the Guide to SROI in 2009 (Nicholls et al. 2009), which was updated in 2012 (Nicholls et al. 2012).

In 2011, the Social Impact Analysts Association (SIAA) was founded in the UK to support practitioners working in charities and social enterprises. Nicholls (2017) describes that Social Impact groups also began to develop in other countries. Next, in 2015, the SROI Network merged with SIAA, reflecting a movement toward collaboration and standardization. The new organization was named Social Value International (SVI), which advocates a principle-based approach. The Seven Principles of Social Value (Social Value International, 2015) are: (1) Involving stakeholders, (2) Understanding change, (3) Avoiding overclaims, (4) Including only what is material, (5) Valuing what matters, (6) Embracing transparency, and (7) Verifying the results. SROI represents a specific application of these principles, where the valuation of outcomes employs financial proxies to monetize those outcomes.

Nicholls (2017) compares SROI with other approaches: Cost Benefit Analysis (CBA), sustainability accounting, and financial accounting.

The first approach, CBA, is typically employed by the public or quasi-public sector and is applied with a level of rigor commensurate with decisions involving taxpayer resources. In contrast, SROI principles can be applied at various levels of rigor, provided there is a minimum level of accountability that is deemed 'good enough' for the decision it informs. While CBA and SROI share some common ground, their differences stem from the fact that SROI is additionally influenced by financial accounting and sustainability reporting, particularly regarding materiality, result verification, and the application of different levels of rigor based on use and audience.

The second approach, sustainability accounting, has often focused on issues raised by stakeholders rather than outcomes, generally neglecting the consideration of counterfactuals and avoiding the use of financial proxies. However, there's an argument that SROI should report absolute rather than net results for reporting corporate impact to avoid the contention that negative outcomes would have occurred anyway, assuming another company would have delivered the products or services (Henriques, 2015).

Nicholls (2017) asserts that while SROI originated as an extension of CBA and later incorporated aspects of sustainability accounting, it has increasingly drawn from the practices of financial accounting to develop standards of good practice. The main similarities with the third approach, financial accounting, are the following: (1) financial accounting aims to provide sufficient information for investors to make informed decisions recognizing associated risks; and (2) it is not designed to prove the financial value being created. Accounting standards have evolved over time based on principles, shared application, and an assurance process to encourage and ensure standardization. SROI incorporates elements from all three techniques but can be likened to financial accounting in that the purpose of the principles and their application is to provide sufficient information for those receiving social returns to make decisions, and to foster standardization over time.

Maier et al. (2015) undertake a comprehensive assessment of the SROI method along two dimensions: the observer's paradigmatic perspective and positive or negative valuation. They identify two major merits: SROI analysis can confer legitimacy to Non-Profit Organizations or their funders, and it can assist in the efficient and effective allocation of resources. However, they also recognize limitations from three perspectives: From an interpretative-sociological perspective, criticism of commensuration and utilitarianism questions the method as a whole. From a technical-instrumental perspective, several difficulties exist, though they could potentially be overcome as the method matures. From an intermediary perspective, several limitations become apparent that, although inherent to SROI analysis, should not be a reason for abandoning it, as long as they are thoroughly understood.

Empirical study

This paper aims to analyze the research conducted by the scientific community on Social Return on Investment (SROI) using a bibliometric approach. Bibliometric studies employ statistical analyses of scientific publications (Pritchard, 1969) to gain objective and impartial insights into a particular research field (Zupic and Čater, 2015). In their study, Moral-Muñoz et al. (2020) assessed a range of software tools for bibliometric analysis, such as Bibexcel, Biblioshiny, BiblioMaps, CiteSpace, CitNetExplorer, SciMAT, Sci2Tool, and VOSviewer. VOSviewer was chosen for its high-quality visualizations and its support for various data input and output formats. VOSviewer is a powerful tool developed in the Java programming language, enabling the creation and visualization of maps based on bibliographic databases. It greatly simplifies the exploration and interpretation of research networks and relationships. The software is available for free download at www.vosviewer.com (Van Eck and Waltman, 2023).

Previous literature has provided reviews of Social Return on Investment (SROI) through both qualitative content analysis and quantitative bibliometric analysis. Content analysis, as defined by Downe-Wamboldt (1992, p. 314), is "a research method that provides a systematic and objective means to make valid inferences from verbal, visual, or written data in order to describe and quantify specific phenomena". Some notable examples of content analysis related to social impact include Islam (2020) and Siemieniako et al. (2021). More precisely, examples of content analysis in the SROI field include Corvo et al. (2022), who conducted a systematic literature review highlighting both the potential and limitations of the SROI model in academic and professional contexts; or Krlev et al. (2013), who analyzed 114 SROI studies conducted between 2002 and 2012 to examine their development, fields of application, and methodological quality. In

specific fields, Banke-Thomas et al. (2015) conducted a systematic review of SROI applications in public health, highlighting lessons learned from previous studies and providing recommendations for future applications of SROI in this sector. Similarly, Edmunds et al. (2018) carried out a systematic literature review to compare different economic evaluations of interventions targeting high-risk young people, encompassing 13 cost-benefit analyses, 17 cost-effectiveness analyses, one cost-utility analysis and a social return on investment. Our study incorporates content analysis to deepen the examination of the text data generated by the VOSviewer software (Cavanagh, 1997).

In identifying the research gap, we observed that bibliometric approaches have also been applied in this field, as seen in the studies by Campigotto Sandri et al. (2020), Alomoto et al. (2022), and Migliavacca et al. (2022). However, these studies had distinct objectives and purposes. Migliavacca et al. (2022) focus on more general analyses than SROI, analyzing 'impact investing', 'impact investment', 'social impact investment', 'impact finance' and 'social finance' in the same way as Campigotto Sandri et al. (2020). Alomoto et al. (2022) examine Social Impact Assessment from a bibliometric perspective, incorporating SROI into their analysis. Nevertheless, their focus is on keywords, whereas this paper will concentrate on terms. Terms are identified using the VOSviewer software, employing natural language processing algorithms. The interconnectedness of terms on the maps is determined by the number of documents in which they co-occur.

Bibliometric research incorporating content analysis (Abu-hassna et al. 2023) allows for a comprehensive examination of the importance of studies on SROI across multiple dimensions, such as journals, countries, terms, organizations, and the most cited authors. This approach uncovers crucial connections and relationships among these elements. Figure 1 offers a comprehensive overview of the entire research design, providing an illustrative summary of the study's details.

Data. The primary databases for academic literature and citation indexing are Web of Science, Google Scholar, and Scopus. According to Harzing and Alakangas (2016), all offer adequate coverage stability for conducting detailed cross-disciplinary comparisons. Web of Science and Scopus, in particular, exhibit comparable levels of coverage.

Abalkina (2024) states that hijacked journals and problematic journals still target Scopus to index unauthorized content. Google Scholar encompasses a wide range of materials, including books, book chapters, software, and publications from journals not indexed in Web of Science or Scopus. However, it lacks a robust quality control process, as it merely aggregates information from academic-related websites without thorough validation. Therefore, we opted to conduct our analysis using the Clarivate Analytics Web of Science (WoS) database, widely recognized as a high-quality and comprehensive source that effectively addresses research integrity concerns.

Since its establishment in 1950, WoS has accumulated a vast collection of top-tier journals, solidifying its reputation as a renowned platform for scientific research. Its global recognition and extensive coverage across various disciplines enable meaningful comparisons in scientific domains (Archambault et al. 2006; Wang et al. 2016).

The web-based version of Web of Science was first launched in 1997 and was subsequently renamed Web of Science Core Collection around 2014 (Liu, 2019). As stated by Clarivate Analytics (2023c), Web of Science Core Collection is the premier resource on the platform, comprising over 34,000 peer-reviewed scholarly journals from around the world (including

Open Access journals), more than 200,000 conference proceedings, and over 134,000 editorially selected books.

This paper's search, conducted on October 17, 2023, within the Web of Science Core Collection, encompassed all papers published until that date. These papers were downloaded in plaintext format, along with their cited references[1], for processing using the VOSviewer software. The search focused on the field *topic*, which includes the title, abstract, and keywords. The comprehensive search strategy was as follows: (sroi) OR ("social return on investment"). In total, the initial sample consisted of 313 papers.

The next stage (see Fig. 1) involves filtering papers based on their relevance to the research area, following the approach suggested by Zott et al. (2011). The final sample for analysis comprises 288 papers, excluding, for example those where 'SROI' referred to terms such as 'Skeleton Regions of Interest,' 'Superior Region of Interest,' 'Semiautomated Region of Interest,' 'Statistical Region of Interest,' 'Subregion of Interest,' or 'Stochastic Reservoir Opportunity Index'.

Descriptive analysis. Figure 2 reveals that the earliest publication dates back to 2004. It is Lingane and Olsen (2004). The number of publications remained fairly constant until 2014, followed by a surge thereafter. Between 2004 and 2014, the average annual publication count was less than 2. However, from 2015 to 2022, this average skyrocketed to 33 publications per year. In their study on Social Impact Assessment, Alomoto et al. (2022) observed a surge of SROI in recent years compared to other social impact categories examined. The citation figures in Fig. 2 represent the Total Times Cited Count, indicating the number of articles that have cited a given paper. Notably, two articles published in 2015 exerted a profound influence on subsequent research, as it will be verified later.

Based on the document types fields by Web of Science, we gathered together the 288 documents in the following categories: articles (203), books and chapters (12), proceedings papers (51), and reviews (22); Fig. 3 illustrates the temporal trends of the different categories. Following the Web of Science help by Clarivate Analytics (2023a), records covered in the two Conference Proceedings indexes (CPCI-S and CPCI-SSH) are identified as proceedings papers. The same records covered in the three journal indexes (SCI-E, SSCI, and A&HCI) are identified as articles when published in a journal[2].

Every journal covered by Web of Science Core Collection is assigned to at least one Web of Science Research Area. Web of Science Research Areas are classified in five broad categories: Arts & Humanities, Life Sciences & Biomedicine, Physical Sciences, Social Sciences and Technology (Clarivate Analytics, 2023b). Figure 4 highlights the 15 Web of Science clusters of Research Areas in our database with the highest frequency. Social Sciences emerged as the most prominent category publishing on SROI, with 133 publications, followed by Life Sciences & Biomedicine with 107 publications and Technology with 72 publications.

Bibliometric tool. The VOSviewer software is employed to generate knowledge maps highlighting various relevant aspects within the selected 288 papers. Initially, a citation analysis (Van Eck and Waltman, 2010) is conducted, concentrating on the following elements: documents, authors, sources, countries, and organizations. The relatedness of these elements on the maps is determined by the frequency with which they cite each other. To complement the visual interpretation of the maps, the software allows for the download of text files containing clusters, weights, and scores associated with the displayed items. These files are utilized in the content analysis to create the tables in the section
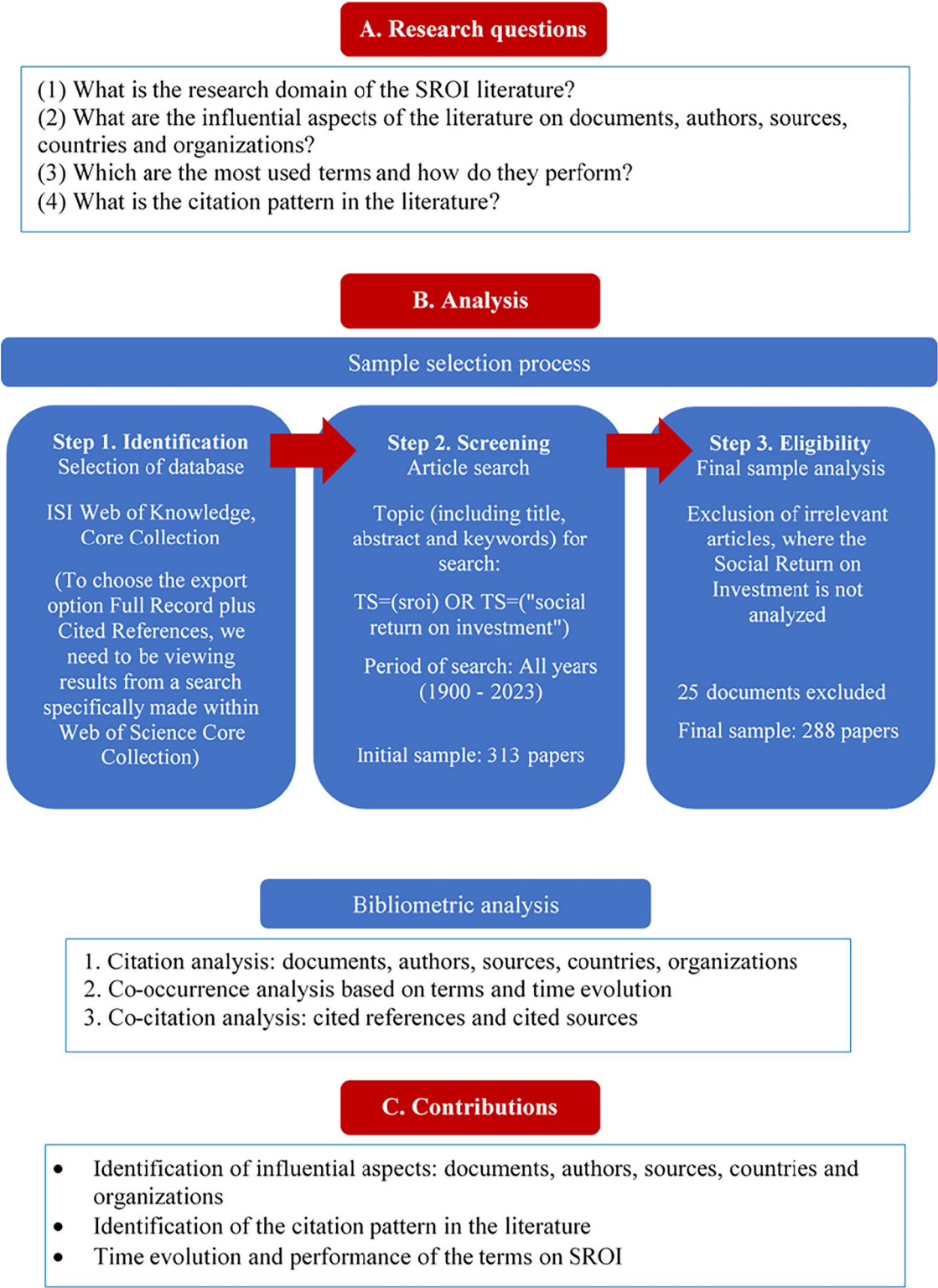
A. Research questions

(1) What is the research domain of the SROI literature?
(2) What are the influential aspects of the literature on documents, authors, sources, countries and organizations?
(3) Which are the most used terms and how do they perform?
(4) What is the citation pattern in the literature?

B. Analysis

Sample selection process

Step 1. Identification
Selection of database

ISI Web of Knowledge, Core Collection

(To choose the export option Full Record plus Cited References, we need to be viewing results from a search specifically made within Web of Science Core Collection)

Step 2. Screening
Article search

Topic (including title, abstract and keywords) for search:

TS=(sroi) OR TS=("social return on investment")

Period of search: All years (1900 - 2023)

Initial sample: 313 papers

Step 3. Eligibility
Final sample analysis

Exclusion of irrelevant articles, where the Social Return on Investment is not analyzed

25 documents excluded

Final sample: 288 papers

Bibliometric analysis

1. Citation analysis: documents, authors, sources, countries, organizations
2. Co-occurrence analysis based on terms and time evolution
3. Co-citation analysis: cited references and cited sources

C. Contributions

- Identification of influential aspects: documents, authors, sources, countries and organizations
- Identification of the citation pattern in the literature
- Time evolution and performance of the terms on SROI

Fig. 1 Research design.

"Relevance of documents, authors, sources, countries and organizations", providing a more comprehensive and detailed representation of the information extracted from the maps. Of the three content analysis approaches suggested by Hsieh and Shannon (2005)—conventional, directed, and summative—we have chosen the directed approach, which allows for the development of initial codes (documents, authors, sources, countries, and organizations) before examining the data.

Additionally, we perform a co-occurrence analysis (Callon et al. 1983) using terms. Terms are identified by the VOSviewer software through natural language processing algorithms. The relatedness of terms is determined by the number of documents
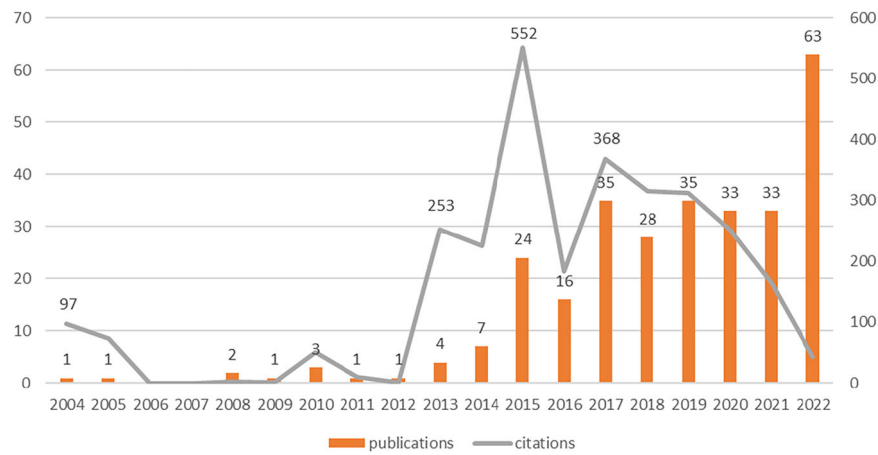
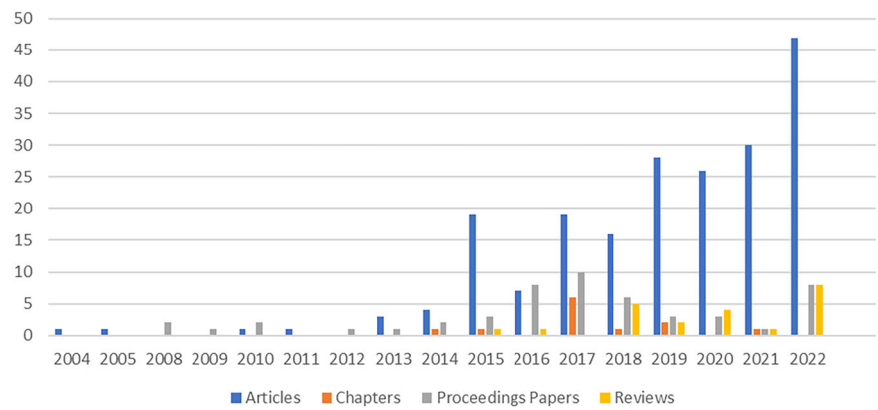**Fig. 2** SROI: publications and citations (2004–2022).

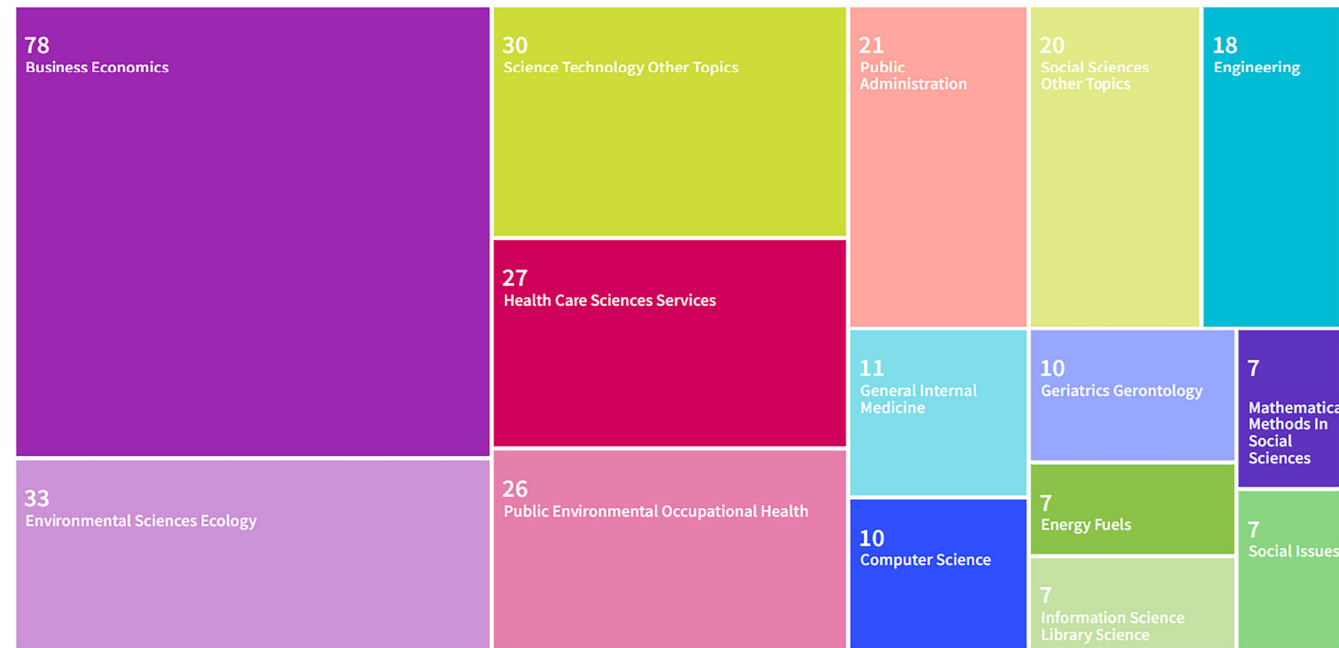**Fig. 3** SROI: publications and document types (2004–2022).

Fig. 4 SROI: The most frequent Web of Science Research Areas (2004–2022).

Table 1 SROI: most cited publications.

Title	Authors	Journal	Year	Citations	Normalized number of citations
Social return on investment (SROI) and performance measurement, the opportunities and barriers for social enterprises in health and social care	Millar, Ross; Hall, Kelly	Public Management Review, 15(6), 923–941	2013	198	3.1554
Long-term effectiveness of supported employment: 5-year follow-up of a randomized controlled trial	Hoffmann, Holger; Jaeckel, Dorothea; Glauser, Sybille; Mueser, Kim T.; Kupper, Zeno	American Journal of Psychiatry, 171(11), 1183–1190	2014	112	3.5
Social return on investment (SROI) methodology to account for value for money of public health interventions: a systematic review	Banke-Thomas, Aduragbemi Oluwabusayo; Madaj, Barbara; Charles, Ameh; Van den Broek, Nynke	BMC Public Health, 15(1), 1–14	2015	98	4.3395
Guidelines for Social Return on Investment	Lingane, A; Olsen, S	California Management Review, 46(3), 116–135	2004	96	1
Who and what really count? Stakeholder prioritization and accounting for social value	Hall, Matthew; Millo, Yuval; Barman, Emily	Journal of Management Studies, 52(7), 907–934	2015	85	3.7638

This table reports the 5 most cited articles included in the sample up until 17 October 2023 according to the Web of Science Core Collection. Normalized number of citations of a document equals the number of citations of the document divided by the average number of citations of all documents published in the same year and is included in the data provided by VOSviewer.

Table 2 SROI: top authors (number of received citations).

Name	Documents	Citations	Normalized number of citations	Name	Documents	Citations	Normalized number of citations
Hall, Kelly (Univ Northampton, UK)	1	198	3.1554	Van den Broek, Nynke (Univ Liverpool, UK)	3	129	7.542
Millar, Ross (Univ Birmingham, UK)	1	198	3.1554	Jaeckel, Dorothea (Univ Berlin, Germany)	2	113	6.6111
Hall, Matthew (London Sch Econ, UK)	4	153	7.6587	Glauser, Sybille (Univ Bern, Switzerland)	1	112	3.5
Banke-Thomas, Aduragbemi (Univ Liverpool, UK)	4	134	7.9939	Hoffmann, Holger (Univ Bern, Switzerland)	1	112	3.5
Madaj, Barbara (Univ Liverpool, UK)	3	129	7.542	Kupper, Zeno (Univ Bern, Switzerland)	1	112	3.5

This table shows the 10 most cited authors included in the sample up until 17 October 2023, according to the Web of Science Core Collection. Normalized number of citations of an author equals the number of citations of the author divided by the average number of citations of all documents published in the same year and is included in the data provided by VOSviewer.

in which they occur together. The co-occurrence of two terms is calculated as the number of publications where both terms are present in the title and abstract fields (Van Eck and Waltman, 2017).

Lastly, a co-citation analysis (Small, 1973) is performed to investigate the citations within the 288 papers of the sample. This analysis focuses on two elements: cited references and cited sources. The relatedness of these elements is determined by the number of times they are cited together. Gutiérrez-Nieto et al. (2023) highlight that it is crucial to distinguish between citation and co-citation. A citation link signifies a connection between two elements where one cites the other. In contrast, a co-citation link connects two elements that are both cited in the same document.

Results of the analysis

Relevance of documents, authors, sources, countries and organizations. The papers authored by Banke-Thomas et al. (2015) and Hall et al. (2015) are undoubtedly top references in the field of SROI studies. These two articles have the highest normalized number of citations[3] compared to other studies listed in Table 1, which presents the most cited documents. This underscores their substantial impact and influence within the research domain.

Maria Merino, Rhiannon Tudor Edwards, and Álvaro Hidalgo-Vega emerge as the most prolific authors in the list of 288 papers, with 10, 9, and 8 documents published, respectively. Table 2, however, showcases the top 10 authors in the field of SROI based on their impact, measured by the number of citations they have

Table 3 SROI: most prolific journals (number of published documents).

Journal	Documents	Citations	Normalized number of citations	Journal Impact Factor 2022	Highest category ranking in JCR 2022	Quartile
Sustainability	16	160	28.97	3.9	48/128 in Environmental Studies	Q2
Evaluation and Program Planning	9	198	19.7143	1.6	69/110 in Social Sciences, Interdisciplinary	Q3
Nonprofit Management & Leadership	9	161	9.0728	2.8	25/45 in Public Administration	Q3
BMC Health Services Research	8	50	10.6837	2.8	57/106 in Health Care Sciences & Services	Q3
Voluntas	6	219	10.2509	2.2	19/44 in Social Issues	Q2
BMC Public Health	5	142	9.2073	4.5	66/207 in Public, Environmental & Occupational Health	Q2
Social Enterprise Journal	5	42	5.2355	2.1	N/A (*)	N/A
BMC Open	4	47	4.7074	2.9	80/169 in Medicine, General & Internal	Q2
Frontiers in Public Health	4	12	3.3895	5.2	43/207 in Public, Environmental & Occupational Health	Q1
Lancet	4	10	0.6305	168.9	1/169 in Medicine, General & Internal	Q1

This table shows the 10 most prolific journals included in the sample up until 17 October 2023, according to the Web of Science Core Collection. Normalized number of citations of a journal equals the number of citations of the journal divided by the average number of citations of all documents published in the same year and is included in the data provided by VOSviewer.
(*) This Emerging Sources Citation Index (ESCI) journal will not receive ranks, quartiles, or percentiles until the release of 2023 data in June 2024.

Table 4 SROI: most prolific countries (number of published documents).

Country	Documents	Citations	Normalized number of citations	Links	Country	Documents	Citations	Normalized number of citations	Links
England	50	945	68.2647	16	Italy	23	243	38.3878	16
USA	43	706	54.4771	15	Wales	19	83	14.9049	10
Australia	30	314	35.0257	13	Germany	12	66	8.9181	10
Spain	30	161	27.9626	13	Thailand	12	24	5.1556	7
Canada	24	271	22.4286	13	Switzerland	10	168	6.1642	10

This table shows the 10 most prolific countries included in the sample up until 17 October 2023, according to the Web of Science Core Collection. Normalized number of citations of a country equals the number of citations of the country divided by the average number of citations of all documents published in the same year and is included in the data provided by VOSviewer.

received. This Table was created using a thesaurus file[4]. As anticipated, the top positions in this ranking are occupied by the authors of the most cited publication: Ross Millar (University of Birmingham, UK) and Kelly Hall (University of Northampton, UK). Notably, Matthew Hall (London School of Economics, UK), along with Aduragbemi Banke-Thomas, Barbara Madaj, and Nynke van den Broek (all from the University of Liverpool, UK), featured in Table 1 among the most cited publications, also reappear in the listing of Table 2 with impressive citation and normalized citation numbers. These authors have made significant contributions to SROI research, as evidenced by their substantial citation counts.

Table 3 contains the ten journals that have published at least 3 articles on SROI. Only one of the journals from Table 1, which listed the most cited publications, appears here, namely *BMC Public Health*. *Sustainability* is the most prolific journal, with 16 documents, although *Voluntas* leads in terms of received citations. When these citations are normalized, *Sustainability* then takes the lead again. The Table includes the Journal Impact Factor for 2022, and *The Lancet*, with 4 publications on SROI, stands out well above the others, with an Impact Factor of 168.9. If we look at the data from category rankings in JCR 2022, most of the journals are in the health field, followed by journals in social issues (*Evaluation and Program Planning* and *Voluntas*), and finally, there is only one journal in environmental studies (*Sustainability*) and one in public administration (*Nonprofit Management & Leadership*). The health journals top the Impact Factor and quartile rankings.

Table 4 presents an analysis of the 10 most prolific countries in terms of research publications on SROI. Some countries are not shown in this Table because they have published fewer documents. However, they have received a significant number of citations: the Netherlands, for instance, has 78 citations to its 6 documents. However, the correlation coefficient between the number of publications and the received citations is high (92.11%) for countries that have published more than 5 documents on SROI. Data of normalized citations confirm this ranking, with England and USA at the top in terms of documents, citations, and normalized citations. The variable link between two countries measures the times one country cites the other.

Table 5 offers detailed information about the authors' affiliations, highlighting the institutions with which they are associated. The table is organized by the number of citations received and includes the top 10 positions in the analysis. Based on the figures for normalized citations[5], the top three institutions in the ranking are the Università degli Studi di Firenze (Italy), Bangor University (Wales), and Boston University (USA). If we examine the variable citations, Bangor University is replaced on the podium by Arizona State University (USA). Analyzing normalized citations seems more appropriate, as normalization corrects for the fact that older documents have had more time to accumulate citations than recent ones. The institutions listed in Table 5 also demonstrate multiple citation links, where one institution cites the other, a pattern similar to the findings in Table 4.

Table 5 SROI: top institutions (number of received citations).

Institution	Documents	Citations	Links	Institution	Documents	Citations	Links
Boston University (USA)	4	202	2	University of Toronto (Canada)	5	72	8
Università degli Studi di Firenze (Italy)	5	101	5	Bangor University (Wales)	13	57	7
Arizona State University (USA)	4	76	5	WU Vienna University of Economics and Business (Austria)	7	57	7
Universidad Autónoma de Barcelona (Spain)	4	72	2	Flinders University (Australia)	4	38	6
Monash University (Australia)	4	72	4	University of Gloucestershire (England)	4	32	4

This table shows the 10 most cited institutions included in the sample up until 17 October 2023, according to the Web of Science Core Collection. The variable link between two institutions measures the frequency with which one institution cites the other and is included in the data provided by VOSviewer.

Co-occurrence network analysis. Co-occurrence analyses are quite valuable for identifying the most relevant terms within SROI research. The visualization of the mapping provides a comprehensive overview of the relationships between terms and the formation of clusters. This view helps identify distinct clusters of related topics, enabling researchers to gain insights into the main research directions within the study of SROI.

The unit of our study is the term. When creating concept maps from a text corpus, users can choose between binary counting and full counting. With binary counting, the software indicates the number of documents in which a term occurs at least once. In the case of full counting, the software indicates the total number of occurrences of a term across all documents. Our decision to use binary counting aligns with the recommendation by Polley (2016).

The program selects 156 terms with at least 10 occurrences to be extracted from the title and the abstract. The sample is then manually refined using a thesaurus file, which helps eliminate general terms such as "author" or "example", merge synonyms (e.g., SROI method and SROI methodology), and correct spelling variations (e.g., organization and organisation). Following this process, 141 unique terms are obtained, and the program selects 60% of the most relevant terms, resulting in 85 terms retained.

The software employs distance-based mapping techniques to create a network visualization of co-occurring terms, as illustrated in Fig. 5. The distance is proportional to the relatedness, and the size shows the number of repetitions (occurrences) of each term. Additionally, the lines represent the number of times the terms appear together (links). Moreover, the thickness of these lines represents the intensity of this relationship, with thicker lines indicating more frequent occurrences together. Four distinct clusters, each comprising at least fourteen terms, are identified[6].

The map displays multiple connections, reflecting the diverse treatment of the topic across different areas and perspectives. Map clusters can be linked to specific subtopics. The green cluster consolidates work related to accounting, including ratios, or monetary value. Here can be found the comparison of Nicholls (2017) with other approaches, primarily cost–benefit analysis. Notably, the term with the highest number of links in this cluster is SROI analysis, positioned closely to the blue cluster. This blue cluster emphasizes how SROI is connected to social issues such as women, persons, health, or family. The most frequently occurring terms (largest nodes) in this cluster are person, service, and health. The red cluster encompasses studies on methodological issues, elucidating its connections to theory, practice, measurement, or indicators. The smaller yellow cluster, comprising 14 terms, represents a specific line of research focused on efficiency and strategy issues.

Both Figs. 5 and 6 analyze the co-occurring terms extracted from SROI publications. However, while Fig. 5 displays the clusters of terms, Fig. 6 illustrates the evolution over time (2015–2022) using an overlay visualization of a map, where terms are colored according to a specific score; in this case, the years.

In Fig. 6, the early years are represented with cool colors, while the recent years are represented with warm colors. The dispersion on the map is evident, with a clear shift in recent years towards a monetary focus (dollar, euro, strategy) and health-based (health, wellbeing), in contrast to the earlier years, which were more centered around business (employment, organization, social enterprise), contribution, and knowledge.

To deepen the analysis, we selected enterprise as a representative term of the early years and health as a representative term of the more recent years. We conducted annual co-occurrence analyses and tabulated the number of co-occurrences for these terms. We then projected the future number of co-occurrences using a linear trend, as shown in Fig. 7. We also included the term mental health in the analysis, as it has emerged as a relevant topic in recent years (notably absent in the early years, as shown in the figure). As shown, the co-occurrences of the term enterprise follow a decreasing trend, while those related to health show an increasing trend.

Co-citation analysis. The co-citation analysis is an effective method for evaluating the foundations of SROI research by analyzing citation patterns within the literature. A fundamental assumption of co-citation analysis is that the more two items (references or sources) are cited together, the more likely it is that their content is related (Zupic and Čater, 2015). In the first analysis (Fig. 8), the analysis unit is the cited references of the papers in the sample, where the relatedness of the references in the map is determined by the number of times they are cited together in the same document. The closer two publications are located to each other, the more frequently these publications tend to be listed in the investigated bibliographies. The size of the node is proportional to the number of citations. To perform the counting, the software offers the possibility to choose between full counting and fractional counting. Fractional counting reduces the influence of documents with a large number of authors. Our choice has been to use fractional counting for the analysis, following the recommendation by Perianes-Rodriguez et al. (2016).

Figure 8 on cited references displays three distinct clusters. The green cluster on the right focuses on SROI and health, with Banke-Thomas et al. (2015) standing out as a leader in citations and co-citations. The red cluster on the left consolidates guides for calculating SROI, with Nicholls et al. (2012) centrally positioned on the map and linked to publications from all clusters. Notably, Millar and Hall (2013), the most cited publication in Table 1, is found in this cluster. Lastly, the blue group at the top gathers documents that analyze measures and evaluations of SROI.
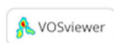
Fig. 5 SROI: network visualization of co-occurring terms.

Fig. 6 SROI: temporal overlay visualization of co-occurring terms in publications.

Figure 9 depicts the network by considering the cited sources of the documents as the unit of analysis. The relatedness of journals in the map is determined by the number of times they are cited together in the same document. The size of each node is proportional to the number of citations. For construction, a minimum of 10 citations for a cited source were chosen.

In Fig. 9, out of the 6018 sources, considering 20 as the minimum number of citations for a source, three clusters emerge: the red cluster on the left with 19 items, the green cluster on the

right with 10 items, and the blue cluster at the top with 8 items. The green cluster emphasizes journals related to health (e.g., *BMC Public Health* with the highest number of citations in this cluster -120-, *BMC Health Services Research*, or *The Lancet*). The red cluster encompasses numerous journals oriented towards social, accounting, and non-profit issues (e.g., *Social Enterprise Journal* with the highest number of citations in this cluster -134-, *Voluntas, Nonprofit Management and Leadership, Accounting, Organizations & Society*, or the *Journal of Business Ethics*), while

Fig. 7 SROI: Future trend of significant co-occurring terms.
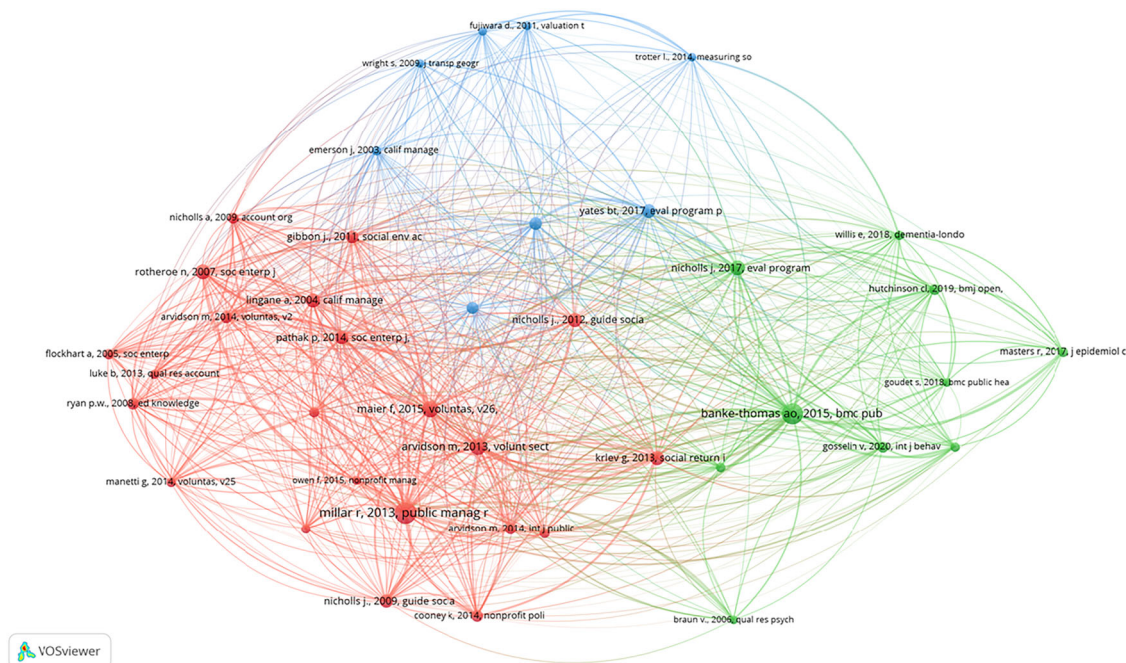
Fig. 8 SROI: network visualization of co-citation (cited references).

the blue cluster includes journals focused on sustainability issues such as *Sustainability*, with the highest number of citations in this cluster -118-, the *Journal of Cleaner Production*, or *Ecological Economics*.

Discussion

This study contributes to advancing the theoretical understanding of Social Return on Investment (SROI), a method for measuring social impact. The bibliometric analysis highlights how the field has evolved, transitioning from a primary focus on employment, social enterprise, and knowledge to more recent emphases on health, strategy, and monetary issues. This shift reflects the growing recognition of SROI's versatility across different disciplines and sectors. The findings are consistent with prior research that highlights the fragmented and evolving nature of SROI methodologies (Maier et al. 2015; Nicholls, 2017). Seminal contributions, such as Banke-Thomas et al. (2015) and Hall et al. (2015), are influential in shaping the field. The growing emphasis on stakeholder engagement and the call for standardized methodologies reflect enduring challenges in the SROI literature.

Moreover, the interdisciplinary nature of SROI, as revealed through co-citation and co-occurrence analyses, underscores its integration with areas such as accounting, sustainability, and social economics. The potential for further advancement lies in exploring synergies between SROI and decision-making methodologies, such as the analytic hierarchy process (AHP) by Saaty (1980, 2004, 2013). AHP can significantly enhance accuracy and objectivity in the identification and weighting of evaluation criteria, as demonstrated in studies such as Serrano-Cinca et al. (2016), Gutiérrez-Nieto et al. (2016), or Kim and Ji (2020). Furthermore, the AHP technique facilitates the integration of stakeholders' preferences into the SROI framework, promoting their active involvement in the research process to ensure that SROI assessments remain relevant and accurately reflect real-world impacts. Future studies could also focus on refining the theoretical framework to incorporate emerging tools like artificial intelligence for automating analyses and reducing subjectivity in assessments. Additionally, longitudinal studies tracking the long-term impacts of SROI-assessed interventions could validate the methodology's effectiveness over time. Moreover, the development of standardized international protocols, as advocated by Krlev et al. (2013) or Maier et al. (2015), remains essential. Establishing global guidelines for SROI applications would not only enhance consistency and comparability but also strengthen
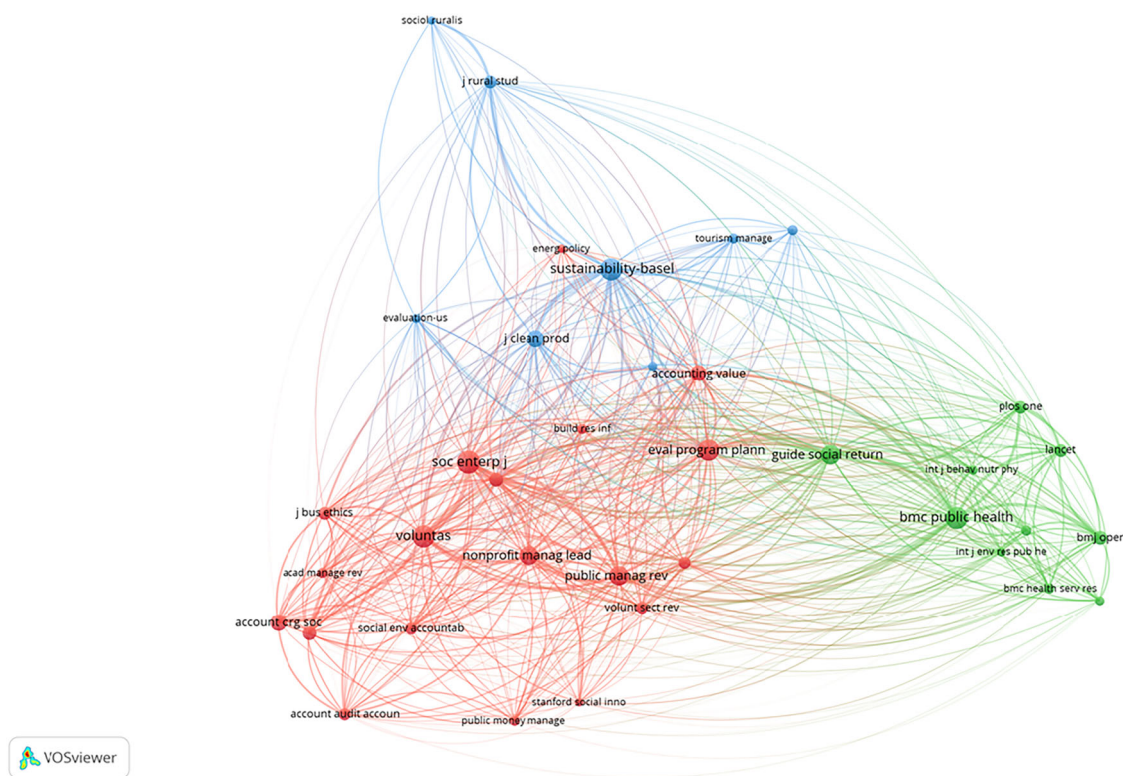
Fig. 9 SROI: network visualization of co-citation (cited sources).

its credibility as a decision-making tool across sectors and regions. Lastly, multidisciplinary collaboration among scholars from different fields facilitates the integration of diverse perspectives, improving the application of SROI.

The findings provide valuable implications for practitioners in the field of SROI. Identifying key authors, institutions, and journals offers a roadmap for understanding the current state of the field. The recent focus on health, strategy, and monetary issues suggests that practitioners should prioritize these areas when applying SROI to maximize its impact. Additionally, integrating advanced tools and methodologies could significantly enhance the practical utility of SROI. For example, artificial intelligence offers the potential to automate processes, analyze large datasets efficiently, and reduce biases, thereby optimizing both the cost and accuracy of SROI assessments. Similarly, leveraging AHP to incorporate stakeholder preferences could enhance the relevance of assessments, aligning with the growing emphasis on participatory approaches in the SROI literature (Chaudhury et al. 2016; Purwohedi and Gurd, 2019). Standardization remains a critical area for practitioners. Developing consistent protocols for applying SROI would facilitate comparability across studies and improve its acceptance as a robust evaluation tool. Practitioners should also consider sector-specific adaptations to ensure that SROI frameworks remain relevant to the unique needs of each field. These enhancements would make assessments more inclusive and reflective of real-world impacts, further embedding SROI as a practical tool in social and economic analysis.

Conclusions

The Social Return on Investment (SROI) has emerged as a framework for assessing social impact that has garnered the attention of researchers globally, with the number of publications seeing significant growth in recent years. The aim of this paper is to present a comprehensive bibliometric analysis of SROI. The

approach of this study is rooted in a citation, co-occurrence, and co-citation methodology, employing scientific maps generated with VOSviewer software.

This paper investigates the growth in the number of Social Return on Investment (SROI) publications (including articles, books and chapters, proceeding papers, and reviews) from its inception until December 2022. The research on this subject gained momentum around 2015. The content analysis based on citations analyzes documents, authors, sources, countries, and organizations. The geographical distribution of research origins underscores the global interest in this phenomenon, spanning North America, numerous European countries, and Australia. Furthermore, the analysis identifies key journals addressing this research topic, considering not only the number of documents but also their citation impact, with a notable emphasis on health and social sources.

Co-occurrence analysis helps identify the most relevant terms within SROI research. The maps display relationships between terms and the formation of clusters, shedding light on the main research directions within the study of SROI. Four distinct clusters are identified. The first cluster consolidates work related to accounting, including ratios or monetary value. The second cluster emphasizes how SROI is connected to social issues such as women, persons, health, or family. The third cluster encompasses studies on methodological issues, elucidating its connections to theory, practice, measurement, or indicators. The fourth cluster represents a specific line of research focused on efficiency and strategy issues. If we analyze the temporal evolution of the terms, we observe that research focused on employment, social enterprise, and knowledge in the early years, while in more recent years, it has shifted to health, strategy, with health-related terms showing a future upward trend.

The co-citation analysis investigates citation patterns within the SROI literature. The higher the frequency of two references or sources being cited together, the more likely their content is

related. Three discernible patterns emerge: (1) social, accounting, non-profit issues, (2) health, and (3) sustainability issues.

This study has certain limitations. Firstly, the search was confined to a renowned single database, Web of Science. Additionally, regarding affiliations in terms of the country of origin or university, the credentials of the first author may not accurately reflect the origin of the study. The limitations of the software used stem from: (1) the accuracy of VOSviewer results depending on the quality of the underlying data; (2) VOSviewer's focus on visualizing quantitative patterns and relationships, without performing qualitative analysis; and (3) VOSviewer's reliance on data available in bibliometric databases, without incorporating additional or contextual information. It is essential to ensure that bibliometric tools and software are regularly updated to maintain their accuracy in analyzing the latest research trends. Despite these limitations, the findings have implications for understanding SROI research.

In summary, this research makes a contribution to SROI literature reviews. The bibliometric study conducts a comprehensive empirical analysis, covering citations of documents, authors, journals, countries, and organizations, along with an examination of co-occurring terms and co-citations. These analyses have revealed trends in SROI research, and the findings can assist researchers in obtaining a comprehensive understanding of the current state of the field.

Data availability

Supplementary material available at the Journal's open data repository at: https://doi.org/10.7910/DVN/IEIHJN.

Notes

1 Based on these exported cited references, we can analyze co-citation connections.

2 Proceedings Paper: published literature generally published in a book of conference proceedings. Review: a renewed study of material previously studied.

3 Normalized number of citations of a document equals the number of citations of the document divided by the average number of citations of all documents published in the same year and is included in the data provided by VOSviewer. Normalization corrects the fact that older documents have had more time to receive citations than more recent documents (Van Eck and Waltman, 2023).

4 A thesaurus file can be employed to merge different variations of author names in order to build a bibliographic map using VOSviewer. According to Van Eck and Waltman (2023), this feature is particularly useful when a researcher's name is written in various ways across different documents, such as using different initials or formats. By using a VOSviewer thesaurus file, it is possible to establish that these different variations actually pertain to the same researcher.

5 Normalized number of citations of an organization equals the number of citations of the organization divided by the average number of citations of all documents published in the same year and is included in the data provided by VOSviewer.

6 A robustness check analysis has been conducted, generating knowledge maps based on keywords. The program selects 1241 keywords with a minimum of five observations. The thesaurus cleaning process and the selection of keywords with the greatest total link strength result in 59 unique keywords. VOSviewer generates six clusters with a minimum of five keywords. Additional details are available upon request.

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