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Article

Visualizing and mapping two decades of literature on board of directors research: A bibliometric analysis from 2000 to 2021

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ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | REVIEW ARTICLE

Visualizing and mapping two decades of literature on board of directors research: a bibliometric analysis from 2000 to 2021

Wahyu Trinarningsih¹, Adhe Rizky Anugerah^{2*} and Prafajar Suksessanno Muttaqin³

Abstract: The Board of Directors (BOD) plays an important role in determining the effectiveness and performance of a corporation that makes research in this field begin to grow significantly in recent years. We conducted a bibliometric analysis of the BOD research from 2000 to 2021 to see the trend of publications on this subject. We retrieved a total of 635 research articles with “Board of Directors” keywords in the article title for further analysis. We used VOSviewer software to construct maps based on network data from scientific publications showing relationships between keywords, authors, countries, and journals. BOD research was dominated by authors affiliated with the United States and European institutions. In terms of co-occurrence, the top author keywords after the primary keyword were “firm performance”, “board composition”, “gender diversity”, “corporate governance”, and “agency theory”. Our results also suggest that political connection and tax avoidance may receive more attention in recent and upcoming years. To the best of the authors'

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PUBLIC INTEREST STATEMENT

The board of directors (BOD) plays an essential role in corporate governance and organizational function. Research in this area continues to grow over the past two decades because BOD impacts corporate financial performance. Due to its importance, a bibliometric analysis was conducted to measure publication performance, past and current research topics, and its most frequent keywords. Bibliometrics uses a statistical approach and network analysis theory to unveil the relationship between keywords, authors, institutions, and countries. We found that the current topics in BOD research are political connection and tax avoidance; shifted from previously were gender diversity, corporate sustainability, and environmental effect that emerged heavily in 2013–2016. According to the keywords cluster, research in BOD is classified into four big topics: (1) board structure and composition, (2) managerial ownership, (3) firm value and performance, and lastly (4) family firm. Lastly, research quality from Asian institutions should be improved along with its productivity improvement.

knowledge, this research is the first to study the bibliometry of BOD research without any other keyword combination.

Subjects: Corporate Finance; Corporate Governance; Corporate Social Responsibility

Keywords: Bibliometric analysis; board of directors; research patterns and trends; Scopus; network

1. Introduction

The board of directors (BOD) as the elected shareholder representative, has a crucial role in an organizational function. The board is responsible for maximizing shareholders' prosperity, involve in the decision-making process, oversight of management, and setting policies of company strategy. Therefore, an effective BOD brings an important corporate governance mechanism to mitigate agency problems and encourages the company to operate efficiently (Terjesen et al., 2015) and boost the firm's performance (Kouaib et al., 2020; Zhou et al., 2018).

Corporate scandals reveal the importance of BOD as a monitoring system. This is because company collapses occurred mostly due to the weak internal corporate governance mechanism by BOD. In addition, poor board monitoring increases corporate risk (Sandvik, 2020). For instance, the Wirecard scandal, the German payment processing company, one of the major scandals in 2020, disclosed an accounting error that inaccurately inflated their balance sheet, and the board filed for insolvency (Post et al., 2011).

Various corporate scandals after the financial crisis in 2008 encouraged companies to adopt good corporate governance practices, and research on corporate governance became more known after this period (Zheng & Kouwenberg, 2019). As boards play an essential role in governance practice, they need to adapt to environmental change. Some studies advocate changing the board composition or using recognized board characteristics. This is because the effectiveness of Board supervision depends on the board's characteristics.

This study provides a quantitative bibliometric analysis to revisit the main areas and current publication trends in the board of directors and suggests future research directions. The analysis addresses the following research questions: RQ1: *What is the current publication trend in board of directors?* RQ2: *Which are the most productive years of research on the board of directors?* RQ3: *Who are the most productive and influential authors on the board of directors' research?* RQ4: *Which are the most productive countries on the board of directors' research?* RQ5: *Which are the most influential institutions on the board of directors' research?*

The number of bibliometric studies on the board of directors is limited; previous studies have focused on corporate governance (Zheng & Kouwenberg, 2019) or more specific topics, such as board diversity (Sánchez-Teba et al., 2021) and its impact on corporate social responsibility (Dwekat et al., 2020). Most of the research retrieved data from the ISI Web of Science by applying the keywords in the title, abstract, and keyword. The studies have also extracted various journal articles, proceedings papers, and reviews (Huang & Ho, 2011). Our bibliometric analysis differs from those of other published articles because, to the best of the authors' knowledge, this research is the first to conduct a bibliometric study on a general board of director field with the Scopus database. Table 1 compares bibliometric studies in the past with our study based on several dimensions.

2. Materials and methods

2.1. Data source and search strategy

The Scopus database was used to perform a bibliometric analysis of the Board of Directors (BOD) in this research. Scopus offers broader coverage than the Web of Science (WOS). It has over 37,000

Table 1. Comparison of previous studies on BOD and our study

Author	Time Period	Keywords/ Search Strategy	Search Field	Data Source and Scope	Total Documents Examined	Bibliometric indicator
(Sánchez-Teba et al., 2021)	No time limit	Women and board of directors	Article title, abstract, and keywords	Web of Science	168	<p>(1) Top 10 most-cited articles and its average citation per year</p> <p>(2) Co-citation (relative importance) of the 10 most-cited articles</p> <p>(3) Top 15 most cited keywords by the authors according to the connection strength</p> <p>(4) Keyword evolution from 2013 to 2018</p> <p>(5) Co-citation reference and top 10 authors with highest total connection force</p>

(Continued)

Table 1. (Continued)

Author	Time Period	Keywords/ Search Strategy	Search Field	Data Source and Scope	Total Documents Examined	Bibliometric indicator
(Zheng & Kouwenberg, 2019)	1996 to 2018	Boards of directors, corporate governance, CEO, board composition, board characteristic, and board structure.	Article title, abstract, and keywords	Web of Science and SCOPUS	6302	<p>(1) Published articles language (English)</p> <p>(2) Document type (only journal article is included)</p> <p>(3) Publication volume by year (1996 to 2018), geographic source and venues</p> <p>(4) Top 20 most active journals by volume and top 20 most influential journals by citation</p> <p>(5) Top 20 most influential authors according to number of Scopus citations</p> <p>(6) Co-citation documents according to the frequency in which two documents are cited together by other documents. This includes co-citation between documents, journals, and authors.</p> <p>(7) Top 20 most cited articles in SCOPUS database</p> <p>(8) Top 20 most influential document based on document co-citation analysis</p> <p>(9) Keyword evolution in board of director and corporate governance in 1996 to 2018 with threshold 30 co-occurrences</p>

(Continued)

Table 1. (Continued)

Author	Time Period	Keywords/ Search Strategy	Search Field	Data Source and Scope	Total Documents Examined	Bibliometric indicator
(Baker et al., 2020)	1999 to 2019	Board diversity	Article title, abstract, and keywords	Web of Science	579	<p>(1) Published article language (English)</p> <p>(2) Document type (only journal article is included)</p> <p>(3) Subject area filter</p> <p>(4) Publication trend by year (between 1999 and early 2019)</p> <p>(5) Top publishing countries with at least 3 publications</p> <p>(6) Page rank analysis on top 20 articles</p> <p>(7) Top publishing journals with minimum 4 articles and its ABS rating (provided by Chartered Association of Business School)</p> <p>(8) Top publishing authors with at least 5 publications on board diversity</p> <p>(9) Top 20 articles by number of global and local citations</p> <p>(10) Articles and authors centrality based on citations</p> <p>(11) Most frequent keywords pairs with at least 6 articles</p> <p>(12) Article classification with the modularity index Q</p>

(Continued)

Table 1. (Continued)

Author	Time Period	Keywords/ Search Strategy	Search Field	Data Source and Scope	Total Documents Examined	Bibliometric indicator
Our Study	2000 to 2021	Board of directors	Article title	Scopus	635	(1) Article language (English) (2) Document type (only journal and conference proceeding) (3) Publication trend by year of publication (2000 to 2020) (4) Keywords co-occurrence, its classification, and keywords evolution in 2010–2020. (5) Number of authors per document (6) Most productive authors with at least 4 articles (7) Most productive countries and publication impact (publication per document, <i>h-index</i> , and <i>g-index</i>) (8) Most productive institutions and its impact with 5 and more articles (9) Country collaboration network with a minimum threshold of 6 (10) Top 15 most preferred journal in BOD research area (11) Top 15 most cited articles in SCOPUS database

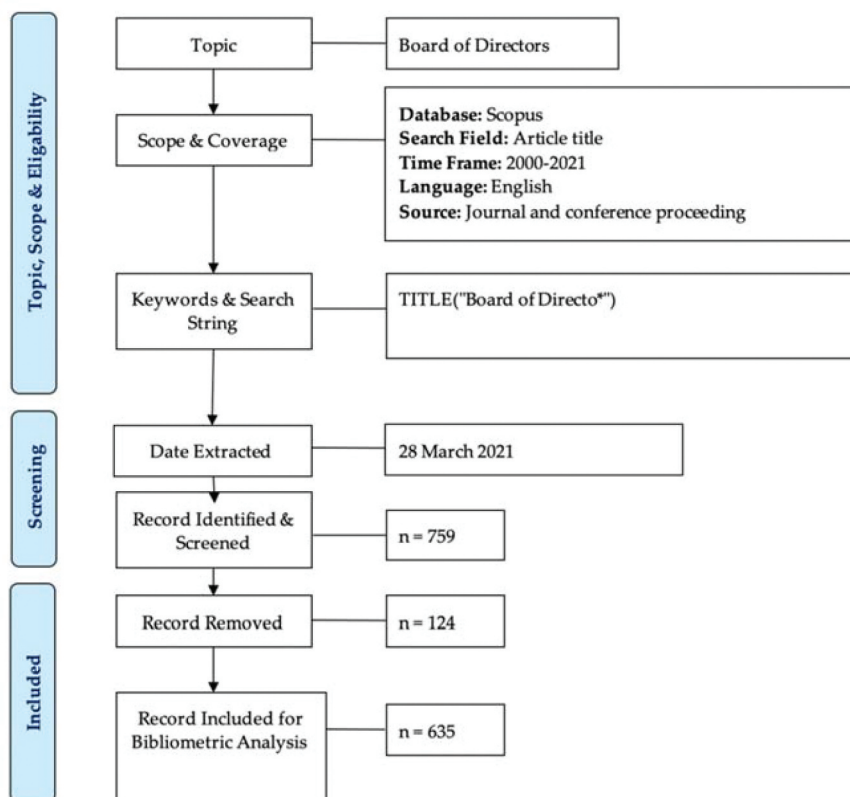
peer-reviewed journal titles, while WOS has 28,560 titles (Tabacaru, 2019). SCOPUS also has an independent content selection and advisory board to ensure quality and monitor its indexed sources (Baas et al., 2020).

This study included only journals and conference papers and excluded other document types, including the book chapter, the review, and the book. Only documents published between 2000 and 2021 were included. In the first run, there were 759 documents on BOD; however, we found 124 documents unrelated to this topic. Most of the excluded documents were BOD letters and decisions on specific issues (e.g., changes of journal's BOD structure, BOD's actions, BOD's award of honour, etc.), not a scientific research article. After the data screening, 635 documents were obtained on 28 March 2021. The complete search strategy, including keywords and the search string, is presented in Figure 1. To improve the accuracy of the findings, the search field was confined to title only. It is because including other search fields, such as keywords and abstract, increases the possibility of including non-related articles in our bibliometric study (false-positive data) (Zyoud, 2019). More false-positive data require more time in pre-cleaning processes.

2.2. Data analysis

The main objective of the bibliometric analysis is to quantitatively measure the number, growth, and trend of scientific publications on a specific topic (Mao et al., 2018). This research evaluated the productivity and impact of research publications at author, institution, and country levels according to this definition. Several extended indicators of the research impact, such as average citations per publication, average citations per cited publication, *h-index*, and *g-index* were used in this research. The analysis is conducted by Harzing Publish or Perish (PoP) software by extracting the research information system (RIS) file from the SCOPUS database.

Figure 1. Flow diagram of the search strategy (Zakaria et al., 2021).



Besides descriptive analysis, this paper includes network analysis to uncover complicated social relationships among countries, authors, and keywords (Wu et al., 2020). The VOSviewer (version 1.6.16) was used to visualize and analyse the co-authorship of authors, institutions, and countries; keyword co-occurrence; citations, etc., of bibliometric data (Van Eck & Waltman, 2010). The keyword co-occurrence explains the critical research topic or thematic foci and the evolution of the research trend in BOD research. Co-authorship analysis is critical to promote innovation in research and the knowledge exchange between authors, institutions, and countries (Zou et al., 2018).

3. Results

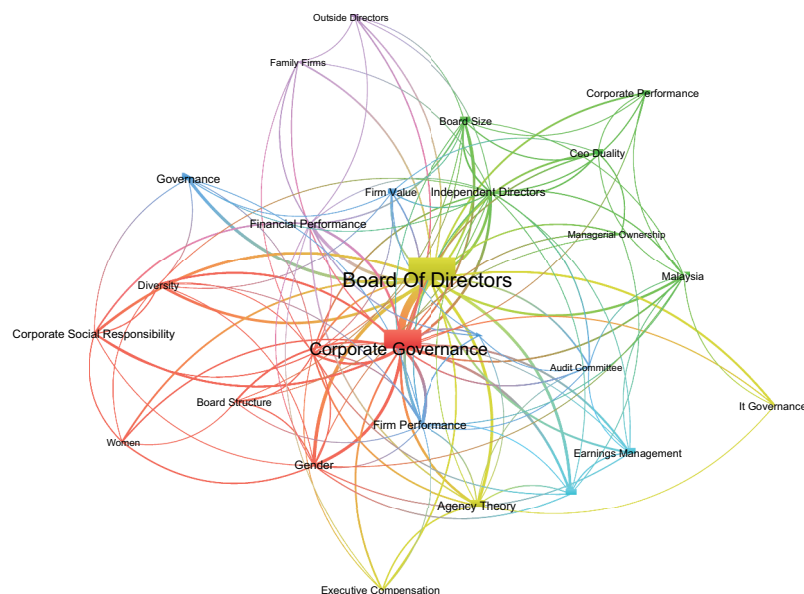
3.1. Description of the retrieved literature

A total of 635 documents in BOD have been refined from the Scopus database. We included only articles and conference papers as “document type”, journals and conference proceedings as “source type”, and English as documents language during the search process. From this number, nine documents were published in bilingual language. The retrieved documents received 16,468 citations, 25.93 cites per paper, 784.19 cites per year, and the h-index is 58.

Besides “board of directors” as a core keyword, “corporate governance” is the most encountered keyword, followed by “independent directors”, “board composition”, “firm performance”, and “gender”. The visualization of research keywords with minimum occurrences of 6 is presented in Figure 2. In the VOSviewer software, the unit of analysis is author keywords. The counting method is fractional, the minimum number of occurrences of a keyword is 6, and thesaurus file was included to reduce keywords duplication.

There are four main clusters of keywords in BOD publications. The first cluster (in the red circle) is research related to board structure; the keywords are “diversity”, “gender”, “board composition”, “corporate social responsibility”, etc. Cluster 2 (in the green circle) is research related to managerial ownership, and common keywords under this cluster are “CEO duality”, “independent directors”, “board size”, “Malaysia”, etc. Cluster 3 (in the blue circle) is research related to firm value; the common keywords are “audit committee”, “board characteristic”, “firm performance”, etc. Cluster

Figure 2. Author keywords mapping.



4 (in the purple circle) is research in the family firms; the keywords include “outside directors” and “financial performance”.

3.2. Growth of publication

The publication growth in BOD studies is assessed by examining the documents based on the year of publication (Ahmi & Mohamad, 2019). Figure 3 shows the publication growth of BOD studies from 2000 to 2020. In the last 21 years, the highest productivity was in 2020, with 80 publications, while the lowest was in 2001, where only five articles were published. Articles published in 2003 received the highest average citation per document, while the lowest was in 2020. This is expected because older documents received more citations. There was an upward productivity trend between 2006 and 2010 with a slight drop in 2009. The productivity then stagnated from 2010 to 2015 where around 30 to 40 articles were published annually. Studies in BOD started to regain researchers’ attention in 2018 and continuously increased until 2020, when publication numbers grew 70.21% in 2 years.

3.3. Authorship patterns, collaboration, and prolific authors

The board of director research was conducted mainly by one to three authors, accumulating 79.53% (505 articles). Researchers preferred to work in a small group, where four and more authors wrote only 96 articles (15.12%). Single-author publications were relatively high, which contributed 22.20% from the total publications or in other words, the degree of collaboration among BOD researchers was 77.80%. Table 2 shows the distribution number of authors per document. Authors with minimum articles of two were visualized and shown in Figure 4. We did not put a higher threshold on the number of publications and citations due to the document limitations and the tendency of authors to be in a small research group. Calabrò A. and De Massis A. became the most central authors in BOD research with a collaboration of six authors.

Based on our dataset, the highest number of publications by a single author is six documents. Table 3 presents a list of the most productive authors. There was no author with a significant number of publications in BOD research. We found two authors with six publications, three authors

Figure 3. Distribution of published articles in BOD studies between 2000 and 2020. Note: The data in 2021 is not included in this table as it is still updating.

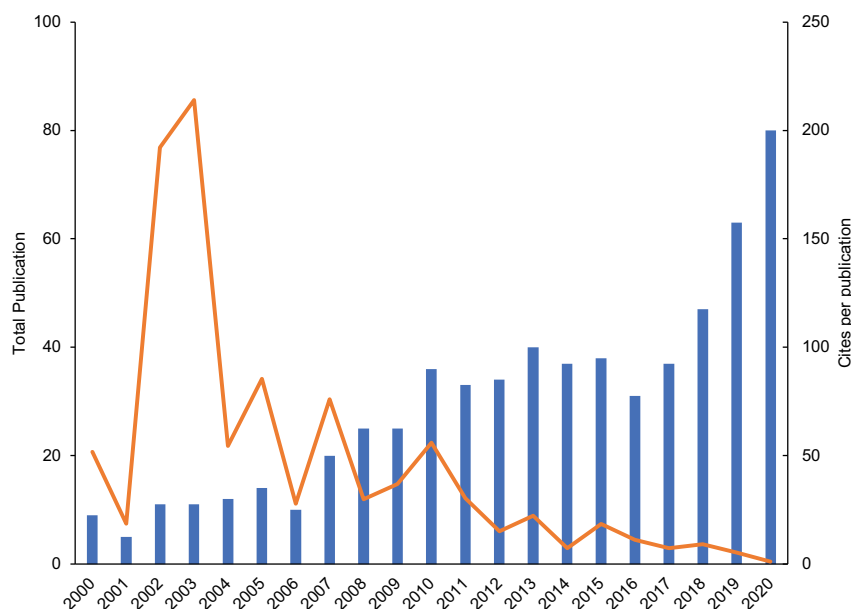
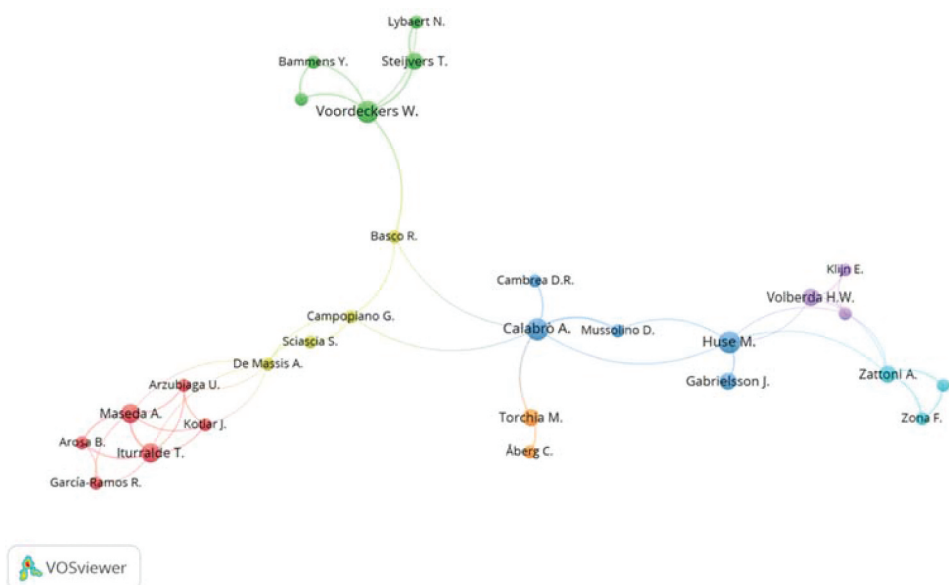


Table 2. Number of Author(s) per document

Author Count	Total Publications (TP)	Percentage (%)
1	141	22.20%
2	196	30.87%
3	168	26.46%
4	73	11.50%
5	13	2.05%
6	5	0.79%
7	2	0.31%
8	1	0.16%
9	-	0.00%
10	2	0.31%
0*	34	5.35%
Total	635	100.00

*No author is listed in the meta data.

Figure 4. Network visualization map of active authors in Board of Directors research with a minimum of 2 publication.



with five publications and four authors with four publications. Huse M from Handelshøyskolen BI received the highest average citation per paper, followed by Voordeckers W. from Universitat Hasselt as the second rank.

3.4. Geographical distribution of publications

Authors from 68 countries contributed to the publication of the retrieved documents. The top 10 most productive countries in BOD research are presented in Table 4. Authors from the United States produced the most, with a total of 152 articles (23.93%), followed by Spain with 58 articles (9.13%), and the United Kingdom with 39 articles (6.14%). European countries dominated the top

Table 3. The most productive authors with a minimum of 4 publications

Author Name	Affiliation	Country	TP	NCP	TC	C/P	C/CP	h	g
Lanis, R.	University of Technology Sydney	Australia	6	6	208	34.67	34.67	5	6
Richardson, G.	Macquarie Business School	Australia	6	6	208	34.67	34.67	5	6
Calabró, A.	IPAG Business School	France	5	4	187	37.40	46.75	3	5
Huse, M.	Handelshøyskolen BI	Norway	5	5	885	177.00	177.00	5	5
Voordeckers, W.	Universiteit Hasselt	Belgium	5	4	325	65.00	81.25	4	5
Bernardi, R.A.	Roger Williams University	United States	4	4	190	47.50	47.50	4	4
García-Sánchez, I. M.	Universidad de Salamanca	Spain	4	4	156	39.00	39.00	4	4
Iturralde, T.	Universidad del País Vasco	Spain	4	4	179	44.75	44.75	3	4
Maseda, A.	Universidad del País Vasco	Spain	4	4	179	44.75	44.75	3	4

TP = total number of publications; NCP = number of cited publications; TC = total citations; C/P = average citations per publication; C/CP = average citations per cited publication; h = h-index; and g = g-index.

Table 4. Most productive countries in board of directors publications

Country	TP	NCP	TC	C/P	C/CP	h	g
United States	152	120	7989	52.56	66.58	36	88
Spain	58	50	1816	31.31	36.32	20	42
United Kingdom	39	35	801	20.54	22.89	15	28
Malaysia	35	25	128	3.66	5.12	7	9
Italy	32	25	1579	49.34	63.16	16	32
Australia	31	24	1032	33.29	43.00	14	31
Canada	29	22	386	13.31	17.55	11	19
Tunisia	23	16	129	5.61	8.06	7	11
China	20	8	72	3.60	9.00	3	8
France	15	13	215	14.33	16.54	6	14

TP = total number of publications; NCP = number of cited publications; TC = total citations; C/P = average citations per publication; C/CP = average citations per cited publication; h = h-index; and g = g-index.

10 lists with four countries, followed by two Asian and North American countries, and one country in Oceania and Africa. Authors from the United States received the highest mean citation per publication, followed by Italy and Australia with average citations per paper of 52.56, 49.34, and 33.29, respectively.

Unlike country productivity, Malaysian institutions are among the most productive institutions in BOD research. Universiti Utara Malaysia has published 12 articles from 2000 to 2021. A total of three institutions from the list in Table 5 were in Malaysia, Spain, and Australia. The University of Rome II (Italy) received the highest mean citations per document with 115.40 cites/publication, followed by the University of Technology Sydney (Australia) with 94.00 cites/publication, and the

Table 5. Most influential institutions with five and more publications

Institution	Country	TP	NCP	TC	C/P	C/CP	h	g
Universiti Utara Malaysia	Malaysia	12	11	71	5.92	6.45	5	8
University of Sfax	Tunisia	9	6	40	4.44	6.67	4	6
Curtin University	Australia	7	5	241	34.43	48.20	5	7
The University of Adelaide	Australia	6	5	207	34.50	41.40	5	6
Universiteit Hasselt	Belgium	6	5	338	56.33	67.60	5	6
University of Technology Sydney	Australia	6	6	564	94.00	94.00	5	6
Universidad de Salamanca	Spain	6	5	391	65.17	78.20	5	6
Universiti Teknologi MARA	Malaysia	5	1	2	0.40	2.00	1	1
Universidad de Zaragoza	Spain	5	4	42	8.40	10.50	3	5

(Continued)

Institution	Country	TP	NCP	TC	C/P	C/CP	h	g
Universiti Putra Malaysia	Malaysia	5	5	25	5.00	5.00	3	5
The University of Rome II	Italy	5	5	577	115.40	115.40	5	5
Universidad del Pais Vasco	Spain	5	5	185	37.00	37.00	4	5
The University of Rome I	Italy	5	4	145	29.00	36.25	3	5
University of Seville	Spain	5	5	33	6.60	6.60	3	5
Université de Tunis	Tunisia	5	3	17	3.40	5.67	2	4
Lancaster University Management School	United Kingdom	5	4	101	20.20	25.25	3	5

Notes: TP = total number of publications; NCP = number of cited publications; TC = total citations; C/P = average citations per publication; C/CP = average citations per cited publication; h = h-index; and g = g-index.

University de Salamanca (Spain) with an average of 65.17 cites/publication. The documents by Malaysian and Tunisian institutions listed in the list of the most productive institutions received a relatively small impact.

Authors from the United States have collaborated with 10 other countries and were at the centre of the network with the strongest links. Figure 5 shows countries collaboration networks in BOD research. Countries collaboration were grouped into six clusters; the first cluster is in red (Italy, Australia, Germany, the Netherlands, Norway, and Belgium), the second cluster is in light blue (Taiwan and the United Kingdom), the third cluster is in green (the United States, South Korea, China, and Canada), the fourth cluster is in yellow (Spain and Brazil), the fifth cluster is in purple (Malaysia and Jordan), and lastly, the sixth cluster is in dark blue (France, Tunisia, Saudi Arabia, and UAE). Countries in the same cluster tend to conduct research together. The thickness of the connecting line between the two countries indicates the strength of the collaboration (Sweileh et al., 2017). Authors from the United States have a strong collaboration with authors from the United Kingdom and China.

3.5. Preferred journals

The Control Journal from Virtus Interpress has been excluded in this study, although it published the highest number of papers. The journal has been discontinued from SCOPUS since 2016. Corporate Governance Bingley is among the most preferred journals to publish BOD research. Figure 6 shows the visualization map of citation analysis for journals with 200 citations and above. *Corporate Governance: An International Review* (Wiley—Blackwell) received the highest number of connecting lines from other journals indicating that this journal was being co-cited with most other journals. However, *the Journal of Business Ethics* (Springer Nature) has the biggest circle size, with the highest number of citations in the board of directors' research Table 6.

3.6. Top cited documents

The top 15 most cited articles in the board of directors can be seen in Table 7. The top-cited article was authored by (Klein, 2002) with the title “Audit committee, board of director characteristics, and earnings management”. The article was published in *the Journal of Accounting and Economics* with

Figure 5. Network visualization map of international collaboration among countries with minimum productivity of 6 document.

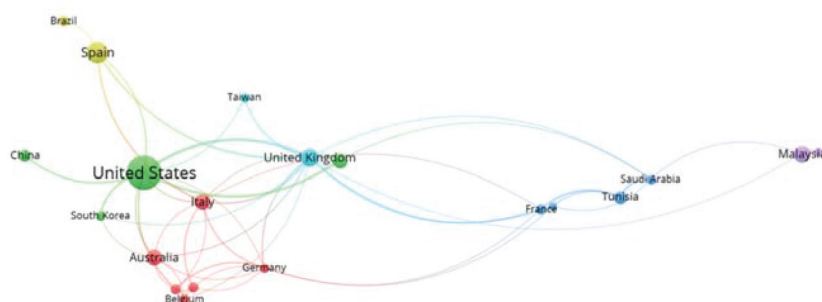
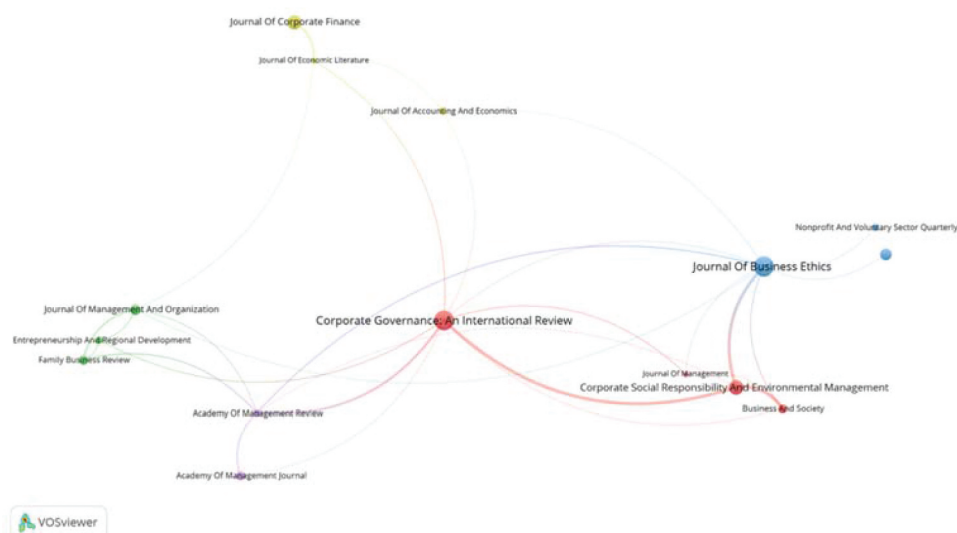


Figure 6. Network visualization map of journal citation with minimum 200 citations.



1,860 citations or 97.89 cites per year. The top 15 most cited articles mainly discussed the relationship between BOD's characteristics (politician in BOD, gender in BOD and BOD in family firms) with the performance and roles of BOD in green governance.

4. Discussion

Several researchers have conducted bibliometric analyses on the board of directors' research; however, the number is limited. Some of the published articles were discussed by the BOD in more general terms, such as corporate governance (Huang & Ho, 2011) and agency theory. Some researchers also specified the topic of BOD with another area, for example, gender or board diversity (Sánchez-Teba et al., 2021; Baker et al., 2020) and corporate social responsibility (Dwekat et al., 2020). The determination of keywords in bibliometric studies were highly dependent on the researcher's objectives. The more general terms may be useful in covering a more general and rougher overview of a scientific discipline. At the same time, specific keyword combination is better in displaying detailed themes of a research domain (Chen & Xiao, 2016). This bibliometric study is in the middle by exploring one of the most critical components in corporate governance.

Table 6. Top Publishing Journals on Board of Directors Research and Remain Listed on SCOPUS

No	Source Title	Publisher	TP	Cite Score	SJR 2019	SNIP 2019
1	Corporate Governance Bingley	Emerald	16	3.30	0.57	1.40
2	Corporate Governance An International Review	Wiley-Blackwell	14	6.00	1.47	1.89
3	Journal Of Business Ethics	Springer Nature	14	7.00	1.97	2.70
4	Journal Of Management And Governance	Springer Nature	14	2.60	0.55	1.14
5	Corporate Social Responsibility And Environmental Management	Wiley-Blackwell	8	5.90	0.97	1.63
6	International Journal Of Business Governance And Ethics	Inderscience	8	1.00	0.24	0.31
7	Journal Of Corporate Finance	Elsevier	7	5.00	1.57	2.24
8	Academy Of Accounting And Financial Studies Journal	Allied Academies	6	0.90	0.18	0.79
9	Journal Of Asian Finance Economics And Business	Korea Distribution Science Association	6	0.50	0.19	1.22
10	Jurnal Pengurusan	Universiti Kebangsaan Malaysia	6	1.00	0.18	0.47
11	International Journal Of Disclosure And Governance	Springer Nature	5	1.60	0.24	0.53
12	Journal Of Banking And Finance	Elsevier	5	3.80	1.34	1.94
13	Journal Of Cleaner Production	Elsevier	5	10.90	1.89	2.39
14	Long Range Planning	Elsevier	5	8.60	2.01	2.49
15	Sustainability Switzerland	MDPI	5	3.20	0.58	1.17

Published bibliometric studies that combined BOD with specific subjects selected the keywords based on their frequency. We found that “corporate social responsibility” and “board diversity” were among the most popular sub-topics in BOD research. The specific studies with few keyword combinations will benefit if researchers aim to reveal their relations at the micro-level, but other important keywords related to BOD may not be included.

We also conducted co-occurrence and keyword analysis to represent the article contents in this bibliometric analysis (Comerio & Strozzi, 2019). Besides the BOD, the most frequently used

Table 7. Top 15 highly cited articles in board of directors' research

No	Title	Authors	Cites
1	Audit committee, board of director characteristics, and earnings management	(Klein, 2002)	1860
2	Boards of directors and firm performance: Integrating agency and resource dependence perspectives	(Hillman & Dalziel, 2003)	1460
3	The role of boards of directors in corporate governance: A conceptual framework and survey	(Adams et al., 2010)	766
4	Does the market value financial expertise on audit committees of boards of directors?	(Defond et al., 2005)	457
5	Corporate governance in banking: The role of the board of directors	(De Andres & Vallelado, 2008)	386
6	The contribution of women on boards of directors: Going beyond the surface	(Nielsen & Huse, 2010)	377
7	Politicians on the board of directors: Do connections affect the bottom line?	(Hillman, 2005)	374
8	Accounting conservatism and board of director characteristics: An empirical analysis	(Ahmed & Duellman, 2007)	332
9	Green governance: Boards of directors' composition and environmental corporate social responsibility	(Post et al., 2011)	315
10	Institutional ownership differences and international diversification: The effects of boards of directors and technological opportunity	(Tihanyi et al., 2003)	286
11	Women on Corporate Boards of Directors and their Influence on Corporate Philanthropy	(Williams, 2003)	280
12	The Role of the Board of Directors in Disseminating Relevant Information on Greenhouse Gases	(Prado-Lorenzo & Garcia-Sanchez, 2010)	235
13	Politically connected boards of directors and the allocation of procurement contracts	(Goldman et al., 2013)	221
14	The Board of Directors in Family Firms: One Size Fits All?	(Corbetta & Salvato, 2004)	216
15	Boards of directors' contribution to strategy: A literature review and research agenda	(Pugliese et al., 2009)	209

keywords were “corporate governance” and “agency theory”, in which the BOD is the sub-part of them. Firm performance and board composition were among the most used keywords, indicating that BOD research has mostly centred on the issue of firm performance and board characteristics. We also found geographical names as keywords, such as the United States, Malaysia, and Canada, indicating corporations in those countries are frequently used as a study case. Maximizing corporate performance seems to be the main goal in BOD research because several keywords related to corporate performance were found, such as “firm value”, “financial performance”, and “firm

performance". Those keywords are strongly linked with board characteristics and corporate strategies, such as "CEO duality", "board size", "gender and women", "CSR", and "board diversity".

There was an increasing trend in BOD research from 1996 to 2018, with a slight downtrend in 2012 and 2017 (Zheng & Kouwenberg, 2019). In this study, we found similar results where research in BOD has an upward trend over the years but slightly decreased in 2016 and continues to grow from 2017 onwards. In 22 years, from 2000 to 2021, there were 635 BOD research articles and 16,468 citations. On average, each article received relatively high citations with 25.93 citations per document, compared to corporate governance research, which received an average of 6.09 citations per document (Nedelchev, 2017). Articles published in 2003 received the highest average citation per document and showed a significant downtrend from 2004 onwards because recent articles aggregate fewer citations than the older ones (Ugolini et al., 2013). However, the highest productivity was found in 2020 with 80 articles.

We also conducted keywords co-occurrence to identify the emerging research topics within the BOD research (Bhattacharya & Basu, 1998). The current keywords trend between 2017 and 2021 were "tax avoidance" and "political connection". According to our database, research on tax avoidance and BOD was first published in 2019 and continues to grow in 2020. Tax avoidance is usually discussed with board characteristics (Hoseini et al., 2019)–(Alkurdi & Mardini, 2020) and board reputation (Lanis et al., 2019). However, research in BOD and political connections was published in 2017 and mainly discussed the effect of politically connected BODs on the firm's value and performance (AlQudah et al., 2019; Idris et al., 2020). The involvement of political connections in the BOD characteristics was due to its advantages in legal protection, export concentration, government contract, and access to credit financing (Fan, 2020; Peng et al., 2017). However, we found that the keyword trend shifted from the one between 2013 and 2016, where the keywords were "gender diversity", "corporate sustainability", and "environmental effect". This finding is supported by research conducted by Sánchez-Teba et al., (2020) (Sánchez-Teba et al., 2021), who found that researchers were focusing on the impact of women on a company's performance during this period, specifically on CSR. Gender diversity was also found to be linearly correlated with corporate sustainability (Kassinis et al., 2016).

Lanis, R. and Richardson, G. became the most productive authors in board of directors' research with a total publication of 6 articles from 2000 to 2021. They both received the same number of citations since they continuously published articles together as main and co-author. The published articles were all about the relationship between BOD and corporate tax avoidance. However, Huse, M. from Handelshøyskolen BI received the highest average citation per document. Their findings were linear with the previous bibliometric research conducted by Baker et al., 2020 (Mao et al., 2018) and Sánchez-Teba et al. (2021), who found that Huse, M. was among the most influential authors in BOD research. Huse, M. published articles earlier (2000–2010) than Lanis, R and Richardson, G. (2011–2020), which may have made him receive a higher number of average citations per document. Two researches of Huse, M. were among the top 15 most cited articles in BOD.

There is no change in the landscape of geographical distribution on the board of directors' research. The academic institutions that originated in the United States, Spain, and the UK are predominating research in BOD. This finding is linear with a bibliometric analysis conducted by Zheng & Kouwenberg (2019), who found similar results that the United States, UK, and Australia were the most productive countries. Besides, a bibliometric analysis in board diversity by Baker et al. (2020) also found that the United States, UK, Spain, and Australia were the dominant key players in board diversity research. We also found two Asian countries listed in the top 10 most productive countries—Malaysia and China, who sits on the fourth and ninth ranks. However, their published articles had a relatively low impact, where the citation per document for Malaysian and Chinese institutions was 3.66 and 3.60, respectively. We found three Malaysian institutions listed as the most productive institutions on BOD research: Universiti Utara Malaysia, Universiti Teknologi

Mara, and Universiti Putra Malaysia, with 22 documents (3.46%) with citation per article varying between 0.40 and 5.92. The low impact of published articles by Malaysian institutions is because most articles were published in local publishers and low cite-score journals. Besides, the Malaysian institutions were started to publish BOD articles in the journal a bit late, where the first article on BOD with Malaysian first author was in 2011.

5. Conclusions

This study analysed the profile of the articles published in the Scopus database from 2000 to 2021 containing the keyword “Board of Directors” on the journal articles and proceeding conference title. BOD is the most focal actor in determining an organisation’s success, and they are responsible in the decision-making process and setting policies. The bibliometric analysis in BOD research would help researchers know the current research trend, the most impactful research articles in BOD for references, the impactful keywords, etc., which would help them get a general overview for further use in their in-depth analysis or study.

We retrieved 635 articles containing the Board of Director’s keyword in the article title within the SCOPUS database from 2000 to 2021. Research in BOD had a stagnancy improvement from 2010 to 2015, where only 30 to 40 articles were published annually, and showed a significant improvement in 2018, where the number grew by 70.21%. Most of the published articles were authored by researchers from the United States and European institutions. Malaysia and China were listed as the most productive countries in Asia (rank 4 and 9 in the world); however, their research impact was relatively low. This is also reflected by their performance at the institution level, where three Malaysian institutions were listed as the most productive, but those institutions received relatively low impact.

The keyword co-occurrence in this study revealed the emerging research topics in the BOD research. We found four research clusters: (1) board structure and composition, (2) managerial ownership, (3) firm value and performance, and lastly (4) family firm. We could not find any relationship of keywords co-occurrence and publication period. BOD research has shifted from gender diversity, corporate sustainability, and environmental effects that were emerging in 2013–2016 to tax avoidance and political connection in 2017–2021. Most of the published articles related to BOD frequently discussed firm performance, which becomes the ultimate goal of restructuring the board characteristic in a corporation.

The study in BOD needs further study in multi-country and more industry focus. We found several country names as the most frequent keywords in BOD research, showing the study has been done in a single country. Multi-country studies allow researchers to compare BOD practices within socioeconomic variations. This bibliometric study would also give a preview on countries with strong BOD research for collaboration purposes. Besides, more industry focus is needed to study the BOD research. The published BOD research usually generalises BOD characteristics in one country with mixed industries. In the future, more research on BOD’s industry focus is needed. Most of the published articles researched banking and healthcare industries, and more observation in different industries is needed. In addition, we unexpectedly found a lack of study in the relationship between COVID-19 and BOD, although our database covers publications from 2020 to March 2021. More research opportunities were available to study the impact of COVID-19 on BOD performance.

This result provides several interesting contributions. First, this study analyses the publication profile on the board of directors by identifying the author, country, institution, and year of publication. Second, our study maps the conceptual structure by utilising the co-occurrence approach to help researchers avoid stagnant topics and improve the field. Third, this research suggests that there is still potential for more research in BOD topics in emerging countries and could improve the quality of the research.

Like any research, there are few limitations to this bibliometric study. First, this study only considered publications on the SCOPUS database and scientific literature in BOD research is expected to be considerably larger. Other research databases like Web of Science and Chinese National Knowledge Infrastructure (CNKI) can be included for future research and to get more accurate results. Second, we only consider research articles published between 2000 and 2021, and new studies might be published every day. Third, we might not include some BOD-related articles because the authors did not put our search query on his title. Fourth, although we have cleaned our database, there is still a probability of unrelated articles covered in this study. Fifth, only articles in English were considered in this bibliometric research; we found at least 152 articles on BOD were listed in the Chinese research database (CNKI).

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No potential conflict of interest was reported by the author(s).

Data availability statement

The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy.

Author contributions

Conceptualization, A.R.A.; methodology, A.R.A and W.T.; software, A.R.A.; validation, A.R.A, P.S.M, and W.T.; formal analysis, A.R.A.; investigation, A.R.A.; resources, W.T.; data curation, P.S.M.; writing—original draft preparation, A.R.A and W.T.; writing—review and editing, A.R.A. and P.S.M.; visualization, A.R.A.; supervision, A.R.A.; project administration, W.T. and P.S.M.; funding acquisition, P.S.M. All authors have read and agreed to the published version of the manuscript.

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