

NON-FINANCIAL INFORMATION REPORTING: LITERATURE REVIEW IN A BIBLIOMETRIC EXAMINATION

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Abstract

This paper provides a detailed perspective on trends and developments in non-financial reporting research. Several significant aspects are highlighted that reflect the increasing importance given to this topic in the academic community and business practices. The analysis involved a bibliometric examination of a selection of more than 700 papers from papers indexed in the Web of Science database- Clarivate Analytics over 20 years from 2002 to the end of 2022 using the VOSviewer software. The results indicate a significant increase in interest in ESG (Environmental, Social, and Governance) reporting. This trend is consistent with the changes observed in the business environment, where companies recognize their responsibility to manage issues related to the environment, society and governance. The analysis highlights the increased impact of regulations and standards in the field of non-financial reporting. Directives and regulations issued by regulatory authorities and international bodies have helped establish a coherent framework for companies. There is a tendency to integrate non-financial information with traditional financial reporting. This demonstrates the companies' effort to provide a complete and balanced picture of their performance. We are seeing an increase in requests from companies for assurance and third-party verification of non-financial reporting. This contributes to increasing credibility and trust in the information provided.

Keywords

non-financial, reporting, bibliometric, performance

JEL Classification

M40, Q56

Introduction

In recent years, interest in companies' non-financial information and intangible assets has increased. Rising social expectations and demands that businesses address issues pertaining to society and the environment in the context of international initiatives to

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create a sustainable community, which include the “Sustainable Development Goals set by the United Nations” (SDGs) and the “Agreement of Paris”, are partially responsible for this trend. Comparably, the most recent update to the European Union's Non-Financial Reporting Directive (NFRD) intends to enhance stakeholder accountability and the disclosure of sufficient non-financial information (NFI). (Dumitru et. al., 2019).

Concomitantly, research on non-financial reporting methods suggests "ways to improve management policies to obtain more comparable, relevant and reliable information," thus creating value for stakeholders. (Ferreira et al., 2018). In addition, it addresses an integrated stakeholder accounting logic that contributes to sustainable development. For a corporation, long-term growth is only possible with the trust of society and stakeholders (Manes et al., 2018) (Manes et al., 2018). For a firm to be successful, it must meet the expectations and demands of society and create shared value from financial as well as non-financial dimensions.

In addition to the emphasis on non-financial reporting brought by NGOs such as the U.N. and researchers, investors are increasingly concerned about it, as can be seen in the expansion of ESG (“environmental, social and governance”) investments.

Investors must determine if the business can expand sustainably in response to changes in the social and natural environments and satisfies society's expectations and aspirations. The potential of the organisation to produce value over the medium and long term is assessed using non-financial information as well, as this cannot be determined just by financial and accounting data.

The growing emphasis on non-financial data has led to the establishment of several frameworks and standards for non-financial disclosure, such as the Global Reporting Initiative (GRI) guidelines, the “US Sustainability Accounting Standards Board's” (SASB), and the “International Integrated Reporting Council” (IIRC) published Integrated Reporting Framework. Considered a framework for non-financial disclosure, the proposals of the “Financial Stability Board's Working Group” on “Climate-related Financial Disclosures” (TCFD) are gaining traction with increasing support from Japanese corporations.

Because so "many standards and frameworks are set in the management and disclosure of nonfinancial information", companies often perceive them to be new and possibly costly obligations. It is important to highlight, nonetheless, that non-financial information is crucial for businesses to win over society's expectations and demands, as well as for them to interact with investors and other stakeholders about moderate and long-term earnings generation (Ali et al., 2007).

The objective of this paper is to create a map of several studies on non-financial reporting through the bibliometric analysis of articles from the "Web of Science Core Collection" (WoS) database. To perform the bibliometric analysis, 724 articles in the last decades were selected as the study period, i.e., from 2002 to 2022. All the data extracted and processed from WoS, and VOSviewer software was used for graphical representation. It used tools such as “keyword co-occurrence”. Based on the authors who had a major influence on the subject under investigation and the frequency with

which the papers were cited in other publications, the study evaluated the most significant research.

The structure of the paper consists of the following sections. After the introduction, the literature on NFR research will be reviewed, the methodology part will describe the ways of conducting the study. In the conclusions section, the results obtained in relation to previous research will be discussed. The last section presents the limitations of the paper, the consequences of the results for management and possible directions for further research.

1. Review of the scientific literature

The creation of unstructured knowledge is a result of the recent exponential increase of the specialised literature about the reporting of non-financial information. Regarding the composition and scope of research in this topic of study, not much is known. Prior qualitative analyses (e.g., Fifka 2013; Ali et al. 2017; Dumay et al., 2016) provide some insights into particular facets of the topic. Erkens et al. (2015), who reviewed 33 review articles on the subject, note that none of the papers are major studies and so do not offer a comprehensive picture of the subject. Furthermore, only a few of these reviews provide bibliometric information, statistics, or tables. Qualitative evaluations are essential for highlighting the level of knowledge now and discussing potential advancements in the future, but they also bring up several additional issues with the methodology (Vogel and Güttel, 2013). They are naturally biased and frequently suffer from subjectivity. Furthermore, the quantity of articles on this subject is increasing at a faster rate than a single researcher can handle.

In terms of bibliometric studies, we could only locate two earlier English-language bibliometric analyses pertaining to the reporting of non-financial data. Fusco and Ricci (2019) offer a framework for understanding the literature on social and environmental accounting in the public sector. Specifically, they concentrate on the who, what, and why of reporting for public organisations. This research ignores the private sector in favour of the public sector, lacking important information on private sector entities. To address the crucial issue, "What is non-financial reporting?" Erkens et al. (2015) performed the first comprehensive bibliometric assessment of non-financial reporting. They provide a definition of non-financial information, which we employ in our research to generate the list of keywords for our search strategy.

Nevertheless, we think that more work must be done on their analysis to give academics more accurate and comprehensive data. They cover 787 publications between 1973 and 2013 in their article.

To better find articles on this subject, the search keywords could also be better. Table 1 displays the total number of phrases that resulted from our selection of keywords, as opposed to Erkens's et al. (2015) 14 terms. Moreover, our sample is not restricted to articles, meaning that other contributions, such books or chapters, are also included; this exclusion has been noted as a weakness in previous research (Fusco and Ricci 2019).

To further serve researchers, the topic structure offered by Erkens et al. (2015) must be expanded upon. The authors identified ten study themes in non-financial information by manually analysing the title, abstract, and keywords of the papers in their sample (without the use of any software). We investigate the statistical relationships between these themes and certain methodologies or types of journals. Nonetheless, the writers fail to offer a perceptive depiction and analysis of the most pertinent inputs from each, furnishing researchers with insufficient details regarding every one of the recognised subjects.

In their study, Erkens et al. (2015) do not include reference analysis (citations and co-citations). They note this as a shortcoming in their paper, even though our study's citation analysis can provide important details on the connections among publications, authors, and other entities. These results support the necessity for an extensive and current bibliometric study that can organise all prior research on the subject and enrich earlier studies with insightful information.

The discussion of La Torre et al. (2020) centres on the proliferation of non-financial reporting tools that have emerged as competitors in recent times. They contend that sustainable development will be difficult to attain or advance "as long as organisations supporting multiple competing frameworks struggle with each other for a global leadership position" (La Torre et al. 2018, p. 610). The UN Global Compact, the Value Reporting Foundation, and the Task Force on Climate-related Financial Disclosures are just a few of the organisations that have launched or are promoting additional standards and principles concurrently. These projects have occupied certain niches in the realm of de facto sustainability reporting requirements, such as climate information, and have contributed to changing that arena.

Thus, these other initiatives have sought to grab some of the jurisdiction in the expanding field of sustainable development accounting and reporting practises, even if the GRI standards and guidelines are still the most widely used frameworks for sustainable development reporting globally.

2. Research methodology

The VOSviewer software version 1.6.18 was used in the research. This software creates dimensional charts based on mathematical calculation algorithms to develop an overview of the evolution of NFI reporting and information. It is used in bibliometric analysis to provide a functional and graphical representation and can show the architecture and structure of networks, including relevant elements (Bartolacci et al., 2020). We performed several reviews to ensure that all essential information was extracted. The topic chosen was "non-financial reporting". Different maps generated and processed in the VOSviewer software are presented in subsections, starting with a keyword co-occurrence analysis, followed by a mapping of bibliographic references to authors, institutions, and countries. The information was collected on April 11, 2023, from the WoS database. To choose the best publications on this topic, 20 years (2002–2022) was chosen, which symbolizes two decades of major issues and developments in

the field of non-financial reporting, especially in the last ten years. 724 relevant documents were found after applying this selection (figure 1).

Figure 1 shows that most of the analyzed papers were classified in the field of Business Finance, followed by Management. Regarding the type of document, most of the works were classified as articles, over 85%, followed by works presented at conferences, respectively almost 10%. This shows us that the chosen topic was intensely debated during the analyzed period.

The information downloaded from WoS was saved as a txt file, and terms that had the same meaning were combined using a thesaurus file to remove redundant expressions. The VOSviewer program was used to examine these files, allowing the creation of a research based on the examination of citations and author-based keywords, as well as the geographic distribution of nations and their association.

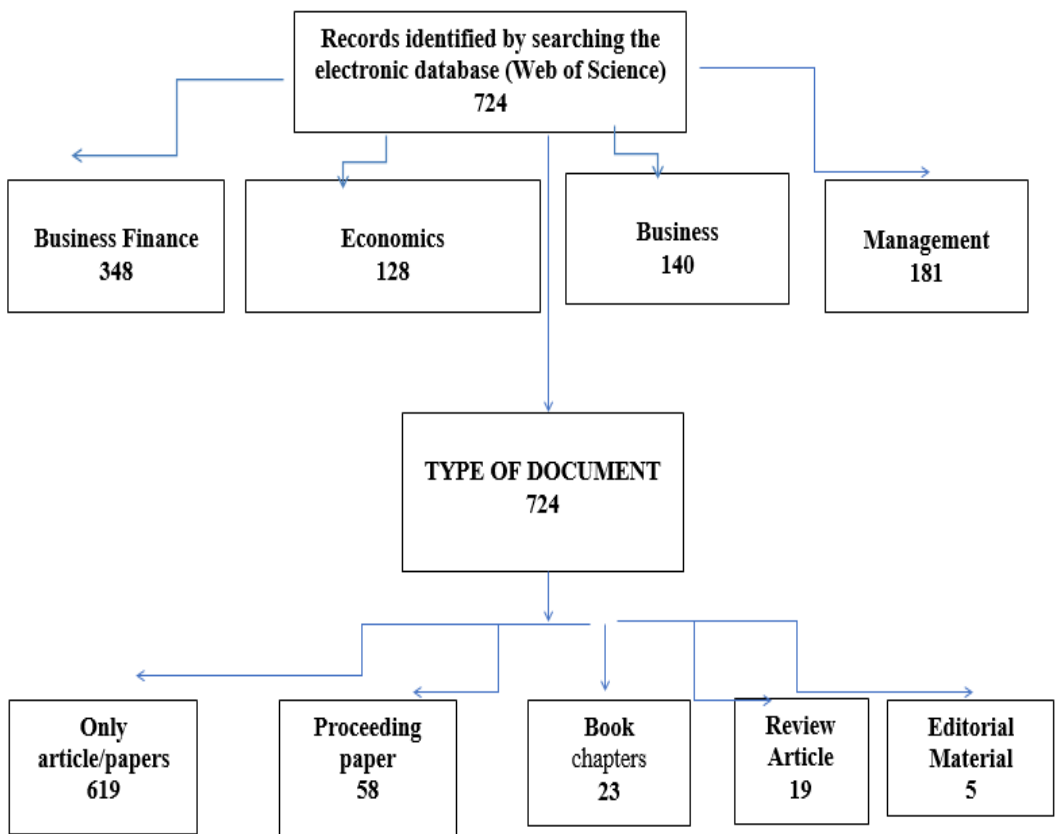


Figure no. 1: Sample selection

Source: Own data processing from WoS 2022

By analysing occurrences and co-citations, this examination helped to determine the type of relationship that existed between the writers and the research topic. Understanding the terminologies offered by the VOSviewer programme was crucial for this case study, as it has its unique nomenclature. For instance, "things" was one of the words that the software utilised. The programme showcased researchers or published scientific studies through "items." There are components to every bibliometric map. Various kinds of linkages define the relationship between the parts.

These connections show term co-occurrence links, bibliographic coupling ties between researchers, and bibliographic coupling links for published papers. When there is a significant correlation between the words, the degree of correlation is represented by a specific mathematical number.

Links between elements allow for grouping them into various groupings. Some bibliometric network parts may have no affiliation with any kind of cluster. A distinct colour designates clusters, and each element is given a certain attribute.

A higher score denotes a more extensive meaning than a lower score. The VOSviewer programme utilises qualities like "score" and "weight" to classify components according to relevance.

3. Results and discussions

The sample period spans the previous 20 years, from 2002 to 2022. Since then, the first article on a related subject has appeared in print. Nonetheless, it wasn't until after 2003—more specifically, after 2011—that the number of publications on non-financial reporting began to rise, averaging over 90 pieces per year. In the sample we chose, namely 2002-2022, we find the centralized data in Figure 2:

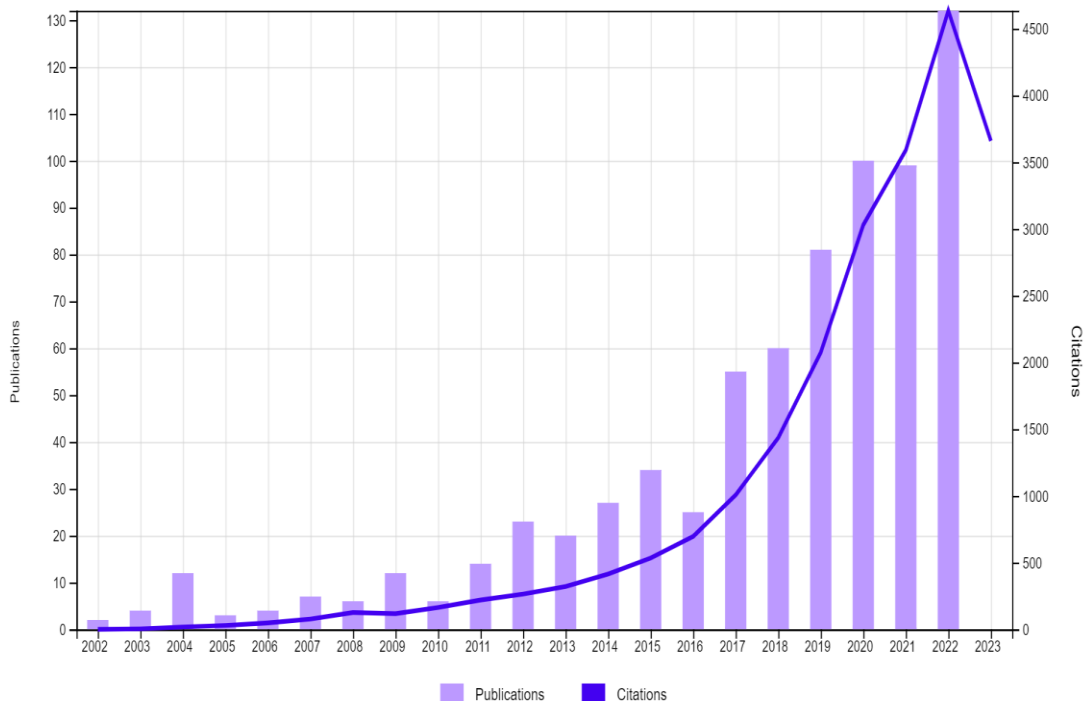


Figure no. 2: Evolution of publications by year

Source: Own processing of data from Web of Science

The bibliometric analysis selected 62 keywords for all potential terms that will allow us to fulfil our study objectives, based on the phrase non-financial reporting entered in the "topic" field of the WoS. This area has the function of searching all categories that meet the selected criteria.

Examining the link between the keywords allowed the distribution of the most frequently encountered terms in the selected articles to be displayed. From 724 Web of Science articles that were considered, the VOSviewer software highlighted 2,084 keywords to show which are the most relevant. A file including all selected works from WoS served as the foundation for the study, so the "bibliographic map" was chosen. A "co-occurrence" analysis was chosen to show the connections between the most important keywords. All terms with a minimum occurrence count of 10 were chosen and 62 keywords that fit the requirements were highlighted based on this count.

Figure 3 displays the findings of the analysis and the relationships between the keywords.

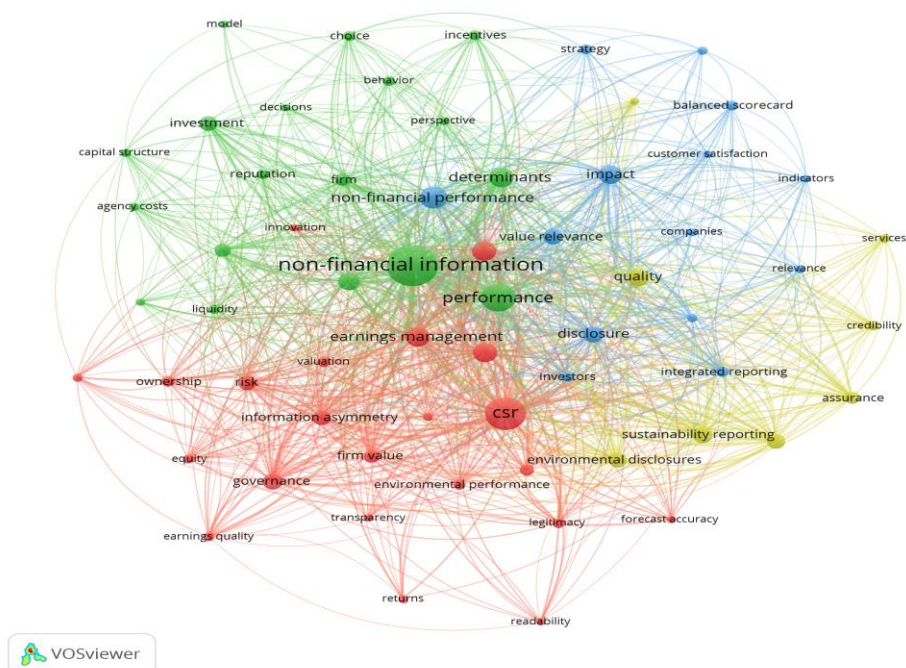


Figure no. 3: The network visualization of the keywords
 Source: Own data processing from WoS 2023

The numbers for the keyword network are returned based on the following criteria: larger ideas and points indicate more frequency of use of the keywords; thicker lines indicate same-work usage; and tighter spacing between points indicates stronger conceptual connections. Four clusters were found in the study, and each was distinguished by a different colour: red, green, blue, and yellow (table 1).

Table no. 1.: Clusters of top 5 keywords

| Cluster 1 (red) | Cluster 2 (green) | Cluster 3 (blue) | Cluster 4 (yellow) |
|-----------------|---------------------------|---------------------------|---------------------------|
| CSR | Non-financial information | non-financial performance | Sustainability reporting |
| cost | performance | indicators | Environmental disclosures |
| governance | Corporate governance | impact | quality |

| | | | |
|------------------|------------------|------------------------------|--------------------|
| risk | decisions | Balanced scorecard | credibility |
| valuation | liquidity | Customer satisfaction | assurance |

Source: Own data processing from VOSViewer 2023

Regarding the analysis of co-authorship of organisations, Figure 4 shows that the first ones by several papers published are the “University of North Carolina” with 10, the “University of Illinois System” with 11, and the “University of New South Walles Sydney” also with 9. However, the total strength of the links indicates that those collaborating most with other organisations are the Universities of North Carolina and Sydney.

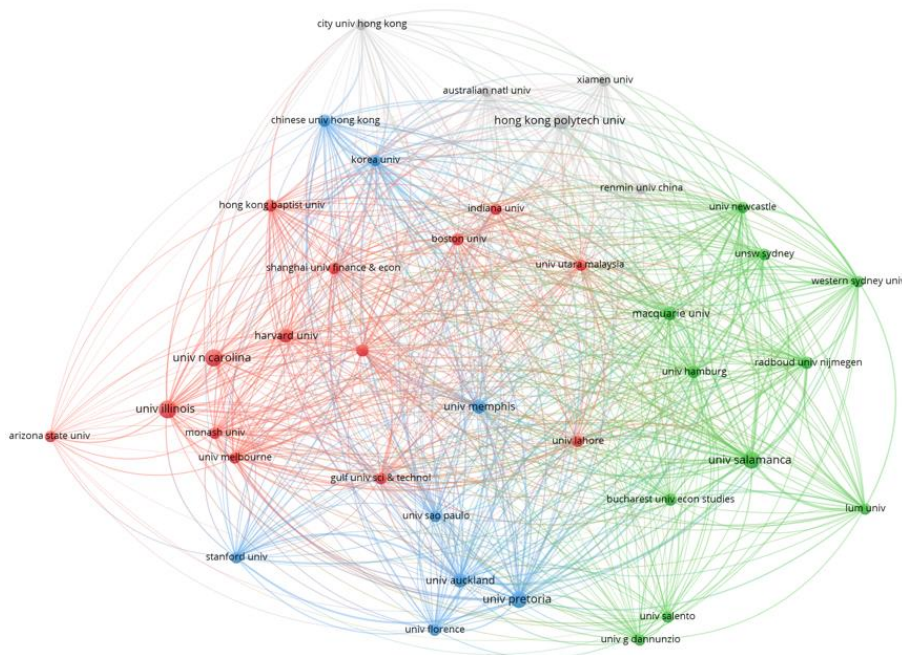


Figure no. 4: Co-authorship network of organizations”

Source: Own data processing from WoS 2022

Finding pertinent writers who are experts in particular fields of study is another benefit of this case study. It is possible to say that this review has identified a group of writers who specialise in using an environmental perspective to investigate non-financial reporting, such as environmental performance and disclosure. This implies that a specific field of study concerns non-financial reporting forms.

The last section of the study is predicated on an examination of the institutional research teams' and an appraisal of their relationship to the established network of collaboration.

In this stage of the bibliometric review, an analysis of the institutions where the articles were published, with the subject of Non-Financial Reporting, was developed to highlight the collaboration within universities around the world. Given the database of 724 articles and the criteria imposed, namely a minimum of ten published papers per university and 50 citations.

Figure no. 5 illustrates the paper with the most robust linkage in our sample Dhaliwal Dan S. (2011). This paper examines “a potential benefit associated with the initiation of voluntary disclosure of corporate social responsibility (CSR) activities: a reduction in firms' cost of equity capital”. The following most cited articles found in our red sample are Dhaliwal, Dan S. (2011) with 1.668 citations and 72 references, Eccles, Robert G.(2014) with 890 citations and 60 references and Dhaliwal, Dan S. (2011) with 829 citations and 80 references. Figure No. 5 also includes a Bibliographic Analysis, a citation analysis that assumes that two publications are comparable if they quote the same sources. We chose this analysis because, according to Vogel (2013), a bibliographic commentary helps examine "new trends" in the scientific community, which is crucial in determining the direction of future research. The distance between nodes and clusters, according to Olczyk (2016), "shows the networks produced by the citation structure" in this manner.

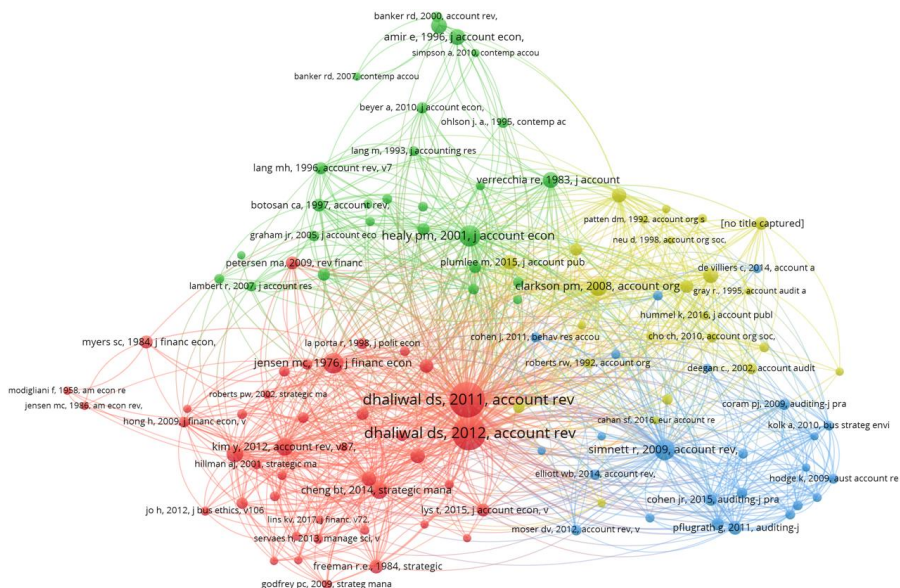


Figure no. 5: “Bibliographic coupling of References”

Source: Own data processing from WoS 2022

Finding pertinent writers who are experts in particular fields of study is another benefit of this case study. It is possible to say that this review has identified a group of writers who specialise in using an environmental perspective to investigate non-financial

reporting, such as environmental performance and disclosure. This indicates that one line of research relates to types of non-financial reporting.

We continue the Bibliographic analysis with Figure 6 which displays the distance between the most significant points on the bibliometric map and the thickness of the lines between them, representing the connection between the countries, we may conclude that scientists from the USA, China, Australia, and Italy work closely together. We stress that Non-Financial Reporting spans a rather large geographic region, indicating a great deal of interest in this issue, to summarise the findings of the second part of the investigation. As a result, this finding establishes the framework for a robust approach towards the implementation of such management.

We have identified five emblematic countries (USA, China, Canada, Australia, and South Korea) that have made the greatest contribution to this research area.

Considering the co-citation study, the primary authors of the papers under evaluation were named. Remarkably, our database includes famous establishments like the Frankfurt School of Finance and Management, the Massachusetts Institute of Technology, and the National Institute for Economic Research.

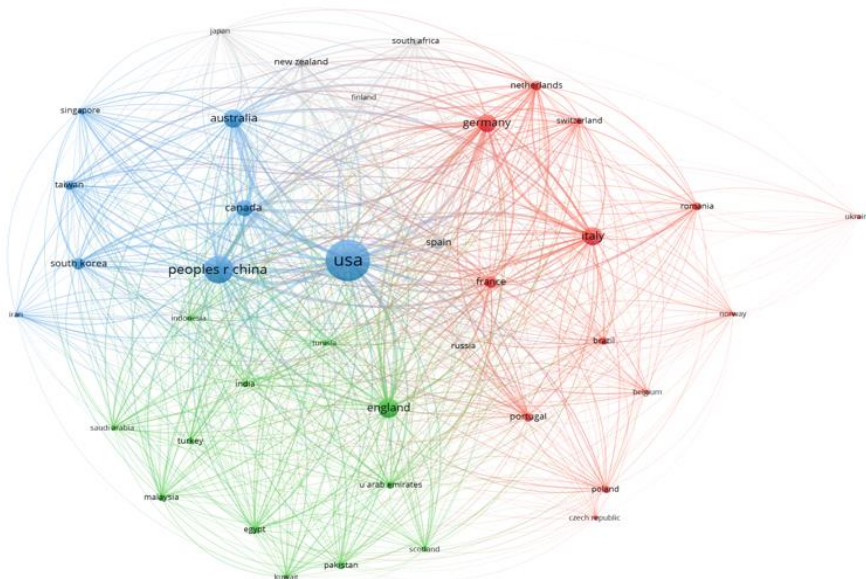


Figure no. 6: “Co-authorship network of countries”
 Source: Own data processing from WoS 2022

To wrap off our investigation into non-financial reporting, we also examined co-authorship which we found to be extremely useful to show the networks of collaboration on the topic and how organizations collaborate, we would like to use this last figure to highlight the distribution of the sample by country.

The results obtained are in accordance with other bibliometric analyses carried out, respectively Grueso-Gala & Zornoza (2022) analysed the papers over 50 years, and Dolhey (2019) analysed them over almost 20 years. Research has shown that interest in the studied topic has been growing in the last decade.

Conclusions

The Global Reporting Initiative (GRI) has indeed played a significant role in advancing these standards over the years. Its long-standing and international status makes it a crucial player in this field. By examining GRI's research and history, you can gain valuable insights into the evolution of sustainable development reporting standards.

The fact that sustainable development reporting practices have been benefiting from global support through GRI for decades is a testament to its importance in this domain. The establishment of a standard vocabulary for reporting on sustainable development has undoubtedly streamlined communication and understanding among stakeholders and organizations.

This paper has a clear and valuable goal. By utilizing the "Web of Science Core Collection" database and carrying out bibliometric research, you aim to create a foundation for future research on Non-Financial Reporting. This approach allows you to identify and prioritize the most influential research in this area, providing a solid basis for further exploration.

Also, by using the VOSviewer program, we were able to identify the most frequently used terms in the published works related to your topic of interest. Narrowing down the selection based on specific criteria is a smart move to ensure that the chosen keywords are the most relevant and representative of the subject matter, thus 62 keywords identified with increased frequency of use were a basis for critical selection.

In the meanwhile, we have recognised five representative nations (South Korea, China, Australia, Canada, and the United States) that have contributed most to this field of study. According to the co-citation analysis, the main authors of the reviewed articles were highlighted.

Most of the 724 analysed articles' high citation counts indicate a publishing interest in this subject. We have created a list of 62 keywords to capture and summarize the research done on NFI reporting because writers use a variety of terminology when writing about it. According to keyword research, the non-financial reporting articles frequently discuss the following ideas: CSR, cost, governance, risk, valuation, performance, corporate governance, decisions, liquidity, indicators, impact, Sustainability reporting, and Environmental disclosures, of which non-financial information is the most important.

These terminologies are the ones that are most frequently used in the literature when discussing NFI reporting. When we examine the study's findings, we find that, even though the subject has been studied in several financial domains, there are still unanswered questions because of the concealed hazards. The results of this study show

that the market economy, financial institutions' services, and a company's risk management procedure are all interdependent. The business must consider the adjustments and suggestions made by the two fields to execute well.

Financial values, non-financial numbers, or any other common denominator will always be required as a standard, fungible metric for analysis in integrated performance management.

This article used bibliometric techniques to map and collect the corpus of research on IFN reporting. This work is significant because, to the best of our knowledge, it is a substantial bibliometric. To the best of our knowledge, the article is essentially a bibliographic compilation of the specialist literature about IFN reporting.

This bibliometric research set out to identify the factors influencing the kind of non-financial reporting, the impact of stakeholders on the style of non-financial reporting, and the relationship between performance and non-financial reporting.

The usage of a single database, where every item from the sample was only ever published once, is the paper's main restriction. Future research directions can be concretized by creating an econometric model with the dependent variable "critical indicators in non-financial reporting" and the independent variables being the most important keywords found because of the bibliometric study conducted in this work.

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