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Towards concise reporting through integrated reporting: a bibliometric review

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Abstract

Purpose – This paper aims to systematically analyse the publications in the field of integrated reporting (IR) and to present an overview of the current publication trends in IR based on the data obtained from the Scopus database.

Design/methodology/approach – Selected bibliometric indicators and bibliometrix R-packages are used in examining metrics like annual publication trends, authors with the most produced work, papers that are often cited, top productive countries, top productive affiliations, frequently mentioned journals, frequently mentioned keywords, analysis of co-citation, analysis of collaboration and analysis of co-word.

Findings – The findings from the bibliometric review indicated that the trend of IR literature had increased from 2017 to 2020, specifically from 2017 to 2019. The findings also indicated that several publications on IR entailed several authors' collaboration and were published in various languages. Moreover, around 148 institution-affiliated researchers from 40 institutions in 20 countries contributed to the IR publication.

Research limitations/implications – This paper offers a comprehensive overview of the current development in IR. It is useful to help emerging scholars identify and understand current trends in IR based on different countries, authors and languages.

Originality/value – This paper contributes to the literature on IR by highlighting the trends of IR publications from the Scopus database using bibliometric analysis.

Keywords Bibliometric analysis, Integrated reporting, Scopus database

Paper type Literature review

1. Introduction

Social and environmental information in the early 2000s was greatly demanded by those who have a stake in it (Gallego-Álvarez and Ortas, 2017). This type of information is significant for users of the information to allocate capital and make decisions (Gray *et al.*, 1996). Due to the importance of social and environmental information, academics and practitioners have highlighted the need for modern corporate reporting that could enhance the quality of traditional corporate reporting in meeting the needs of financial providers (Brown and Dillard, 2014). Traditional corporate reporting is criticised for its inability to provide a larger audience with optimum details and hold firms accountable for societal and environmental matters (Gray *et al.*, 2014; Hamad *et al.*, 2020; Pistoni *et al.*, 2018).

In response to the need for modern corporate reporting, organisations have begun issuing social and environmental stand-alone sustainability reports as a part of the annual

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report (Adhariani and de Villiers, 2019). While organisations were able to differentiate their social and environmental disclosures from their financial information, it is difficult for them to relate the influence of their business operations on the economy, society and environment (Cheng *et al.*, 2014). In view of this, the International Integrated Reporting Council (IIRC) has highlighted the importance of integrating distinct and divided reporting areas into one seamless report that reflects the company's ability to produce current and future value (IIRC, 2013, 2021). More specifically, the IIRC recommends companies use an integrated reporting (IR) approach when preparing corporate reports known as an integrated report.

The integrated report is a type of report that communicates a company's financial and non-financial information in a cohesive way and provides a comprehensive picture of the company's direction and its risks and opportunities for value creation (IIRC, 2021). Meanwhile, IR is a comprehensive reporting framework that aims to provide a holistic and integrated view of an organisation's financial performance, governance and sustainability practices. IR aims to enhance the quality of information available to financial capital providers by encouraging companies to adopt a holistic and efficient approach to corporate reporting that draws on diverse elements of reporting with the view that companies should communicate factors that affect them in creating value (IIRC, 2021).

The usefulness and criticality of IR have led companies, governments and researchers to examine current developments in IR and leverage them for strategy formulations (Adams, 2015), assess corporate value (de Villiers *et al.*, 2017) and facilitate investors' capital growth (Macias and Farfan-Lievano, 2017). Other studies highlighted its usefulness in assessing the impact of the organisation on human rights, environment and global concerns (Abeysekera, 2013), enhancing accountability among public organisations (Guthrie *et al.*, 2017; IIRC, 2021), clarifying the reasons behind the high market values than book values in some organisations (Serafeim, 2015) and ensuring that management remains accountable to stakeholders (Maroun *et al.*, 2022; Fayad *et al.*, 2022).

However, literature on IR has largely shielded away from using bibliometric analysis. Existing studies limited their analysis to content analysis, e.g. structured literature review using the Web of Science (WoS) database from 1975 to 2019 (Navarrete-Oyarce *et al.*, 2021), systematic literature review (SLR) involving 110 articles in IR (Soriya and Rastogi, 2022) and review (Di Vaio *et al.*, 2020). Moreover, Lopes and Penela (2021) used WoS and Scopus in their study, leading to a significant difference in the present work from the previous ones for several reasons. This study uses bibliometric analysis on IR through a bibliometrix R-package tool to evaluate the development of the study area and to determine the answers to the research questions (RQ). This study focuses on publications from 2010 to August 2021 and is confined to those publications in the Scopus database.

This study will first highlight the current research trends and notable contributing authors in the field of IR. According to Ellegaard and Wallin (2015), bibliometrics analysis is a valuable method for evaluating the scientific field as it allows researchers to get a comprehensive picture of the historical development of the field of study and to identify variables that are related to the study. Furthermore, bibliometrics analysis is also a useful tool to help researchers to identify possible co-researchers among the most prolific authors (Budd, 1988) and provides information about the growth of the discipline and its most prominent authors (Moed *et al.*, 1985). Therefore, the first and the second RQ for the study are:

RQ1. What is the pattern of annual publication trends?

RQ2. Who are the major contributing authors?

This study will also demonstrate which articles have the highest citation count, most productive countries and affiliations in IR. We aim to provide specific trails of evidence to researchers to find the most reliable articles and articles with high citations. According to Ho (2012), articles with high citations might give the novices researchers ideas to understand how the field of study has grown over time and identify researchers who have high contributions in the research area. Hence, emerging scholars might get a comprehensive overview of the current development and identify the gap in the literature.

Additionally, top-cited articles provide quantitative information about the countries and affiliations of the authors (Dubin and Arthur, 1993). Interestingly, research publications by countries are helpful to researchers in identifying and analysing the contributions made by researchers and collaborations across educational institutions (Budd, 1988; Lazar and Chithra, 2020; Liu *et al.*, 2015; Rahman *et al.*, 2022; Van Raan and Van der Velde, 1991). Therefore, the third, fourth and fifth RQs of the study are:

RQ3. Which articles have the highest citation count?

RQ4. Which countries are the most productive?

RQ5. Which affiliations are the most productive?

Meanwhile, publishing scientific research in refereed journals, accredited journals and indexed journals has various benefits and advantages for researchers and the research community (Rosenstreich and Wooliscroft, 2009). Still, many academics have insufficient knowledge to identify quality and top international journals of a specific discipline (Lin *et al.*, 2019). With bibliometrics analysis, researchers can unpack the development of a specific field while highlighting the emerging areas in that field (Choijil *et al.*, 2022). Bibliometrics analysis is also helpful to researchers who intend to collaborate with other co-researchers and relationships in the author keyword (Dong *et al.*, 2012; Pesta *et al.*, 2018), as well as co-citation trends (Wang and Li, 2014). Besides, Budd (1988) highlights that the bibliometrics analysis is a useful tool which might help researchers to identify possible partners among the most prolific authors and select high-quality journals and source titles for their own works.

Based on the arguments postulated by the above-mentioned scholars and their outputs on the development of bibliometrics analysis, the sixth, seventh and eighth RQs are:

RQ6. Which are the top trending scientific journals?

RQ7. What is the most frequently used author keyword?

RQ8. What is the pattern of collaboration and co-citation trends?

This study contributes to the literature in different ways. Firstly, it provides an extensive picture of the historical development of IR research to enable researchers to understand how research in IR has evolved over the past 10 years. Secondly, this study guides future research by outlining important considerations, such as essential methodology, basic concepts, top journals, institutions, publications and authors. For instance, determining which universities are leading in IR research might serve as a proxy for general regional tendencies in the field. In addition, empirical evaluations of the highest-cited works and trends in the field shed light on the IR research environment and resurrect conversations on IR topics deemed crucial by academics and their connection to IR. Thirdly, the study results will be beneficial to companies and stakeholders worldwide, including policymakers, decision makers, analysts and academics. They need to understand the reasons that drive

countries and management to adopt IR rather than traditional corporate reporting. In particular, regulators need to develop a deeper grasp of IR to establish new regulations and standards for IR. Considering the usefulness and importance of IR, this study's motivation lies in the need to analyse publications regarding the topic with the help of bibliometric analysis, as this would be a novel contribution to literature and provide an extensive picture of the current IR knowledge.

The organisation of the paper sections is as follows; Section 1 presents brief information on the IR concept. This is followed by Section 2 with the previous literature reviews, Section 3 with the research methods, Section 4 with the analysis and findings and Section 5 with the discussion and conclusion. The paper is expected to contribute to the literature by presenting comprehensive current knowledge on IR.

2. Literature review

Studies on IR have tremendously increased over the years due to its development. However, many of them paid attention to various factors and advantages of IR, resulting in just a handful pieces of literature reviews to date. For instance, a review of the IR field using the SLR approach to understand the current state of IR research provides a critical assessment of the current literature and proposes future research prospects. Also, de Villiers *et al.* (2017) conducted a content analysis to discuss how firms might create value in the future and how IR may help by reviewing studies on IR, exploring measurement and study design difficulties, identifying methods and providing an agenda for future research. They also explored why accountants, investors, regulators and managers are interested in IR. Empirically, Velte and Stawinoga (2017) evaluated 44 studies from well-known databases worldwide (WoS, Google Scholar, SSRN, EBSCO and Science Direct) with libraries only until the end of February 2016.

Meanwhile, Oll and Rommerskirchen (2018) reviewed 34 articles that provide an overview of the descriptive analysis findings of the criticism of IR. Vitolla *et al.* (2019a) conducted an SLR to determine the appreciations, criticisms and effects of IR. From 2011 to 2018, 61 papers were retrieved from Google Scholar, Wiley, Elsevier, EBSCOhost and Springer Link. Hence, this paper focuses on the bibliometric output, which differs from SLR, meta or content analysis studies.

In contrast, bibliometric analyses are rarely used. Based on these studies' publication date, none gives a full overview of IR publications or undertakes quantitative analysis with bibliometric measures. More recently, Navarrete-Oyarce *et al.* (2021) used 268 articles published in the WoS database from 2011 to 2019, while Lopes and Penela (2021) used a combination of data from WoS and Scopus. Similarly, Di Vaio *et al.* (2020) used 60 publications in English from 1990 to 2019.

Despite the fact that several bibliometric studies on IR have been performed in the past, it is evident that their scope is limited. There is a lack of extensive and understandable coverage of bibliometrics analysis from various perspectives. In Table 1, we have listed similar studies that used bibliometric analysis on IR. It can be observed that each paper has its own limitations, such as scope and sources, coverage and research protocols. Therefore, this study aims to fill these gaps by shedding light on the most recent developments in IR research.

3. Materials and methods

3.1 Methodology

Bibliometric analysis can be defined as a quantitative research method that involves examining and analysing bibliographic data, such as publications, citations and related

Author(s)	Domain/search strategy	Data source and scope	TDE	Attributes examined
Navarrete-Oyarce *et al.* (2021)	"Integrated reporting"	Web of Science (2011 to 2019)	268	Citations, authors, institutions, countries and journals
Lopes and Penela (2021)	"Integrated report*"	Web of Science and Scopus (2006 to 2020)	540	Number of publications, number of citations, scholars and journals, accounting journals
Di Vaio *et al.* (2020)	"social", "sustainable" and "integrated"	Web of Science (1990 to 1999)	60	SLR and bibliometric
Othman and Basnan (2021)	"Integrated reporting"	Scopus database (2013 to 2020)	358	Research productivity, documents, subject area, most active source title, country distribution of publications, most active institutions, authorship, keywords and network analysis of citations

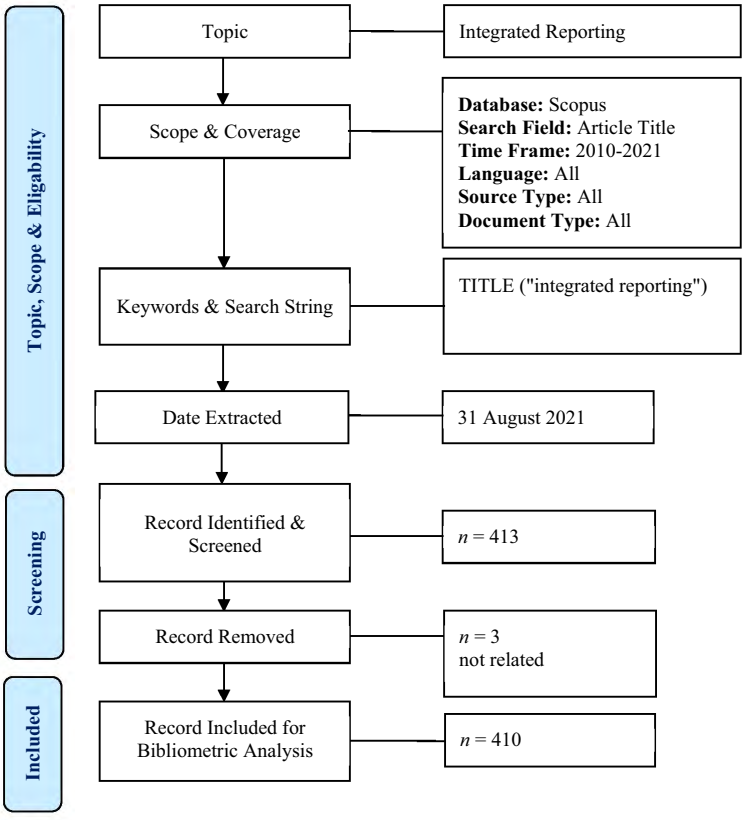
Notes: TDE = total documents examined; Asterisks (*) is used to capture related and derivative terms
Source: Developed by authors

Table 1. Summary of previous studies used bibliometric analyses on integrated reporting

metadata, to gain insights into the characteristics, patterns and trends within a specific body of literature (Khatib *et al.*, 2022). It uses statistical and computational techniques to measure and evaluate various aspects of scholarly communication and information dissemination (Dong *et al.*, 2012). Shi *et al.* (2020) recommended that analysing the research activities within a scientific field can serve as a valuable tool for comprehending its structure. Nevertheless, it is suggested that a mere compilation of references, including prominent research, authors and institutions, accompanied by a brief description, falls short of qualifying as a comprehensive bibliographic study (Ellegaard and Wallin, 2015). A genuine bibliographic study should extend its focus to encompass the evaluation of the underlying structure within a specific research field (Pattnaik *et al.*, 2021).

3.2 Defining keyword

To successfully conduct bibliometric research, it is essential to use the most accurate keywords related to the research field (Rahman *et al.*, 2022). Hence, to ensure articles are extracted from reliable sources, this study used the following search codes in the title for document retrieval from Scopus: TITLE ("integrated reporting"). We did not limit the search based on either language used, document types, source type or the subject areas of the journal. The search yielded 413 research studies from 1974 to 2021 and from the total articles, three (from 1974, 1988 and 2000) had to be dropped because they were unrelated to IR. Notably, the IR research journey came to light in 2010 (Vitolla and Raimo, 2018; Hameed and Rahman Ahmed, 2020), yielding the final number of 410 retrieved documents (refer to Figure 1 for the search approach). The size of the article data set is notable, indicating a substantial amount of research on IR. This extensive collection of articles allows for a comprehensive analysis of the topic and provides a broad understanding of the field's development over time. The inclusion of articles from various time periods enables the identification of historical trends and the evolution of research in IR. Also, we have



Sources: Mansour *et al*. (2021); Moher *et al*. (2009)

Figure 1.
Flow diagram of the search strategy

deliberately chosen this specific period to examine IR due to its significance in the field's initial development, which emerged in 2010. This period allows us to capture the foundational stages of IR, including the emergence of key frameworks, the evolution of reporting practices and the establishment of research trends and themes.

3.3 Search strategy

In this study, the Scopus database was used to obtain studies concerning IR by analysing every type of publication dated from 2010 to August 2021 in the Scopus Science database. Scopus refers to a large multidisciplinary database containing citations and abstracts from industry journals, patent records, books, peer-reviewed articles and conference publications and provides tools for analysing, tracking and visualising the search outcome (Vieira and Gomes, 2009). The database currently consists of over 39,743 titles, with 25,000 active titles and 14,558 inactive ones (primary predecessor of the active titles) and over 210,000 volumes (Mongeon and Paul-Hus, 2016). Thus, Scopus can provide an extensive scientific research perspective from all over the globe and is presently considered one of the major relevant information sources in the research community (Mansour *et al.*, 2021).

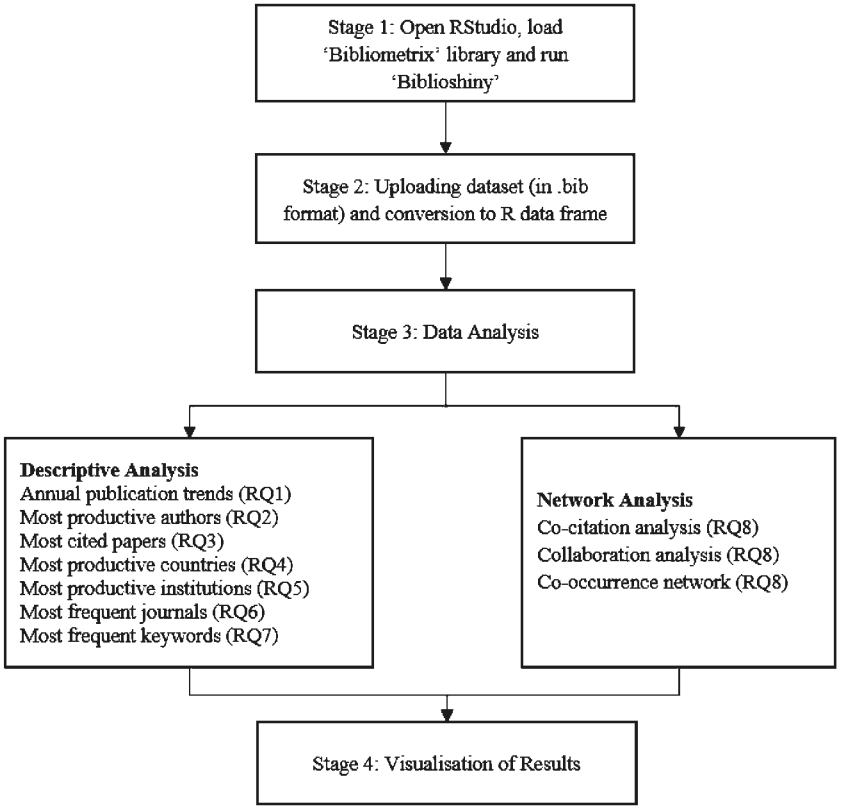
3.4 Tool and data analysis

All the documents obtained also has been screened to avoid duplications or any irrelevant documents to the topic of the study. This study follows the modified preferred reporting items for systematic reviews and meta-analyses flow diagram proposed by Moher *et al.* (2009). The final number of documents comprised the basis from which the study structure was formed. However, it is evident that public research articles show an increasing trend, which needs complex knowledge accrual. As such, bibliometric analysis is required to conduct a literature review process that is systematic and organised. The selected documents were downloaded in the "BibTeX" format (.bib) from the Scopus database for the bibliometric analysis. The data set is then uploaded into the R-package tool Biblioshiny, a shiny app for Bibliometrix R-package (Aria and Cuccurullo, 2017). The use of an R-package in our study was motivated by several reasons. According to Mustikarini and Adhariani (2022), the R-package is a widely recognised and widely used programming language and software environment specifically designed for statistical computing and data analysis. Moreover, it offers a comprehensive range of tools, libraries and packages that facilitate advanced statistical analyses, visualisation and data manipulation (Lazar and Chithra, 2020; Qi *et al.*, 2023). Additionally, the availability of R-packages tailored specifically for bibliometric analysis allows us to leverage well-established and validated methodologies in the field.

The present study uses bibliometric analysis, using Biblioshiny as a tool, to investigate the IR literature. Figure 2 presents the findings of the research analysis. The analysis encompasses various aspects such as annual publication trends, major contributing authors, highly cited articles, institutional productivity, journal productivity, country productivity and author keyword frequency. By examining the annual publication trends, this research provides insights into the overall growth or decline of IR publications over time. Additionally, by identifying major contributing authors, the study sheds light on researchers who have made noteworthy contributions to the literature. Moreover, the identification of articles with the highest citation count enables an understanding of the most influential and impactful studies in the field. Furthermore, the examination of productivity across different institutions, journals and countries provides valuable insights into the research output and geographical distribution of IR research. The determination of frequently used author keywords offers an understanding of the common terminologies and thematic associations within the literature. This analysis facilitates comprehension of the key concepts, topics and areas of focus within the IR literature. Finally, the exploration of collaboration and co-citation trends uncovers patterns of interaction and influence among authors and articles, thereby revealing potential communities of practice and research networks. Overall, this comprehensive analysis contributes to the understanding of the IR literature and provides a foundation for further research in the field.

4. Findings

This section discusses the findings from Biblioshiny to determine the answers to the RQ. Biblioshiny allows researchers to customise and filter their co-citation analysis based on various criteria (Rahman *et al.*, 2022). Users can specify timeframes, select specific journals or authors or focus on particular research topics to refine their analysis and gain deeper insights into specific areas of interest (Ramanan *et al.*, 2020). The present study aims to determine the pattern of annual publication trends, recognise the contributing authors, highlight the articles with the highest citation country, determine the most productive countries and affiliations, determine the most trending scientific journals and determine the



Source: Developed by authors

Figure 2.
Flow diagram of the analysis steps

most frequently used keyword. This study also intends to present the pattern of collaboration and co-citation trends.

4.1 Descriptive analysis

4.1.1 Main information. The analysis of the published documents from the data set was based on the document and source types. The former refers to the types of the document concerning originality (i.e. conference proceedings, journal articles or book series), while the latter refers to the source of the documents (i.e. journal, conference paper, book chapter, book or trade publication). Notably, conference paper under document type varies from those under source type (Sweileh *et al.*, 2017). While conference papers are presented at a conference, some are also published as journal articles. In other words, this refers to the conference papers that were also published as conference proceedings/book chapters categorised under source type despite initially being submitted as conference papers. Nine types of documents were highlighted as published on eXtensible Business Reporting Language, i.e. conference papers, journal articles, book chapters, notes, reviews, editorials, books and short surveys. However, one publication remained undefined in the database (Table 2), and over 773 authors have dedicated their work to IR, indicating that the topic gained interest in academic circles. Table 2 also shows the

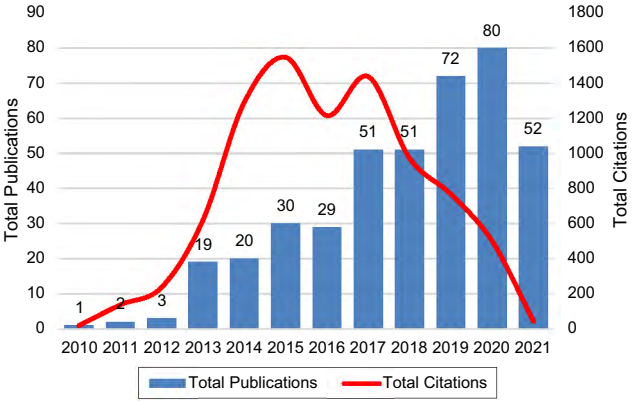
Description	Results
Main information about data	
Timespan	2010:2021
Sources (journals, books, etc.)	183
Documents	410
Average years from publication	3.06
Average citations per document	21.43
Average citations per year per document	4.321
References	22,348
Document types	
Article	331
Book chapter	29
Conference paper	20
Review	17
Book	7
Note	3
Editorial	2
Article in press	1
Document contents	
Keywords plus (id)	375
Author's keywords (de)	800
Authors	
Authors	773
Author appearances	1,088
Authors of single-authored documents	62
Authors of multiple-authored documents	711
Authors collaboration	
Single-authored documents	70
Documents per author	0.53
Authors per document	1.89
Co-authors per documents	2.65
Collaboration index	2.09
Languages	
English	404
Portuguese	4
Spanish	1
Romanian	1
Moldavian	1
Moldovan	1
Ukrainian	1

Source: Developed by authors

Table 2.
Main information

languages of the documents published related to IR. Most of the documents were published in English, four documents in Portuguese and one each in Spanish, Romanian, Moldavian, Moldovan and Ukrainian. It is also worth noting that one of the documents is prepared in dual languages, i.e. in English and Spanish and one is prepared in triple languages, i.e. in Romanian, Moldavian and Moldovan.

4.1.2 Annual publication trends. The graph in Figure 3 shows the areas of IR relating to *RQ1*, which began in 2010. Since then, the growth rate of literature dedicated to the topic has



Source: Developed by authors

Figure 3.
Publication trends

increased from 2013 to 2021, with the number notably higher from 2018 to 2020. Consequently, many companies worldwide are increasingly conscious of non-financial information, resulting in the rapid implementation of IR among companies. This is because IR promotes integrated thinking in companies and good cooperation among departments to improve the value creation of the business for both the short and long term, as well as an improved corporate reporting model (Vitolla *et al.*, 2019b). Ideally, the integrated thinking refers to a holistic approach that considers the interconnections and interdependencies between different aspects of an organisation's strategy, operations and performance (Fayad *et al.*, 2022). Besides, the IR enhances the capital market's information quality, transparency and accountability (Ahmed Haji and Anifowose, 2016). It may lead to lowered capital costs, reduced analysts' earnings provision mistakes (Zhou *et al.*, 2017) and increased capital inflows from foreign investors (Macias and Farfan-Lievano, 2017). IR also helps clarify business issues and performance and improve corporate reputation and stakeholder relationships (Adhariani and de Villiers, 2019). Figure 3 illustrates how IR development drew the attention of academics and researchers over time.

4.1.3 Most productive authors. Table 3 presents the most active authors with published documents on IR topics based on 410 publications in the Scopus database to assess *RQ2*. From Table 3, Nicola Raimo from the Libera Universita Mediterranea is among the most active authors, with over 16 publications, an *h*-index of 12 and a total citation number of over 300. This is followed by Filippo Vitolla, with 312 citations and 16 published papers on the topic. Comparatively, judging by the overall number of citations, the top authors are Charl de Villiers with 719 citations, John Dumay with 548 citations and James Guthrie with 443 citations.

4.1.4 Most cited papers. Table 4 lists the global top-cited papers to assess *RQ3*. de Villiers *et al.* (2014) tops the list with 304 global citations. The research is among the pioneers in the IR field. The research outcome illustrates the dynamic IR policy development and the early enhancements to practice, the theoretical and empirical issues stemming from the concept's interpretation and implementation in organisations. Their research also highlights areas needing more rigorous academic research to inform policy and practical enhancements. This is followed by Flower (2015), with 253 citations, who conducted a critical examination of the IIRC, claiming that the firm and not society obtain IR's only value, and it has negligible impact on corporate reporting practice. The third most cited

No.	Author	Affiliation	Country	TP	*h*	*g*	*m*	TC	PYS
1	Nicola Raimo	Libera Università Mediterranea	Italy	16	12	16	4	312	2019
2	Filippo Vitolla	Libera Università Mediterranea	Italy	16	12	16	4	312	2019
3	John Dumay	Macquarie University	Australia	12	10	12	1.667	548	2016
4	Charl de Villiers	University of Auckland	New Zealand	11	10	11	1.25	719	2014
5	Michele Rubino	Libera Università Mediterranea	Italy	11	10	11	3.333	283	2019
6	Warren Maroun	University of the Witwatersrand	South Africa	9	9	9	1	359	2013
7	Cristiana Bernardi	Open University	UK	6	5	6	0.833	443	2016
8	Isabel–María García–Sánchez	University of Salamanca	Spain	6	6	6	0.667	408	2013
9	James Guthrie	Macquarie University	Australia	6	5	6	0.833	445	2016
10	Gaia Melloni	University of Lausanne	Switzerland	6	6	6	0.857	385	2015

Table 3.
Most productive authors

Notes: TP = total publications; *h* = *h*-index; *g*:*g*-index; *m* = *m*-index; TC = total citations; PYS = publication year start
Source: Developed by authors

document is Dumay *et al.* (2016), with 242 citations. The article examined the area of IR to provide insights into its development and growth as a research field and to comprehensively discuss current studies while proposing avenues for future studies. The study claimed that the majority of the published IR research presented normative reasons for IR, with little to no study examining it.

4.1.5 Most productive countries. To address *RQ4*, this study also presents the most productive countries that published documents on IR. Table 6 illustrates the most active countries that contributed to publications in the IR. Italy, with 94 total publications, is rated first due to the high number of researchers interested in IR (refer to Table 5). The practice of IR is becoming more common in Italy (Baldo, 2017; Borgato *et al.*, 2021), which has prompted academicians to investigate and improve its regulations. This could be due to the significance of IR and several environmental challenges, among other things. Australia came second, with a total publication of 52, followed by the UK in third place, with 50 publications, and South Africa is ranked fourth (41). In terms of total citations, Australia is rated first, with 1,114 citations, followed by Italy (909), Germany (573) and South Africa (456). Malaysia is not far behind, with 214 citations, ahead of other Asian counterparts such as Indonesia and Japan. From the findings, it is observed that governments worldwide are interested in the implementation of IR. Therefore, it is likely to impact future studies in the field.

4.1.6 Most productive affiliations. Moving on to *RQ5*, the analysis of the most productive affiliations in this research on IR provides interesting insights into the global awareness of this topic. Notably, the top 10 productive affiliations worldwide demonstrate a positive increase in recognition and engagement with IR. Among these, Australia and South Africa stand out, as indicated in Table 6. Furthermore, it is worth highlighting the significant contribution of Malaysia, a developing Asian country, which has demonstrated its commitment to IR through the exceptional performance of its institutions.

No.	Author(s)	Title	Journal	TC	C/Y
1	de Villiers *et al.* (2014)	Integrated reporting: insights, gaps and an agenda for future research	*Accounting, Auditing and Accountability Journal*	304	38
2	Flower (2015)	The international integrated reporting council: a story of failure	*Critical Perspectives on Accounting*	253	36.14
3	Dumay *et al.* (2016)	Integrated reporting: a structured literature review	*Accounting Forum*	242	40.33
4	Adams (2015)	The international integrated reporting council: a call to action	*Critical Perspectives on Accounting*	220	31.43
5	Jensen and Berg (2012)	Determinants of traditional sustainability reporting versus integrated reporting. An institutionalist approach	*Business Strategy and the Environment*	220	22
6	Stubbs and Higgins (2014)	Integrated reporting and internal mechanisms of change	*Accounting, Auditing and Accountability*	186	23.25
7	Brown and Dillard (2014)	Integrated reporting: on the need for broadening out and opening-up	*Accounting, Auditing and Accountability*	170	21.25
8	Frias-Aceituno *et al.* (2013)	Is integrated reporting determined by a country's legal system? An exploratory study	*Journal of Cleaner Production*	149	16.56
9	Cheng *et al.* (2014)	The international integrated reporting framework: key issues and future research opportunities	*Journal of International Financial Management and Accounting*	139	17.38
10	García-Sánchez *et al.* (2013)	The cultural system and integrated reporting	*International Business Review*	139	15.44

Notes: TC = total citations; C/Y = citations per year
Source: Developed by authors

Table 4.
Top 10 cited documents

No.	Country	TP	Per cent (%)	TC	C/P
1	Italy	94	22.93	909	15.317
2	Australia	52	12.68	1,114	46.417
3	UK	50	12.20	266	17.733
4	South Africa	41	10.00	456	19.826
5	USA	26	6.34	114	10.364
6	Germany	23	5.61	573	38.200
7	Spain	22	5.37	603	46.385
8	New Zealand	19	4.63	128	64.000
9	Malaysia	17	4.15	214	19.455
10	Romania	12	2.93	47	7.833

Notes: TP = total publications; TC = total citations; C/P = citations per paper
Source: Developed by authors

Table 5.
Top 10 productive countries

Table 6.
Top productive institutions

No.	Affiliation	No. of article	%
1	Macquarie University	17	4.15
2	University of Pretoria	11	2.68
3	Deakin University	9	2.20
4	University of the Witwatersrand	9	2.20
5	Lum Jean Monnet University	8	1.95
6	Universidad de Salamanca	8	1.95
7	University of Auckland	7	1.71
8	Universitas Indonesia	7	1.71
9	Universiti Teknologi Mara	7	1.71
10	University of Bologna	7	1.71

Source: Developed by authors

Within Malaysia, one institution, in particular, has emerged as a leader in IR research, with an impressive tally of seven publications. Macquarie University has secured the top spot among Malaysian institutions, further solidifying its position as a key contributor to the field. The institution's dedication to producing scholarly articles on IR is evident with a remarkable count of 17 publications.

Additionally, the University of Pretoria, Deakin University and the University of Witwatersrand have also demonstrated their commitment to IR through their notable publication records. These institutions have made significant contributions to the global body of knowledge on IR, further reinforcing the positive increase in global awareness and engagement with this important topic.

The remarkable performance of these institutions, both in Australia, South Africa and Malaysia, showcases the growing recognition and importance of IR as a field of study. These institutions' commitment to producing high-quality research in IR contributes to the broader global understanding and implementation of effective reporting practices, ultimately leading to more transparent and sustainable business practices worldwide.

4.1.7 Most frequent journals. The answer to *RQ6* lies in Table 7, which presents the top ten frequent journals that published IR articles. These journals are considered the top reliable sources of IR studies and documents. Heading the list is the *Meditari Accountancy Research* (26 articles), followed by the *Journal of Intellectual Capital* (22 articles). The table

Table 7.
Top 10 frequent journals

No.	Sources	No. of articles	%
1	*Meditari Accountancy Research*	26	6.3
2	*Journal of Intellectual Capital*	22	5.4
3	*Accounting Auditing and Accountability Journal*	16	3.9
4	*Business Strategy and the Environment*	16	3.9
5	*Sustainability (Switzerland)*	15	3.7
6	*Corporate Social Responsibility and Environmental Management*	12	2.9
7	*Journal of Financial Reporting and Accounting*	12	2.9
8	*Sustainability Accounting Management and Policy Journal*	12	2.9
9	*Journal of Management and Governance*	10	2.4
10	*Critical Perspectives on Accounting*	7	1.7

Source: Developed by authors

shows that IR as a field of research is continually attracting more journals, with all the top 10 journals achieving a high index in the Scopus database.

4.1.8 Most frequent keywords. RQ7 is about the most frequent keywords used in the IR approach. Based on the analysis, the top 30 occurring keywords are presented in Table 8, including reporting, integrated, sustainability, corporate, disclosure, companies, evidence, capital, study, social, analysis, accounting, international, south, adoption, role, empirical, financial and framework.

4.2 Network analysis

4.2.1 Co-citation analysis. Co-citation analysis serves as a valuable tool for organising scholarly literature and uncovering thematic clusters and gaps within the scientific field (Aria and Cuccurullo, 2017). This method examines instances where two references appear together in the reference list of a single document. By analysing co-citations, researchers can gain insights into the content and subject area of publications by evaluating frequently cited references in conjunction (Ho, 2012). Moreover, when two publications appear multiple times in the reference list of an article, it signifies a potential similarity in empirical discipline, methodology, theory and topic.

Based on the default setting in Biblioshiny, the co-citation network of documents obtained from the Scopus database has been generated (see Figure 4), where two streams appeared in the sample literature. The larges cluster (Red) emphasises the barriers and challenges faced by organisations in implementing IR. These barriers include biased disclosures, a weak understanding of the business value of IR and the need for further academic research to improve IR policy and practice (Dumay *et al.*, 2017; Perego *et al.*, 2016; Stacchezzini *et al.*, 2016). These findings highlight the importance of addressing these barriers to enhance the effectiveness of IR.

Enhancing the effectiveness of IR can be challenged by various barriers, including lack of awareness, resistance to change, siloed organisational structure, data availability and quality, short-term focus and investor pressure, regulatory and reporting frameworks, lack of stakeholder engagement and resource constraints among companies. For example, implementing IR requires dedicated resources, including skilled personnel, technological infrastructure and time. Companies with limited resources may find it challenging to allocate sufficient resources to develop and maintain effective IR practices. Perego *et al.* (2016) highlighted that the fragmented nature of the field of IR, suggesting a lack of consensus and contested understanding of IR. It should be noted that these barriers might

No.	Terms	Frequency	No.	Terms	Frequency	No.	Terms	Frequency
1	reporting	458	11	social	26	21	case	19
2	integrated	432	12	analysis	24	22	intellectual	19
3	sustainability	51	13	accounting	22	23	perspective	18
4	corporate	47	14	international	22	24	public	18
5	disclosure	38	15	south	22	25	performance	17
6	companies	35	16	adoption	21	26	sector	17
7	evidence	35	17	role	21	27	assurance	15
8	capital	31	18	empirical	20	28	listed	15
9	study	28	19	financial	20	29	governance	14
10	quality	27	20	framework	20	30	African	13

Source: Developed by authors

Table 8.
Top 10 keywords (indexed keywords)

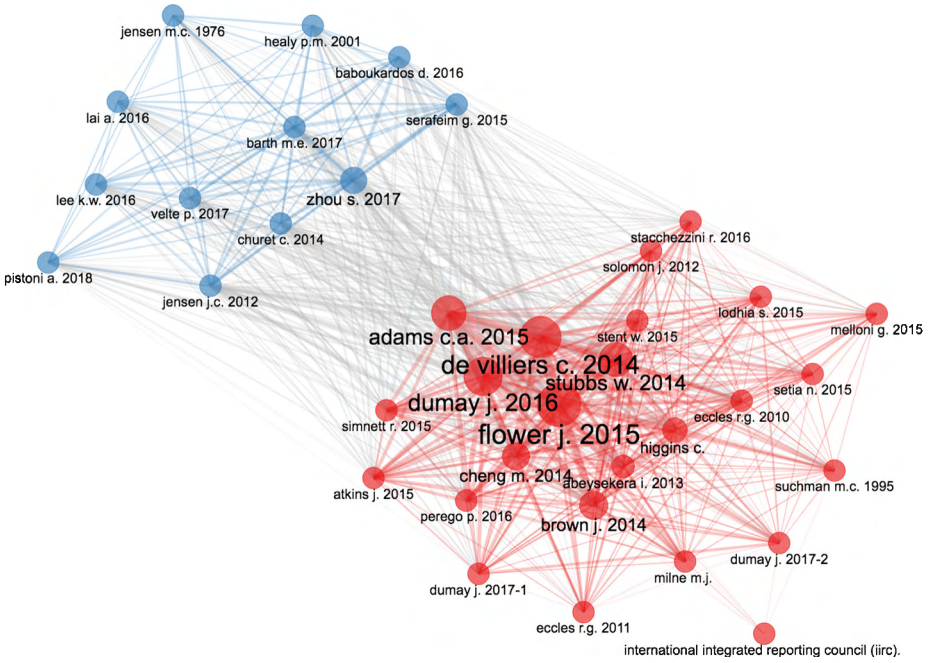


Figure 4.
Co-citations network by papers

Source: Developed by authors

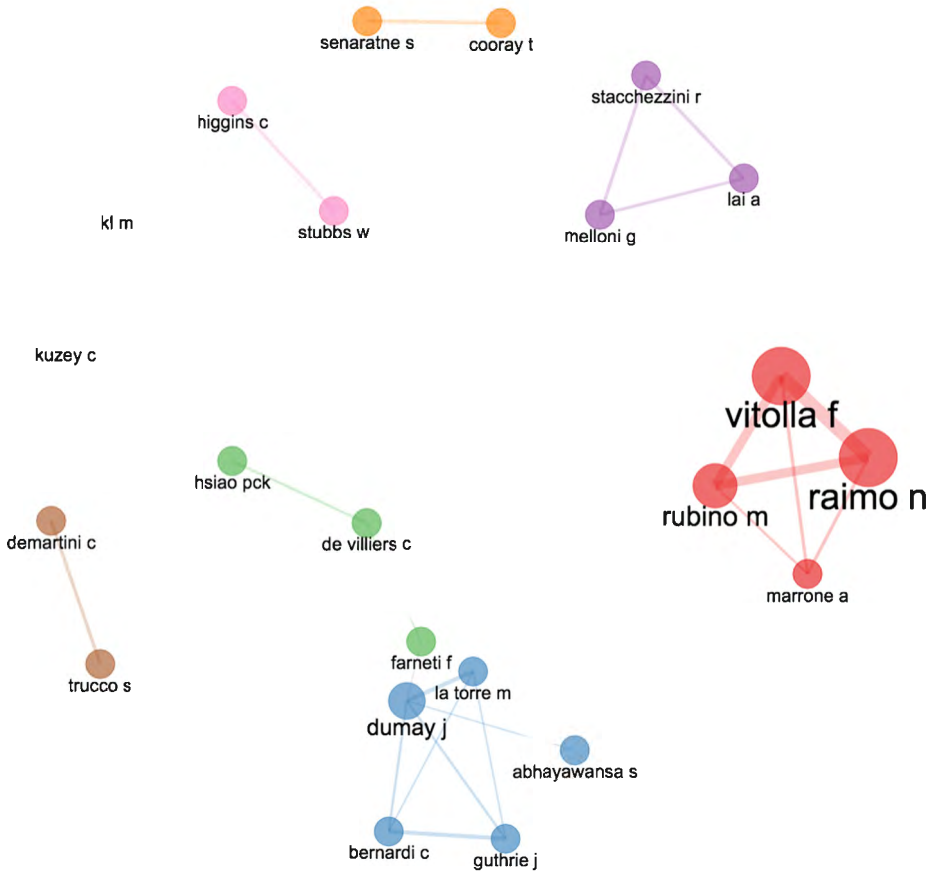
differ from country/industry to another. Dumay *et al.* (2016) and Simnett and Huggins (2015) emphasised the need to assess the costs and benefits of reporting in accordance with the IR framework and to expand the framework to include reporting entities other than corporations and a broader array of capitals. In conclusion, the cluster analysis reveals that IR is a complex and evolving field, with both potential benefits and challenges. The studies highlight the need for further research to overcome barriers, address theoretical and empirical challenges and guide policy and practice. Future research should focus on critiquing and improving the practice of IR, assessing its impact on various stakeholders and expanding the framework to encompass a broader range of reporting entities and capitals.

The second cluster (Blue) analysis IR from the agency and institutional aspects and its implications. Based on the agency argument, the lower the agent-owner conflict of interest, the higher the disclosure level in the firm to its stakeholders (Jensen and Meckling, 1976; Khatib *et al.*, 2021). It has been found that a positive association between firm valuation and IR disclosures, suggesting that the benefits of IR exceed its costs (Churet and Eccles, 2014; Lee and Yeo, 2016). From the institutional aspect, Jensen and Berg (2012) showed that IR companies differ from traditional sustainability reporting companies based on country-level determinants, such as investor and employment protection laws, market coordination and economic, environmental and social development. Within investor relations, materiality aligns with company strategy by elucidating strategic priorities along with associated actions and outcomes (Lai *et al.*, 2017). This strategic and efficient company's alignment with IR increases, analyst forecast errors decrease (Zhou *et al.*, 2017). IR aims to provide information to a wide range of stakeholders. Future research could focus on understanding

stakeholders' perspectives and expectations regarding integrated reports, as well as exploring effective methods for engaging stakeholders in the reporting process.

4.2.2 Collaboration network. The final research question, *RQ8*, was addressed by analysing the collaboration among authors and institutions using 30 nodes for clarity. Figure 5 presents the connected authors with the following indication, the colour, circle size, font size and thickness of connecting lines reflect the strength of the authors' relationships. More specifically, connected authors are depicted in the same colour and group. From Figure 5, Raimo N, Vitolla F, Rubino M and Marrone A closely collaborated and conducted research. Institutional collaboration is presented in Figure 6, while a network map of countries' affiliations is presented in Figure 7.

Figure 7 illustrates the country network analysis, which evaluates the collaborative relationships between different countries in the IR literature. This analysis provides valuable insights into the most contributing countries and their collaborative patterns in the field. Firstly, the country network analysis allows us to identify the countries that play a significant role in the IR literature. In this case, Italy emerges as a key player, indicating a high level of



Source: Developed by authors

Figure 5.
Authors collaboration network

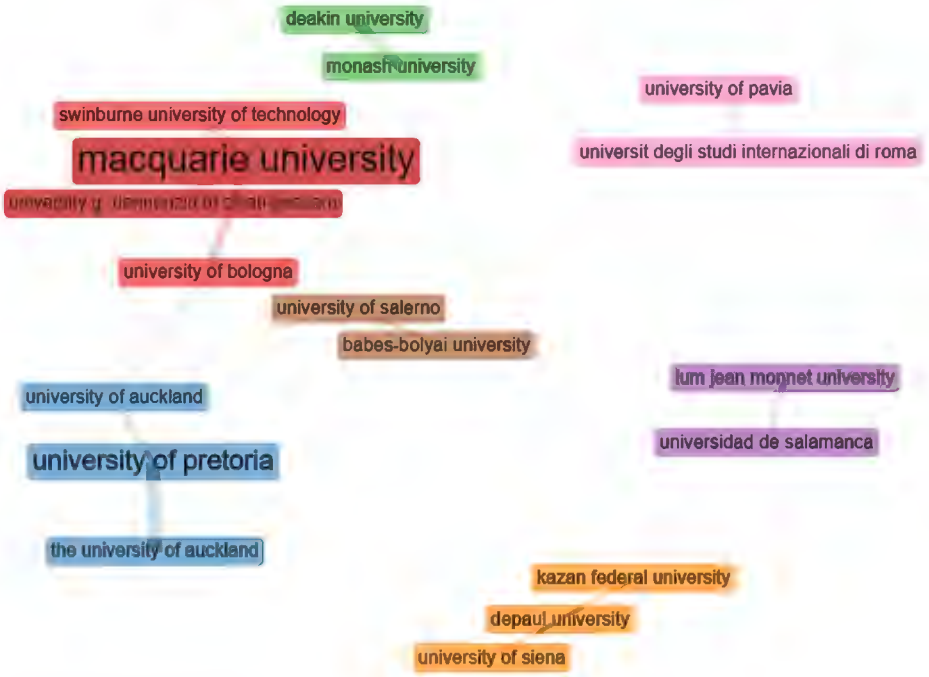


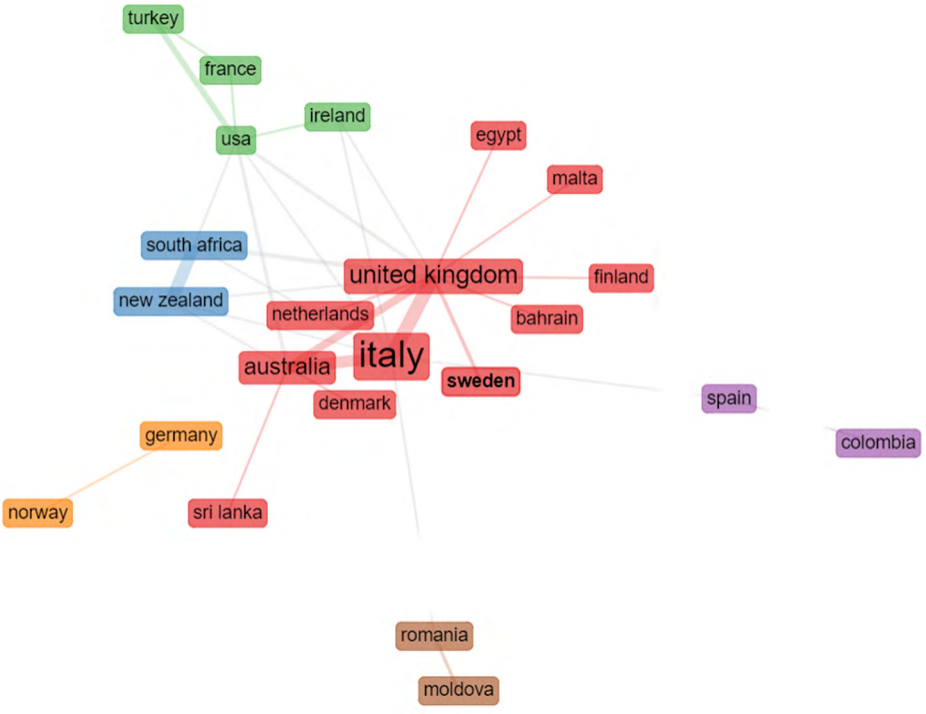
Figure 6.
Institution collaboration network

Source: Developed by authors

research output and collaboration with other countries. Collaborative efforts between Italy and Australia suggest a strong partnership in producing research publications related to IR. Secondly, an interesting observation from Figure 7 is the concentration of research focus in certain regions, particularly Europe. Countries like Italy, the UK, Sweden, Spain and Germany demonstrate active participation and collaboration in the IR literature. On the other hand, some regions such as Southeast Asia, Africa and Latin America appear to contribute relatively less to the IR literature, as evidenced by their limited connections in the network.

This finding raises important considerations regarding the geographic distribution of research in IR. The concentration of research in certain regions suggests that IR determinants and consequences might vary across different markets. This implies the necessity of involving a more diverse range of countries in IR research to capture the nuances and contextual factors that shape IR practices globally. Further research efforts can explore the reasons behind the disparity and encourage increased participation from underrepresented regions.

4.2.3 Co-word analysis. In the analysis, the most encountered keywords after dropping the core keywords relating to the search query included Sustainability Reporting, Sustainability, Corporate Governance, Corporate Social Responsibility, Integrated Thinking, Intellectual Capital, Sustainable Development, South Africa, Accountability, Stakeholder, Corporate Reporting and Integrated Approach. The identified keywords, such as Sustainability Reporting, Sustainability, Corporate Governance and Corporate Social Responsibility, align with the core themes often associated with IR. These keywords reflect the emphasis on environmental and social aspects, as well as the importance of governance



Source: Developed by authors

Figure 7.
Country collaboration network

and responsibility in corporate reporting practices. The inclusion of keywords like Integrated Thinking and Integrated Approach further highlights the integration of various dimensions within reporting frameworks.

The objective behind obtaining the co-word analysis is to determine the co-occurrence of the words to develop clusters and networks based on Scopus database articles. In this regard, co-word analysis shows the ones that use the article's contents, which can be reflected in the whole text, abstract and keywords (Lazar and Chithra, 2020). Based on the 30 nodes, the authors' keywords occurrence is presented in Figure 8. The result reveals that there are three main themes in IR research. We can see the value creation, business model, information asymmetry, accountability, assurance, firm value, value relevance and integrated thinking from the network of co-occurrences of the author's keywords. IR is promoting this idea (IIRC, 2021). Additionally, the analysis suggests the presence of three main themes in IR research: value creation, business model and information asymmetry. While these themes are certainly relevant, it is important to acknowledge that IR encompasses a broader scope of topics and considerations. The focus on these specific themes may overlook other important aspects, such as social impact, stakeholder engagement or the role of technology in reporting practices.

5. Discussion and conclusion

Due to the importance of IR, we aim to provide a comprehensive review of published literature on IR through the use of bibliometric analysis. According to Kushairi and Ahmi (2021),

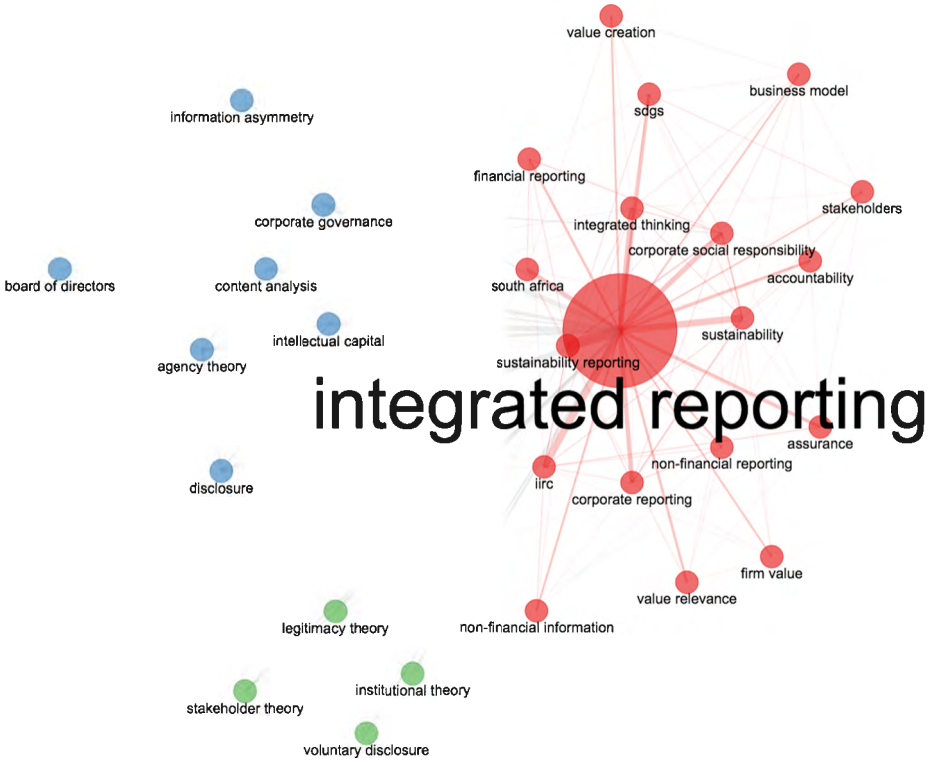


Figure 8.
Co-occurrences network of author's keywords

Source: Developed by authors

bibliometric analysis evaluates research productivity and publications in a particular research domain. Moreover, information garnered from the bibliometric data is useful for evaluating the trends in a specific research area (Liu *et al.*, 2015).

The findings from the analysis can also shed light on the varying research contributions aspects in a specific study field to be used as a guide for researchers in high-impact research production (Akhavan *et al.*, 2016). Thus, this study concentrated on publications dedicated to IR from the Scopus database. The total number of published documents that fell under this category numbered 410, which were obtained using a defined search query. It has been found that literature has focused on the consequences of IR, including firm performance and valuation. However, the existing literature is still unclear about these consequences due the complexity of IR nature, which requires more research on this area. Islam (2021) suggested that mixed findings are reported on the relationship of firm performance and IR.

Moreover, IR publications have shown an increasing trend from year to year until 2020 and beyond. Although the topic has progressed and developed, there are still opportunities for research that future studies can pursue. The publications were published in over 20 countries, with Italy heading the list of in-country collaborations. Specifically, Italy has worked with Australia in IR research publications. More comparative research is needed on countries and industries that were overlooked in the literature as IR practices differ from one country/industry to another. For example, Churet and Eccles (2014) reported that IR exerts a

significant effect on the performance of the firm that operates in only to industries (information technology and health care).

Although bibliometric analysis has a specific nature, some issues need clarification to provide the reader with the required explanation and enhancement for future reference. The first limitation is the results emerging from the specific keyword, which means that the search query outcome on the other fields in the abstract and keywords was excluded in the analysis. Most research that discussed specific areas would mention that area in their titles, while others include them in their abstract or the keyword field. In this regard, the focus of the research may not be specifically related to what is searched for, and as such, this calls for filtering and cleaning prior to the analysis. Future studies can be extended to look into this issue, as it is also noted that no search query is accurately perfect (100%). Thus, the expectation of false positives and negative results should be considered (Sweileh *et al.*, 2017).

This study has contributed to knowledge by presenting the current trend of research on IR. This study also extends and complements previous findings on IR literature using a bibliometric approach and providing meaningful insights into previous literature trends. The outcome of this study will assist researchers in identifying the current gap in the field of IR and, most significantly, recommending a research agenda for the area.

Another limitation is the use of the Scopus database alone as the source of the primary document. Even though Scopus is one of the top extensive databases that document scholarly works (Kushairi and Ahmi, 2021; Sweileh *et al.*, 2017), it is still limited in its coverage. Future studies may include other available databases like the WoS, Google Scholar and Dimensions. More importantly, the combination of all the databases would increase the contribution to a valuable outcome.

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