

More than twenty years of the eXtensible Business Reporting Language

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Abstract. *eXtensible Business Reporting Language (XBRL) is being considered as the future language for business and financial reporting, aiming to provide precise, dependable, and timely financial and non-financial information to both internal and external stakeholders. Therefore, the aim of this paper is to study the scientific foundations of a research field that has been developing for about 20 years. Through bibliometric analysis methods, we will examine the conceptual and intellectual foundations underpinning the existing knowledge in the scientific literature on XBRL, identifying the main research trends and future directions for new research, which will delve deeper into various aspects of XBRL adoption.*

Keywords. XBRL, extensible business reporting language, accounting information systems, Internet financial reporting, bibliometric analysis

1 Introduction

With the growth in the availability of scientific literature, there is an increasing need for summarizing and critically analyzing specific research topics, as well as for consolidating, organizing, and synthesizing accumulated knowledge (Kunisch et al., 2018). Literature reviews are fundamental mechanisms for providing insights into the scientific foundations of a particular field of study, initiating new debates, advancing scientific discourse, and guiding future research directions. Linnenluecke et al. (2020) caution that the exponential growth of scientific literature results in an increase in low-quality research papers, particularly with the emergence of so-called predatory journals in open access, which are easily accessible. Therefore, finding relevant literature is more challenging than ever in terms of selecting

sources and evidence on which to build and advance the research field. A highly useful form of literature review is bibliometric analysis, which summarizes the bibliometric and intellectual structure of a research field and analyzes relationships among various research components. Therefore, this paper will clarify the theoretical framework of bibliometrics as a statistical analysis of metadata from scientific papers aimed at assessing and predicting trends in the development of a specific scientific field, and present a systematic, transparent, and reproducible overview of the literature. In addition to the above, this paper will introduce advanced techniques that go beyond bibliometrics and complement scientific or bibliometric mapping methods through visualization, i.e., graphical presentation of analysis results. These techniques are based on graph theory, social network analysis, clustering, etc. The subject of the bibliometric analysis will be the concept of Extensible Business Reporting Language (XBRL), an essential topic in contemporary research and development of accounting information communication technologies. The aim of this paper is to explore the concept of XBRL from both theoretical and applied perspectives, synthesizing various research viewpoints on the subject. Furthermore, the goal was not to limit the range of literature over time in order to track the development of scientific thought from its initial appearance in the academic literature.

The implementation of new accounting information technologies, such as XBRL is a complex and context-specific process. Companies whose securities are traded on a regulated market are required to prepare financial statements in accordance with International Financial Reporting Standards.

Organizations may choose to implement XBRL to reduce the costs associated with regulatory compliance and enhance their competitive standing with potential investors. XBRL, which is rooted in XML, simplifies the automated production of

financial data. This collaborative initiative spans the globe, involving professionals from the accounting field, regulators, and businesses. Using information for right purpose seems to be an important aspect evolving the technologies with application in accounting, whether exploring ERP systems creating an efficient data flow, or standard software to reduce the complexity of communication.

Examples of successful XBRL implementation in prominent countries like the USA, UK (Abdullah et al., 2009), Spain, Italy, and Brazil (Backus & Leiser, 2021) underscore the advantages of XBRL, particularly in cases where regulators and governments collaborate to share data. Research findings also suggest that voluntary adoption rates fluctuate unless there is a mandate for adoption imposed by a reporting agent or organization.

Despite XBRL's slow adoption rate, it is steadily gaining worldwide recognition. Consequently, it's understandable that researchers, industry professionals, and governments continue to prioritize research on XBRL adoption. Moreover, there is an expectation of more studies in this field (Borgi, 2022).

The paper is structured into the following sections: After the introduction, Section 2 provides an overview of the theoretical knowledge on the given topic. Section 3 precisely describes the research methodology, while Section 4 presents the results and findings of the conducted research. Finally, Section 5 provide a discussion, concludes the paper and proposes avenues for future research.

2 Literature review

Bibliometric analysis is a quantitative, systematic review of scientific literature aimed at assessing the scientific progress in a particular research area (Ruhanen et al., 2015).

Over two decades of XBRL literature can reveal trends, advancements, and unresolved issues (Roohani et al., 2010). For example, a study by Locke & Lowe (2007) focuses on the development of XBRL using concepts drawn from a model of successful open source projects. The other studies examine the impact of XBRL adoption in different regions or countries, for example, Steenkamp & Nel (2012) in South Africa; Lakovic et al. (2019) in Montenegro; Liu et al. (2014) in PR China; Liu, Wang, & Yao (2014) in the USA; Bai, Sakaue & Takeda (2014) in Japan. In their research, Shan & Troshani (2014) confirmed the thesis that the application of XBRL can facilitate the auditing process of financial statements, as evidenced by lower auditing costs. Some studies like Gatea, Alnawas & Gali (2021), Ib, Jide & Zik-Rullahi (2016) and Chen (2012) highlighted XBRL's impact on financial reporting and its role in enhancing the

transparency of information in financial statements. The authors found that XBRL adoption leads to a reduction in information asymmetry between managers and investors, thereby enhancing the overall transparency of financial statements. XBRL adoption improves the quality of financial disclosures and allows easier comparison of financial data across different jurisdictions.

Given the absence of bibliometric analysis on XBRL publications, this paper aims to explore the concept of XBRL from both theoretical and applied perspectives, synthesizing various research viewpoints on the subject. A study by Aidi, & Rosli (2019), for example, analyze and report the 370 documents related to XBRL, all of which were sourced from the Scopus database gathered from 2001 to 2019. A study by Erkus & Chiu (2014) presents an analysis of citation counts, co-citations, and publications based on 49 articles sourced from four databases: EBSCO Host, ISI Knowledge Web, Science Direct, and the Social Science Research Network. A study by El Ansary & Oubrich (2016) report the 113 articles related to XBRL based on the ProQuest ABI/Inform, Science Direct and Springer Link database gathered from 2000 to 2014. Study by Bartolacci et al. (2020) covered Scopus database and they selected only 142 articles published in peer-reviewed journals in English between 2001 and 2019, focusing primarily on the consequences of XBRL implementation on financial reporting. Uyob, Saad & Ahmi (2019) analyzed 86 articles published only in English with the specific focus on the impact of XBRL. The data were gathered from Google Scholar and Scopus database starting from the year 2003 until 2018. As a result, this study will expand upon the findings by utilizing the current sources and tools available.

3 Methodology

This analysis of this study covers papers from the Web of Science core collection database, as it is regarded as the most selective database, ensuring that the records in WoS are presumed to be of the highest quality research papers (Lacković Vinček et al., 2023), with the Visualization of Similarities (VOSviewer) program used as the analytical tool.

The search terms used to recognize the most relevant documents included “XBRL” or “extensible business reporting language” as keywords in the title or abstract. The retrieval date was February 1st, 2023. The database analysis was conducted using the free VOSviewer software program, which is specifically designed for bibliometric analysis. VOSviewer generates a map where the relatedness of variables is represented by the distance between them. The shorter the distance between the observed variables, the stronger the connection between them,

which is based on the “visualization of similarities” (VOS) approach (Goyal & Kumar, 2021).

Bibliometric analysis is a scientifically computer-assisted method that identifies core research areas or authors and their interrelationships, correlating all publications related to a specific research topic (de Bellis, 2009). The application of bibliometric analysis enables researchers to explore elements of research, trends in specific fields, intellectual structures within research domains, journal and article performance, and collaboration patterns (de Bruyn et al., 2023). Bibliometric analysis is applied as a specialized method for analyzing large volumes of scientific data across various research fields, including accounting.

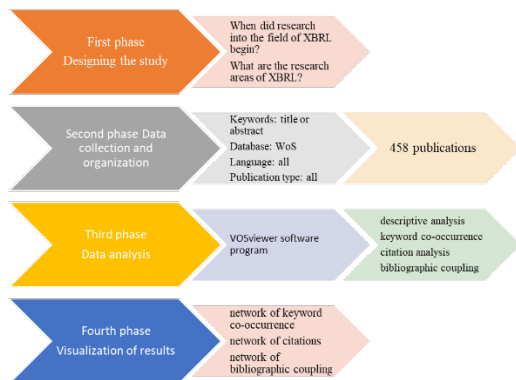


Figure 1. Stages of conducting bibliometric analysis on XBRL

Source: Author.

According to the specified criteria, a total of 458 publications were obtained across the entire WoS database in all categories, and they are considered for further analysis. The analysis of filtered documents was conducted using bibliometric mapping in the VOSviewer software. Descriptive analysis, keyword co-occurrence analysis, citation analysis, and bibliographic coupling analysis were applied (Fig. 1).

4 Results and findings

In the Web of Science core collection database, a total of 458 publications mentioning XBRL in the title or abstract were found from 2002 to 2023, which included 320 (69.87%) original research article, 110 (23.71%) proceeding papers, 10 (2.16%) book chapters and editorial materials, and 8 (1.72%) review articles (Fig. 2).

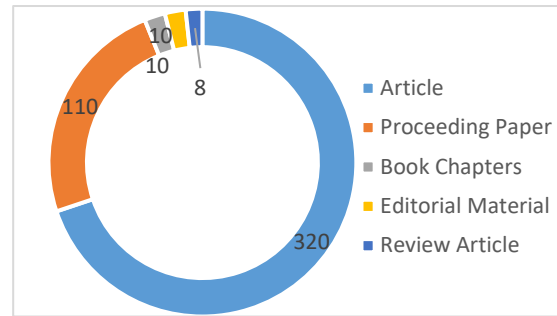


Figure 2. Publication types

Source: Own elaboration based on WoS 2023 data.

The dataset's published documents were also analyzed according to the annual publication frequency. The first publications on XBRL were published by Elliott (March 2002), as well as Nutz & Strauss (October 2002). According to the data presented in Fig. 3, it is evident that no publications on the topic of XBRL were published in 2003, followed by a noticeable slow growth until 2009. The number of published papers increased each year, with the highest number published in 2015, 2017, and 2018 (more than 40 papers per year). After 2021, there was a sudden decline again in the number of published papers on the topic of XBRL, which is surprising considering the fact that the European regulatory framework requires sole proprietorships with securities traded on a regulated market to fully prepare their annual financial statements in Extensible Markup Language format for reporting periods beginning on or after January 1, 2021 (Miścikowska, 2021).

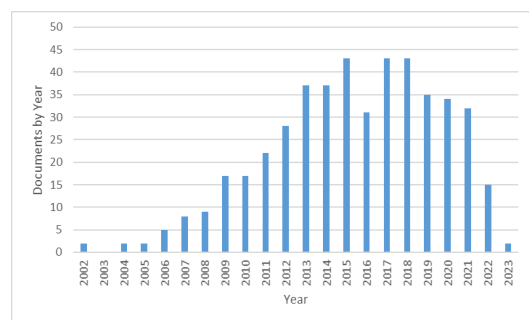


Figure 3. Annual scientific production on XBRL
Source: Own calculation based on WoS 2023 data

As shown in Table 1, nearly all the publications (443, 96.77%) were written in English. Three publications were published in Chinese, German, Portuguese, and Spanish languages each, two publications in Russian, and one publication in Arabic.

Table 1. Languages used for publication

Language	No. of publications	Percentage (%)
English	443	96.77
Chinese	3	0.65
German	3	0.65
Portuguese	3	0.65
Spanish	3	0.65
Russian	2	0.43
Arabic	1	0.22
Total	458	100.00

Source: Own elaboration based on WoS 2023 data.

Keyword analysis using the VOSviewer was conducted to investigate the predominant themes in XBRL. A total of 1121 keywords were identified in 458 publications. Fig. 4 displays a network visualization of author keywords, employing color, circle size, font size, and line thickness to illustrate their relationships with other keywords. (Sweileh et al., 2017).

According to the analysis in this study, eight clusters in XBRL research have been identified based on author keywords. The first red cluster is related to XBRL, corporate disclosure, e-government, extensible business reporting, financial information, internet, sustainability and transparency. The second green include the keywords of adoption, digital reporting, extensible business reporting, institutional theory, malaysia, standard business reporting and xbrl.

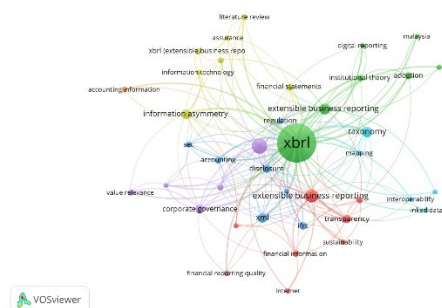


Figure 4. Keyword co-occurrence

Source: Own mapping in VOSviewer based on the WoS 2023 data.

The most frequently appearing keywords were financial reporting, taxonomy, information asymmetry, XML, corporate governance, transparency, disclosure and information systems (Table 2).

Table 2. Top ten keywords of XBRL based on the occurrence

Author keywords	Occurrences	Percentage (%)
Financial Reporting	40	25.81
Taxonomy	19	4.09
Information Asymmetry	16	3.45
XML	16	3.45
Corporate Governance	14	3.02
Transparency	11	2.37
Disclosure	11	2.37
Information Systems	10	2.16
Accounting	9	1.94
Adoption	9	1.94

Source: Own elaboration based on WoS 2023 data.

In addition to keywords, it is important to examine the occurrence count in WoS subject categories, which are listed in Table 3, to understand the research area. Research areas are assigned to journals and define the scientific focus of the journal. A journal can be assigned multiple subject categories depending on its scientific orientation. As expected due to the field to which XBRL belongs, which is primarily accounting and auditing, business economics ranks first (65.73%), followed by computer science (20%).

Table 3. Number of publications in various research areas

Research area	No. of publications	Percentage (%)
Business Economics	305	65.73
Computer Science	92	19.83
Engineering	30	6.47
Information Science		
Library Science	22	4.74
Operations Research		
Management Science	13	2.80
Social Sciences		
Other Topics	13	2.80
Public Administration	12	2.59
Education		
Educational Research	9	1.94
Science Technology		
Other Topics	9	1.94
Telecommunications	9	1.94

Source: Own elaboration based on WoS 2023 data.

Table 4 presents the leading journals on XBRL. The highest-ranking journal was the *Journal of Information Systems*, with 44 publications and an impact factor (IF) of 2.308.

Table 4. Overview of leading journals publishing on XBRL

Journal name	Publisher	Document type	Total
Journal of Information Systems	American Accounting Association	Journal	44
Journal of Emerging Technologies in Accounting	American Accounting Association	Journal	18
International Journal of Accounting Information Systems	Elsevier B. V.	Journal	16
International Journal of Accounting and Information Management	Emerald Publishing Limited	Journal	13
International Journal of Disclosure and Governance	Palgrave Macmillan	Journal	11
Lecture Notes in Computer Science	Springer Nature	Book Series	10
Issues in Accounting Education	American Accounting Association	Journal	8
Accounting Horizons	American Accounting Association	Journal	7
International Journal of E Business Research	IGI Global	Journal	6
Decision Support Systems	Elsevier B. V.	Journal	5

Source: Own elaboration based on WoS 2023 data.

Table 5 provides an overview of published papers on the topic of XBRL by country. The United States ranks first in terms of the number of papers in this scientific field, with a share of 41.03 % (183 publications), followed by China (72 publications, 15.52%), and Australia (40 publications, 8.62%).

Table 5. Overview of publications on XBRL by country

Country	No. of publications	Percentage (%)
USA	183	41.03
China	72	15.52
Australia	40	8.62
England	23	4.96
Canada	22	4.74
Italy	22	4.74
Germany	20	4.31
Spain	16	3.45
Indonesia	13	2.80
Malaysia	12	2.59
Netherlands	12	2.59
Taiwan	11	2.37

Source: Own elaboration based on WoS 2023 data.

Table 6 shows the leading organizations publishing on XBRL. The most active organization working on XBRL is Rutgers State University at New Brunswick, with the total of 21 publications on XBRL (13.55%). Next on the list are California State University System (17 publications, 3.66%) and The University of Hawaii at Manoa, as well as The University of Hawaii System (each with 16 publications, 3.45%). From the analysis presented, it is evident that all organizations operate within the United States, and research on XBRL is primarily focused on the western side of the world, highlighting a gap between research in the USA and other parts of the world.

Table 6. Leading organizations publishing on XBRL

Organization	No. of publications	Percentage (%)
Rutgers State University at New Brunswick	21	13.55
California State University System	17	3.66
University of Hawaii at Manoa	16	3.45
University of Hawaii System	16	3.45
Rutgers State University at Newark	14	3.02
State University System of Florida	13	2.80

University of Arkansas at Fayetteville	13	2.80
University of Arkansas System	13	2.80
University of Adelaide	12	2.59
Bentley University	10	2.16
Delft University of Technology	10	2.16

Source: Own elaboration based on WoS 2023 data.

Table 7 listed the most active authors with more than five publications. Among them, Troshani, I. from the University of Adelaide has authored 12 papers predominantly focused on digital reporting. Except him, Farewell, S. M. and Debreceeny, R. S. have published more than ten publications on XBRL.

Table 7. Top authors publishing on XBRL

Author name	No. of publications	Percentage (%)
Troshani, I.	12	13.04
Farewell, S. M.	11	2.37
Debreceeny, R. S.	10	2.16
No, W. G.	9	1.94
Vasarhelyi, M. A.	7	1.51
Felden, C.	7	1.51
Boritz, J. E.	6	1.29
Rohde, F.	6	1.29
Wang, T.	6	1.29
Janssen, M.	6	1.29
Alles, M. G.	6	1.29
Wang, D.	6	1.29

Source: Own elaboration based on WoS 2023 data.

Fig. 5 shows the bibliographic coupling of authors on the topic of XBRL. Bibliographic coupling occurs when two papers cite a common third paper in their bibliographies. This indicates that there is a likelihood that the two papers address a similar topic. Two documents are bibliographically coupled if they both cite one or more common documents. This method is applied as a complement to co-citation analysis. While co-citation analysis shows that two papers appear together in the reference list of another paper, bibliographic coupling counts the number of references that a group of documents shares together. The diagram illustrates a close collaboration between Debreceeny, R. and Farewell, S., who frequently work together on researches, as well as Kim, J. W. and Lim, J. H. Additionally, Vasarhelyi, M. A. collaborates with a

group of authors colored in blue, and No, W. G. collaborates with authors colored in purple.

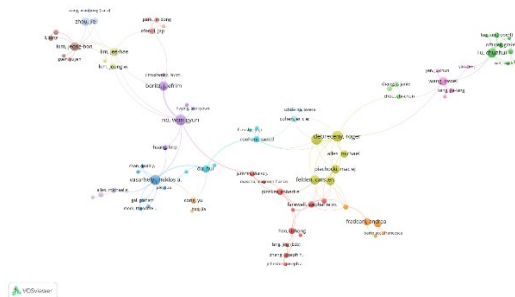


Figure 5. Bibliographic coupling of authors on the topic of XBRL

Source: Own mapping in VOSviewer based on the WoS 2023 data.

Fig. 6 shows the bibliographic coupling of co-authorship between countries. Nodes represent countries based on the affiliation addresses of authors, and the thickness of the network lines represents the strength of collaboration (De Luliis et al., 2024). The two largest nodes are the USA and China. The main partners of the USA are Taiwan, Japan and South Korea (colored green). China has worked closely with Canada and Singapore (colored pink), while England has collaborated with Finland, Jordan and Malta (colored red).

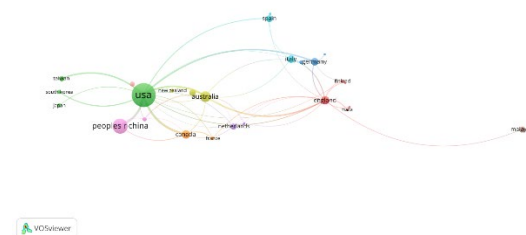


Figure 6. Bibliometric coupling of co-authorship between countries

Source: Own mapping in VOSviewer based on the WoS 2023 data.

The citation analysis in Table 8 shows the impact of publications on XBRL. In the field of XBRL over a period of 21 years, 458 papers have been published, which have been cited 4883 times in other works, averaging 221.95 citations per year, 10.48 citations per document, and with an h-index of 34.

Table 8. Citation analysis

Metrics	Data
Publication years	2002-2023
Citation years	21
Documents	458
Citations	4883
Citations per year	221.95

Citations per document	10.48
Hirsch h-index	34

Source: Own elaboration based on WoS 2023 data.

Table 9 lists the most cited articles in the field of XBRL, based on their citation count. The article titled "Does search-facilitating technology improve the transparency of financial reporting?" authored by Hodge, Kennedy & Maines (2004) ranks first in terms of the number of citations (its citation count is 242 or the average per year is 12.74 citations). The second most cited article, with a total of 182 citations (or the average per year is 15.17 citations), was published later, in 2011, under the title "A Review of ERP Research: A Future Agenda for Accounting Information Systems," authored by Grabski, Leech & Schmidt. From the table provided, it can be concluded that among the top ten most cited articles are those with a total of more than 65 citations. Over the twenty-year period observed, the most cited articles were published between 2010 and 2012.

Table 9. Most cited articles in the WoS database on XBRL

Authors	Title	Source	Cites
Hodge, F. D., Kennedy, J. J. & Maines, L. A. (2004)	Does search-facilitating technology improve the transparency of financial reporting?	Accounting Review	242
Grabski, S. V., Leech, S. A. & Schmidt, P. J. (2011)	A Review of ERP Research: A Future Agenda for Accounting Information Systems	Journal of Information Systems	182
Debrecceny, R., Farewell, S., Piechocki, M., Felden, C. & Graening, A. (2010)	Does it add up? Early evidence on the data quality of XBRL filings to the SEC	Journal of Accounting and Public Policy	108
Yoon, H., Zo, H. & Ciganek, A. P. (2011)	Does XBRL adoption reduce information asymmetry?	Journal of Business Research	98

Kim, J. W., Lim, J. H. & No, W. G. (2012)	The Effect of First Wave Mandatory XBRL Reporting across the Financial Information Environment	Journal of Information Systems	92
Pinsker, R. & Li, S. (2008)	Costs and benefits of XBRL adoption: Early evidence	Communications of the ACM	80
Blankespoor, E., Miller, B. P. & White, H. D. (2014)	Initial evidence on the market impact of the XBRL mandate	Review of Accounting Studies	75
Bozanic, Z., Hoopes, J. L., Thornock, J. R. & Williams, B. M. (2017)	IRS Attention	Journal of Accounting Research	74
Hoitash, R. & Hoitash, U. (2018)	Measuring Accounting Reporting Complexity with XBRL	Accounting Review	69
Plumlee, R. D. & Plumlee, M. A. (2008)	Assurance on XBRL for Financial Reporting	Accounting Horizons	67

Source: Own elaboration based on WoS 2023 data.

5 Discussion and Conclusion

The popularity and development of bibliometric analysis primarily lie in the advancement, availability, and accessibility of bibliometric software and citation databases, which ensure ease and speed in managing structured data. Additionally, the multidisciplinary nature of bibliometric methodology is valuable for handling large volumes of scientific data and generating significant research impact. Citation databases and their online platforms, such as WoS and Scopus, index large volumes of bibliographic data on scientific literature and their references, and measure the citation count of each publication (Buchanan, 2006). Collections of bibliographic data and their corresponding

bibliometric indicators are becoming easily and quickly accessible to scientists for further use.

From this study, 458 publications about XBRL indexed in WoS core collection database were analyzed. Researchers Elliott, R. K., Nutz, A., and Strauss, M. in 2002 have laid the scientific foundations for the research area, and among the most influential authors are Troshani, I., Farewell, S. M. and Debreceeny, R. S.

The collaboration structure is revealed through co-authorship analysis, which presents the intellectual collaboration among scientists along with attributes such as organizations and countries. This analysis can provide insights into the connectivity of authors within a specific geographic area, the internationalization of a certain group of authors, and identify authors with extensive collaboration networks. The collaboration network of authors indicates that groups of authors tend to collaborate within smaller groups and have very limited collaboration outside their co-authorship circle. The collaboration network of countries reveals that the most significant scientific collaboration occurs between researchers from the United States and China. Additionally, these two countries collaborate with Taiwan, Japan, South Korea, Canada, and Singapore.

The most frequently used author keywords reveal the thematic areas studied within the field of XBRL, namely financial reporting, taxonomy, information asymmetry, XML, corporate governance, transparency, disclosure and information systems. Journals that have published papers on XBRL are categorized into research areas of various scientific disciplines, such as business economics, computer science, engineering, information science, etc.

Over 95% of documents were published in English and originated from 58 identified countries. With regard to analysis of the citation report from WoS core collection database on XBRL, over a period of 21 years, 458 papers have been published, which have been cited 4883 times in other works, averaging 221.95 citations per year, 10.48 citations per document, and with an h-index of 34.

The documents on XBRL are mostly published in the publications that include business economics, computer science and engineering research area. The analysis of keywords frequency has shown that financial reporting and taxonomy are the most common keywords in the gathered documents.

Despite the comprehensive and objective analysis that bibliometrics enables, there are still some limitations to the conducted research. The first limitation pertains to the fact that the analysis includes papers based on two keywords that appear in the title or abstract of the work (XBRL or extensible business reporting language). In future research, it is recommended to expand the search to include keywords or the entire text. However, in that case, the selection of papers should be based on

several keywords that appear in each work. The second limitation relates to the primary source of publication data, which in this case is only the Web of Science database. Therefore, future research could include other relevant databases, such as Scopus. Despite the mentioned limitations, the conducted bibliometric analysis can be beneficial to researchers in the fields of accounting and auditing who are exploring XBRL, aiding in understanding new trends and approaches in researching its application and enhancement for the future.

Bibliometric analysis is a widely applicable tool, so for precise research, it is essential to carefully select the objectives and bibliometric techniques that will provide the best answers.

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References

- Abdullah, A., Khadaroo, I., & Shaikh, J. (2009), "Institutionalisation of XBRL in the USA and UK", *International Journal of Managerial and Financial Accounting*, Vol. 1, No. 3, pp. 292-304.
- Aidi, A. & Rosli, M. (2019), "Bibliometric Analysis of Global Scientific Literature on Web Accessibility", *International Journal of Recent Technology and Engineering*, Vol. 7, No. 6, pp. 250-258.
- Backus, C., & Leiser, S. (2021), "An Open Data Standard for Local Government Financial Reporting: How it Could Work in Michigan", *Center for Local, State, and Urban Policy, University of Michigan*. <https://closup.umich.edu/sites/closup/files/2021-07/closup-wp-56-Backus-Leiser-An-Open-Data-Standard-for-Local-Government-Financial-Reporting-How-it-Could-Work-in-Michigan.pdf>
- Bai, Z., Sakaue, M., & Takeda, F. (2014), "The impact of XBRL adoption on the information environment: Evidence from Japan", *The Japanese Accounting Review*, Vol. 4, pp. 49-74.
- Bartolacci, F., Caputo, A., Fradeani, A., & Soverchia, M. (2020), "Twenty years of XBRL: what we know and where we are going", *Meditari Accountancy Research*, Vol. 29, No. 5, pp. 1113-1145.
- Borgi, H. (2022), "XBRL technology adoption and consequences: A synthesis of theories and

- suggestions of future research”, *Journal of Accounting and Management Information Systems*, Vol. 21, No. 2, pp. 220-235.
- Buchanan, R. A. (2006), “Accuracy of cited references: The role of citation databases”, *College & Research Libraries*, Vol. 67, No. 4, pp. 292-303.
- Chen, Y. C. (2012), “A comparative study of e-government XBRL implementations: The potential of improving information transparency and efficiency”, *Government information quarterly*, Vol. 29, No. 4, pp. 553-563.
- de Bellis, N. (2009), “Bibliometrics and citation analysis: from the science citation index to cybermetrics”, *Scarecrow press*.
- de Bruyn, C., Said, F. B., Meyer, N., & Soliman, M., (2023), “Research in tourism sustainability: A comprehensive bibliometric analysis from 1990 to 2022”, *Heliyon*, Vol. 9, No. 8, pp. 1-22.
- De Iuliis, M., Cardoni, A., & Cimellaro, G. P. (2024), “Resilience and safety of civil engineering systems and communities: A bibliometric analysis for mapping the state-of-the-art”, *Safety Science*, Vol. 174, 106470.
- El Ansary, M., & Oubrich, M. (2016), “State of the art and trends of the research on XBRL bibliometric analysis from 2000–2014” in 4th IEEE International Colloquium on Information Science and Technology (CiSt), 2016, IEEE, pp. 243-250.
- Elliott, R. K. (2002), “Twenty-first century assurance”, *Auditing: A Journal of Practice & Theory*, Vol. 21, No. 1, pp.139-146.
- Erkus, H., & Chiu, V. (2014), “On the research contribution of XBRL literature-A bibliometrics analysis”, *Eurasian journal of business and economics*, Vol. 7, No. 13, pp. 173-188.
- Gatea, A. K., Alnawas, A. A. & Gali, Z. H. (2021), “The effect of XBRL financial reporting on enhancing the transparency of information in the financial statements”, *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, Vol. 12, No. 11, pp. 4945-4953.
- Goyal, K., & Kumar, S. (2021), “Financial literacy: A systematic review and bibliometric analysis”, *International Journal of Consumer Studies*, Vol. 45, No. 1, pp. 80-105.
- Ib, C. E., Jide, I., & Zik-Rullahi, A. A. (2016), “The impact of XBRL on financial reporting: A conceptual analysis”, *International Journal of Empirical Finance*, Vol. 4, No. 2, pp. 78-85.
- Kunisch, S., Menz, M., Bartunek, J. M., Cardinal, L. B., & Denyer, D. (2018), “Feature topic at organizational research methods: How to conduct rigorous and impactful literature reviews?”, *Organizational Research Methods*, Vol. 21, No. 3, pp. 519-523.
- Lacković Vincek, Z., Gregurec, I., & Kovšca, V. (2023), “Exploring the trend of the research on Logistics 4.0”, *LogForum*, Vol. 19, No. 3, pp. 395-409.
- Lakovic, T., Rondovic, B., Backovic-Vulic, T., & Ivanovic, I. (2019), “The determinants of xbrl adoption: An empirical study in an emerging economy” in *Information Systems: 15th European, Mediterranean, and Middle Eastern Conference, EMCIS 2018, Limassol, Cyprus, October 4-5, 2018, Proceedings 15*, pp. 532-546. Springer International Publishing.
- Linnenluecke, M. K., Marrone, M., & Singh, A. K. (2020), “Conducting systematic literature reviews and bibliometric analyses”, *Australian Journal of Management*, Vol. 45. No. 2, pp. 175-194.
- Liu, C., Luo, X. R., Sia, C. L., O'farrell, G., & Teo, H. H. (2014), “The impact of XBRL adoption in PR China”, *Decision Support Systems*, Vol. 59, pp. 242-249.
- Liu, C., Wang, T., & Yao, L. J. (2014), “XBRL’s impact on analyst forecast behavior: An empirical study”, *Journal of accounting and public policy*, Vol. 33, No. 1, pp. 69-82.
- Locke, J., & Lowe, A. (2007), “XBRL: an (open) source of enlightenment or disillusion?”, *European Accounting Review*, Vol. 16, No. 3, pp. 585-623.
- Miścikowska, D. (2021), “Preparers’ readiness for ESEF reporting: Early evidence from the Warsaw Stock Exchange”, *Ekonomia Międzynarodowa*, Vol. 35, pp. 194-234.
- Nutz, A., & Strauss, M. (2002), “Concept and practical implementation of the eXtensible Business Reporting Language (XBRL) Konzept und praktischer Einsatz”, *Wirtschaftsinformatik*, Vol. 44, pp. 447-457.
- Roohani, S., Xianming, Z., Capozzoli, E., & Lamberton, B. (2010), “Analysis of XBRL literature: A decade of progress and puzzle”, *International Journal of Digital Accounting Research*, Vol. 10, pp. 131-147.
- Ruhanen, L., Weiler, B., Moyle, B. D. & McLennan, C. L.J. (2015), “Trends and patterns in sustainable tourism research: A 25-year bibliometric analysis”, *Journal of Sustainable Tourism*, Vol. 23, No. 4, pp. 517-535.
- Shan, Y. G., & Troshani, I. (2014), “Does XBRL benefit financial statement auditing?”, *Journal of*

Computer Information Systems, Vol 54, No. 4, pp. 11-21.

Steenkamp, L. P., & Nel, G. F. (2012), "The adoption of XBRL in South Africa: an empirical study", *The Electronic Library*, Vol. 3, No. 30, pp.409-425.

Sweileh, W. M., Al-Jabi, S. W., AbuTaha, A. S., Sa'ed, H. Z., Anayah, F. M. & Sawalha, A. F. (2017), "Bibliometric analysis of worldwide scientific literature in mobile-health: 2006-2016", *BMC Medical Informatics and Decision Making*, Vol. 72, No. 17, pp. 1-12.

Uyob, R., Saad, R. A. J., & Aidi, A. (2019), "A Review of the Study on the Impacts of the eXtensible Business Reporting Language (XBRL)", *International Journal of Scientific & Technology Research*, Vol. 8, No. 9, pp. 2320-2329.