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A bibliometric analysis of board diversity: Current status, development, and future research directions

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ABSTRACT

This study identifies the main areas and current dynamics of the field of board diversity and suggests future research directions. Using a bibliometric analysis, we examine a sample of 579 studies from the ISI Web of Science database to identify research activity on board diversity between 1999 and early 2019. We find the most influential articles and authors based on their citations and publications as well as their location and importance within the network. We also examine current themes, find impediments to growth in the literature, and suggest avenues for future research. Although research activity on board diversity occurs globally, a lack of collaboration exists across country lines, especially between authors of developed and developing countries. Research on board diversity focuses on gender diversity, with relatively less attention on age, nationality, ethnicity, professional background, and cognition. We conclude by suggesting five potential research directions.

1. Introduction

A board of directors is vital to an organization's functioning by providing a strategic focus and affecting firm performance (Srivastava, 2015; Thams, Kelley, & Von Glinow, 2018). The board ensures that management interests remain aligned with those of the firm's shareholders (Wellalage & Locke, 2013). In the aftermath of the global financial crisis of 2008–2009 (GFC hereafter), stakeholders' trust in board effectiveness decreased (Terjesen, Sealy, & Singh, 2009). Regulators and researchers globally realized that corporate boards need to be more effective to deal with environmental changes. Various countries recognized the need for legislation to change board composition. To this end, many nations have implemented a quota for women on corporate boards. Norway led this initiative by mandating a minimum 40% representation of each gender on the boards of their firms. This was followed by Belgium, Denmark, France, Germany, Iceland, Italy, Malaysia, the Netherlands, and Spain, whose mandatory quotas range from 30% to 40%, while Finland, India, Israel, and the UAE have mandated the presence of at least one woman on boards.

Research on organizational theory shows that diverse boards are more likely to discuss tougher issues and have more informed discussions (Srinidhi, Gul, & Tsui, 2011). Diversity in age, gender, nationality, and race brings different opinions, and this makes the board of directors more innovative and flexible than less diverse boards (Miller & Triana, 2009). Such diversity enables directors to be better monitors (Adams & Ferreira, 2009; Husted & de Sousa-Filho, 2019; Kang, Ding, & Charoenwong, 2010; Terjesen et al., 2009; Upadhyay & Zeng, 2014), which in turn enhances corporate governance (Adams & Ferreira, 2009; Isidro & Sobral, 2015; Perryman, Fernando, & Tripathy, 2016). Diverse boards also tend to be more knowledgeable about the marketplace, which leads to better financial and environmental, social, and governance performance (Campbell & Mínguez-Vera, 2008; Conyon & He, 2017; Harjoto & Rossi, 2019; Kim & Lim, 2010). Moreover, such boards can offer rich perspectives owing to their diverse human capital in terms of expertise, experience, and networking (Kabongo & Okpara, 2019; Kaczmarek, Kimino, & Pye, 2014).

Yet, board diversity can also have negative consequences. For example, research from the social psychological perspective finds that diversity leads to more conflicts among board members, resulting in slower decision-making (Triana, Miller, & Trzebiatowski, 2014). An increase in board diversity also leads to forming in-groups and out-groups, which may decrease communication, complicate decision-making, and damage group cohesion (Eulerich, Velte, & Van Uum, 2014).

This study identifies the main areas and current dynamics of board diversity and suggests future research directions. Using a bibliometric

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analysis, we identify the publication patterns and intellectual structure in this area. To the best of our knowledge, this study is the first to combine a bibliometric analysis and systematic literature review on board diversity. We address the following research questions (RQs): *RQ1: What is the current publication trend in board diversity? RQ2: Which are the most influential articles on board diversity? RQ3: Which themes involving board diversity are the most popular among scholars? RQ4: Who are the most influential authors on board diversity? RQ5: What is the current state of collaboration involving board diversity? RQ6: What is the intellectual structure of current research on board diversity? RQ7: What kinds of issues hamper research on board diversity? RQ8: What areas involving board diversity need additional study?*

Previous researchers such as Terjesen et al. (2009) and Kagzi and Guha (2018) limit their review work to content analysis, whereas Velte (2017) uses a structured literature review. Our literature review differs from those of other authors in several ways. First, to best of our knowledge, no literature review on board diversity uses a bibliometric analysis to evaluate the progress in the field and answer our RQs. Second, earlier reviews, except Terjesen et al. (2009), used a more limited data period than our study. Third, we identify the issues impeding research on board diversity and offer directions for future research. Table 1 compares earlier reviews with our study based on several dimensions.

2. Literature review

The impact of board diversity on firm outcomes is central to research on board diversity. Van der Walt and Ingley (2003) define boardroom diversity as a combination of human and social capital on which boards of directors draw for their governance function. This has remained the central argument in favor of board diversity, as diverse boards are supposed to benefit from diverse perspectives and therefore perform their duties better. Adams and Ferreira (2009) suggest that while boardroom diversity has a negative impact on a firm's financial performance, it does positively influence governance. Similarly, Srinidhi et al. (2011) find a positive relationship between board diversity and earnings quality. Gul, Srinidhi, and Ng (2011) find that through greater public disclosure, diverse boards positively affect share price informativeness. Although researchers have agreed on board diversity's positive relation with improved governance, its relationship with superior financial performance lacks consensus. Many researchers have found a positive relationship between board diversity and firm performance (Campbell & Mínguez-Vera, 2008; Francoeur, Labelle, & Sinclair-Desgagné, 2008; Terjesen, Couto, & Francisco, 2016), while others have found a non-significant and negative relationship (Adams & Ferreira, 2009; Carter, D'Souza, Simkins, & Simpson, 2010; Rose, 2007).

In light of these mixed findings, researchers have examined the mechanisms through which board diversity affects firm performance. Kor (2006) and Miller and Triana (2009) find that board diversity positively influences firm innovation. Similarly, Dezső and Ross (2012) suggest that board diversity positively affects performance only when a firm's strategy focuses on innovation. Nielsen and Huse (2010) find board diversity to be positively related to a board's strategic control. Bear, Rahman, and Post (2010) find positive linkages among board diversity, corporate social responsibility, and firm reputation. Post, Rahman, and Rubow (2011) find a positive impact of board diversity on environmental performance. Hence, the mediating effect of various firm-related variables has advanced research in the field of board diversity.

In addition to the impact of board diversity on firm outcomes, researchers have focused on the contextual factors that affect board diversity. Institutional factors such as legislation and corporate governance guidelines (Terjesen, Aguilera, & Lorenz, 2015), industry type (Arena et al., 2015), and firm-specific characteristics such as firm size, network linkages, and strategic orientation (Hillman, Shropshire, & Cannella, 2007) have been discussed. Grosvold and Brammer (2011) find that national (economic, social, legal, and political) institutions affect board diversity. Brammer, Millington, and Pavelin (2009) show that board diversity positively affects firm reputation in industries in which firms work closer with final consumers. Similarly, Brammer, Millington, and Pavelin (2007) find that board diversity is influenced by a firm's external business environment.

Despite these advancements, the business case for board diversity remains obscure. The relationship between board diversity and firm performance is unclear, as research on board diversity lacks direction and is becoming stagnated. Thus, the state of the literature and future research avenues are vague. The present study bridges this gap by synthesizing the current literature, identifying prominent themes, and providing future research directions.

3. Data and methodology

Similar to Korom (2019), we created an ISI Web of Science (WOS) database and conducted a topic search during March 2019. However, we followed a broader search strategy by conducting a topic (combination of title, abstract, author keyword, and keywords plus fields in WOS) search with our search string. We developed a search string after reviewing the articles and categories of board diversity defined by Erhardt, Werbel, and Shrader (2003). Erhardt et al. (2003) classify diversity in the literature into demographic and cognitive diversity. The search string was constructed to capture the many facets of demographic diversity (age, gender, ethnicity, and race) and cognitive diversity (personality, education, knowledge, and perception). Other concepts such as the tenure of a board member and his/her functional background were also included. Having identified 1306 articles between 1999 and early 2019, we then reduced the number of articles to 579 using the following WOS categories: Business, Management, Business Finance, Social Sciences Interdisciplinary, Economics, Ethics, Social Issues, and Women's Studies. Research on board diversity comes under business, management, economics, finance, and social sciences with some research concentrating on business ethics, social issues, and feminism. Table 2 summarizes our search strategy and data retrieval process.

3.1. Methods of analysis

According to Ronda-Pupo (2017), the structure of a scientific field

Table 1
Comparison of previous studies of board diversity and our study.

Basis of the Comparison	Terjesen et al. (2009)	Velte (2017)	Kagzi and Guha (2018)	Our Study
Time period	No time limit	2008–2016	1989–2016	No time limit
Keywords	Not specified	Not specified	Not specified	A string of keywords related to board diversity
Focus of the study	Female presence on boards	Female presence on boards and its impact on performance	All aspects of board diversity	All aspects of board diversity
Methodology	Content analysis	Structured review	Content analysis	Structured literature review, bibliometric analysis, and content analysis

This table compares earlier literature reviews on board diversity with our study.

Table 2
Search strategy and data retrieval process.

Date	Database	Search String
06-03-2019	ISI WOS	Board and (gender or age or tenure or background or profess* or functional or ethnic or cogni*) and (diversity or hetero*)
First-stage filters applied.		
Filters First Stage	**Document Type**: Article **Language**: English	
Result	1306 journal articles in English	
Subject area filters from the WOS categories applied		
Filters Second Stage	**WOS Categories:** Business, Management, Business Finance Social Sciences Interdisciplinary, Economics, Ethics, Social Issues, and Women's Studies	
Result	579 articles from relevant subject areas	

This table describes the search strategy used in our study.

can be identified by its research activity. To find the structure of research on board diversity, we use a bibliometric analysis (Castriotta, Loi, Marku, & Naitana, 2019). When combined with a social network analysis, this illustrates the structure and central themes of a research area (Tunger & Eulerich, 2018). Thus, a bibliometric analysis enables us to identify current trends and future research avenues (Li, Wu, & Wu, 2017). For these reasons, we use a bibliometric analysis combined with a systematic literature review (Tranfield, Denyer, & Smart, 2003).

Drawing upon Cisneros, Ibanescu, Keen, Lobato-Calleros, and Niebla-Zatarain (2018), Fahimnia, Sarkis, and Davarzani (2015) and Xu, Gong, Jia, Brown, and Xu (2018), we conducted a bibliometric analysis of the literature on board diversity using such tools as a citation analysis, co-citation analysis, keyword co-occurrence analysis, PageRank analysis, and co-authorship analysis. These widely used tools are suitable for answering our RQs (Castriotta et al., 2019; Cisneros et al., 2018; Fahimnia et al., 2015; Korom, 2019; Xu et al., 2018). Following these works, we used software packages including BibExcel (Persson, Danell, & Schneider, 2009) and Gephi (Bastian, Heymann, & Jacomy, 2009). BibExcel provides flexibility and compatibility with other software packages such as Gephi, Pajek, and VOSviewer (Persson et al., 2009). Further, Gephi offers an editable and user-friendly environment. Gephi's filtering capabilities, compatibility with different data formats, and several built-in toolboxes are an added advantage for conducting network analysis (Fahimnia et al., 2015). We extracted bibliographic data on the full sample (i.e., 579 articles) from the WOS and created a network file using BibExcel. Then, we created a separate network file for each analysis (citation network, co-citation network, keyword co-occurrence, and co-citation) and used Gephi to calculate different measures. Fig. 1 illustrates our study's research structure.

4. Analysis and findings

To answer *RQ1* (*What is the current publication trend in board diversity?*), we analyzed the publication trend in board diversity using total publications by year, country, journal, contributing author, and organization. We calculated the data for this analysis using the bibliographic data collected from the ISI WOS database.

4.1. Publication by year

Fig. 2 presents the number of publications on board diversity between 1992 and early 2019. The sharp increase in publications after 2008 corresponds to the beginning of the GFC and the passage of quota law by the Norwegian parliament that secured a minimum of 40% of seats for each gender. Some attribute the GFC to weak monitoring by bank boards (Terjesen et al., 2009).

4.2. Publishing activity by country

Board diversity has attracted considerable attention from researchers, as indicated by the contributions from 75 countries. Table 3 lists the top publishing countries on board diversity, with the top three being the United States, the United Kingdom, and Spain. The United States was at the epicenter of the GFC, although it also affected European nations. The top publishing countries in Asia are Malaysia and the People's Republic of China. Malaysia was among the first nation to legislate a quota for women on boards and China has a mandate for women to contribute economically (Horak & Cui, 2017).

4.3. Publishing activity by Journal

The 579 articles appeared in 214 journals. Table 4 lists the journals with the most articles on board diversity. The leading journals are the *Journal of Business Ethics* followed by *Corporate Governance: The International Journal of Business in Society*, *Corporate Governance: An International Review*, and the *Journal of Business Research*. The subject of board diversity belongs to the broader area of corporate governance, which matches the areas of interest of these journals well. Further, many of these journals have an Association of Business Schools (ABS) rating of 4*, 4, or 3, which means that the area has received attention from some of the best journals from the field of management.

4.4. Publishing activity by author and organization

Based on our dataset, 1229 authors from 719 organizations published articles on the subject of board diversity. Table 5 lists the top contributing authors and organizations. As shown in the table, Isabel Maria Garcia-Sanchez published the most articles (nine) on board diversity followed by Antonio Minguez-Vera with eight publications. The most active organizations in this field were Universiti Utara Malaysia and the University of London, each with 11 articles, followed by the University of Salamanca and University of Sevilla, each with 10. Most of the authors and institutions belong to European nations and the United States; however, many studies use samples drawn from Asia and Africa. Hence, while research on board diversity is concentrated on western economies, contributions to the area have been made worldwide.

4.5. Citation network analysis

Our second RQ *(Which are the most influential articles on board diversity?*) aims to identify the most influential articles on board diversity. To answer *RQ2*, we analyzed the citation networks of 579 articles. Although several methods are available to measure the impact of a research publication, citation analysis is the most prevalent (Ding & Cronin, 2011). Citation and referencing enable us to establish intellectual linkages (Appio, Cesaroni, & Di Minin, 2014). In citation analysis, measuring an article's impact relies on using the number of citations by other works. We used Gephi and BibExcel to conduct our citation analysis.

Table 6 shows the top research publications by both global and local citations. Global citations refer to the number of times other works cite an article in the database including works in other research areas and disciplines. Local citations show an article's popularity within the network of 579 articles. According to the global citations, Adams and Ferreira (2009) garnered the most citations with 738 citations, followed

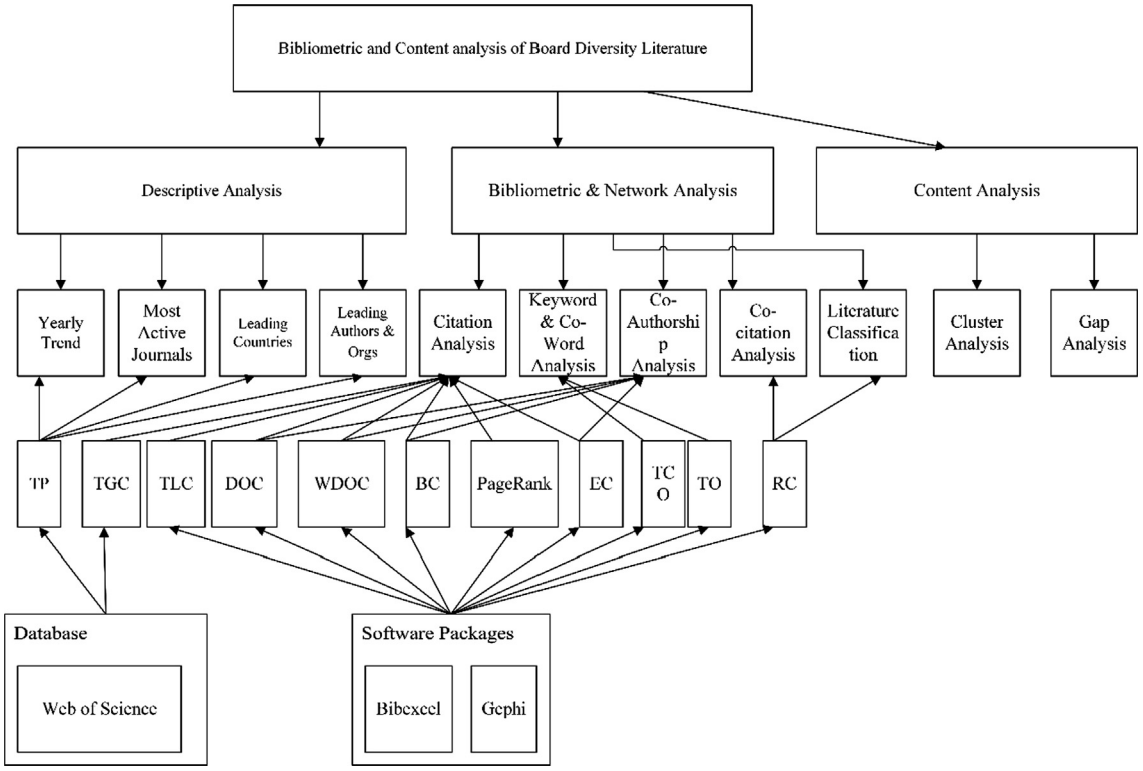

Fig. 1. Research structure for our study. This figure presents the analytical framework used in our study, where **TP** = Total Publications; **TGC** = Total Global Citations; **TLC** = Total Local Citations; **DOC** = Degree of Centrality; **WDOC** = Weighted Degree of Centrality; **BC** = Betweenness Centrality; **EC** = Eigen-Centrality; **TCO** = Total Co-Occurrence; **TO** = Total Occurrence; **RC** = Research Clustering.

by Hoskisson, Hitt, Johnson, and Grossman (2002) with 354 citations. Among the local citations were Adams and Ferreira (2009) with 280 citations, followed by Campbell and Mínguez-Vera (2008) and Carter et al. (2010) with 157 citations each. Fig. 3 shows the prominent nodes in the citation network with a high number of local citations. Local citations are a measure of contextual citations and show an article's influence over the body of the literature in the field of board diversity. Articles with higher local citations thus have a greater influence on the development of board diversity as a field.

4.5.1. Centrality analysis of citation networks

Table 7 presents the measures of centrality of the most connected articles within the network. We measured the degree of centrality using the number of relational ties a node has within the network (Cisneros et al., 2018). Within a citation network, this measures an article's influence within the article network. A higher degree of centrality signifies an article's contribution to the overall body of the literature. Thus, an article cited more often in other articles has a higher degree of centrality and this reflects its contribution to the literature.

The weighted degree of centrality shows an article's relative popularity within the network. We computed this measure by adding each relational tie after multiplying it by its weight. Given that we attached no weights to the nodes, this measure was equal to the degree of centrality. Normalized betweenness centrality is a measure of an article's ability to connect future research to past research. From a network point of view, nodes with higher betweenness centrality connect parts of the network that are less connected. Table 7 shows that Farrell and Hersch (2005) and Carter et al. (2010) have the highest normalized betweenness centrality, signifying that this paper acts as a broker or connector of knowledge flows within the network.

Eigen-centrality is another measure of an article's relative influence within a network. In this method, every node within a network receives

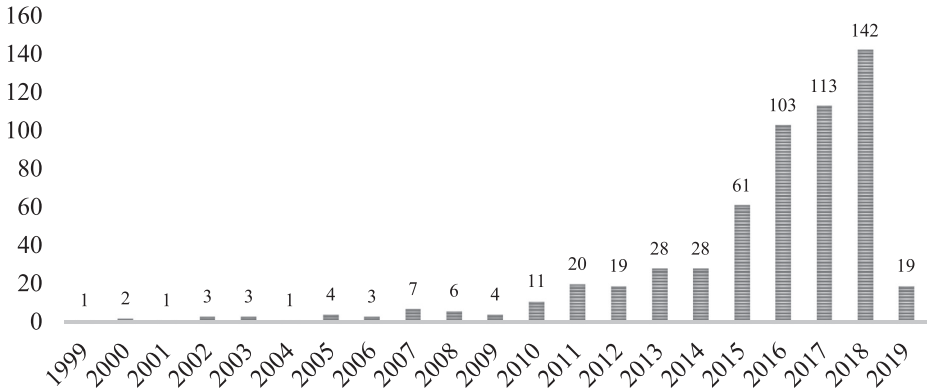

Fig. 2. Annual Distribution of articles on board diversity retrieved from the ISI WOS. This figure presents the number of articles on board diversity published annually taken from the ISI WOS between 1999 and early 2019.

Table 3
Top publishing countries on board diversity.

Countries	Number of Articles
United States	154
England	79
Spain	75
Australia	66
Malaysia	36
People's Republic of China	35
France	29
Germany	25
Canada	24
Italy	22
Norway	21
Netherlands	15
India	14
New Zealand	14
Portugal	12
Scotland	12
Belgium	10
Denmark	9
Pakistan	9
South Africa	9
Finland	8
Tunisia	8
Turkey	8
Sweden	7
Colombia	6
Lebanon	6
Wales	6
Ghana	5
Romania	5
Singapore	5
Taiwan	5
Croatia	4
Russia	4
Switzerland	4
Egypt	3
Indonesia	3
Jordan	3
Morocco	3
Nigeria	3

This table shows the top publishing countries on board diversity.

a score assuming that the contribution of high scoring articles to its score is greater than that of the same number of low scoring articles (Cisneros et al., 2018). Table 8 shows that articles with more local citations do not necessarily have a higher eigen-centrality score. Despite having a higher degree of centrality than Farrell and Hersch (2005), both Campbell and Mínguez-Vera (2008) and Carter et al. (2010) have less influence on the literature, perhaps because of their limited contributions. However, Farrell and Hersch (2005) was one of the first studies of the subject to explore the impact of existing board structures on the appointment of female directors. This might be a plausible cause of its higher significance.

4.6. PageRank analysis

PageRank analysis is another method for measuring an article's prestige (Ding, Yan, Frazho, & Caverlee, 2009), which increases as other highly cited articles cite the article in question. More citations may not indicate high prestige despite citations and prestige sometimes being correlated. PageRank can measure prestige (Brin & Page, 1998). Initially designed for prioritizing webpages when performing a keyword search, PageRank is used to calculate the influence of research articles. The formula for calculating PageRank is as follows:

$$PR(A) = \frac{(1-d)}{N} + d\left(\frac{PR(T_1)}{C(T_1)} + \cdots + \frac{PR(T_n)}{C(T_n)}\right)$$

where A is an article cited by other articles T_1, T_2, T_3, ……, T_n. Here, $C(T_1)$ is the citations of paper T_1; $PR(T_1)$ is its PageRank; and d is a dampening factor whose value in the original Google algorithm was 0.85 based on the observation that an individual surfing follows about six hyperlinks before quitting. N is the size of the network. The 107 articles identified in the co-citation analysis have a PageRank between 0.085054 and 0.000782. This finding suggests that the probability of citing any of these articles by cross-referencing the articles in the citation network lies between these two numbers.

Table 8 presents the results of the PageRank analysis. A disparity seemingly exists between the results of the citation and PageRank analyses because articles with a low number of global and local citations have a higher PageRank. Interestingly, a discrepancy also exists in the results of PageRank and the centrality measures. For example, despite contributing to the field of board diversity, the studies by Agrawal and Knoeber (2001) and Van der Walt and Ingley (2003) both have fewer local citations and a low degree of centrality. Agrawal and Knoeber (2001) address the political orientation of firms and their resulting board appointments, while Van der Walt and Ingley (2003) build a theoretical foundation by developing a taxonomy for diversity and discuss its implications on firms' decision-making. As both are "firsts" in this regard, they enjoy comparatively higher prestige. This finding suggests that an article's prestige does not always depend on the number of citations; it may depend on the number of times it contributes to other high-quality studies.

4.7. Keyword and co-occurrence analysis

The rationale behind conducting co-occurrence and keyword analysis is that an author's keywords sufficiently represent an article's content (Comerio & Strozzi, 2019). Keyword co-occurrence occurs when two keywords appear together in an article, indicating that a relationship exists between the two concepts. *RQ3* (*Which themes involving board diversity are the most popular among scholars?*) focuses on identifying the themes popular among scholars working on board diversity. To address this RQ, we use keyword and co-occurrence analysis in the BibExcel software. Scientometrists usually use co-occurrence (or co-word) analysis to discern knowledge in the strategy and management fields (Castriotta et al., 2019). Scientific researchers use this method to measure performance and trace innovations and information flows (Wormell, 2000).

To explore the prevalent themes within board diversity, we conduct keyword and keyword co-occurrence analyses. Table 9 suggests that corporate governance is the most frequently used keyword in the board diversity literature. This finding is logical because board diversity centers on its applicability for improving corporate governance. The second most often used keyword is gender diversity, which suggests that board diversity research has mostly centered on the issue of women and their presence on boards. Among the top 10 most frequently occurring keywords, three relate to gender diversity. Corporate social responsibility has also emerged as a prevalent theme within the literature. As Fig. 4 shows, corporate governance and gender diversity are the most prominent nodes in the network, showing their relative importance in the field of board diversity.

According to Table 10, corporate governance and gender diversity co-occur most often. Although corporate governance and boards of directors are second, corporate governance improvements seem to be the primary goal for researchers in this area. Another emerging theme is gender diversity on boards, which is by far the most popular research theme in board diversity. These keyword pairs suggest that researchers have shown an overwhelming interest in the issue of gender diversity on boards, which is understandable as gender forms the largest constituency among demographic factors. This finding also suggests that other types of demographic factors have received less attention from researchers.

Table 4
Top publishing journals on board diversity.

Name of Journal	ABS rating	Publisher	Number of Articles
Journal of Business Ethics	3	Springer Nature	57
Corporate Governance: The International Journal of Business in Society	2	Emerald Group Publishing	28
Corporate Governance: An International Review	3	Wiley-Blackwell	24
Corporate Social Responsibility and Environmental Management	1	Wiley Online	12
Journal of Business Research	3	Elsevier BV	10
Management Decision	2	Emerald Group Publishing	10
Journal of Corporate Finance	4	Elsevier BV	10
British Journal of Management	4	Wiley-Blackwell	10
Gender in Management	1	Emerald Group Publishing	9
Academy of Management Journal	4*	Academy of Management	7
Journal of Management and Governance	1	Springer US	7
Managerial Finance	1	Emerald Group Publishing	7
Business Strategy and The Environment	3	Wiley-Blackwell	6
Equality Diversity and Inclusion	NR	Emerald Group Publishing	6
Human Resource Management	4	Wiley-Blackwell	6
Journal of Banking and Finance	4	Elsevier BV	6
Pacific Accounting Review	1	Emerald Group Publishing	6
Managerial Auditing Journal	2	Emerald Group Publishing	5
Strategic Management Journal	4*	Wiley-Blackwell	5
Applied Economics Letters	1	Routledge	4
Contemporary Accounting Research	4	Wiley-Blackwell	4
Economics Bulletin	NR	Springer-Verlag	4
European Management Review	3	Wiley-Blackwell	4
International Review of Financial Analysis	3	Elsevier BV	4
Journal of Accounting in Emerging Economies	2	Emerald Group Publishing	4
Leadership Quarterly	4	Elsevier BV	4
Management Science	4*	INFORMS	4
Nonprofit and Voluntary Sector Quarterly	3	Sage Publication	4
Pacific-Basin Finance Journal	2	Elsevier BV	4

This table shows the top journals publishing articles on board diversity. Here, the ABS rating of journal quality (provided by the Chartered Association of Business Schools (CABS)), 4* = journals recognized worldwide as examples of excellence and/or publishing the most original and best-executed research that have a high impact factor; 3 = journals publishing the most original and well-executed research but may or may not have a high impact factor; 2 = journals publishing original research with acceptable standards; 1 = journals publishing original research with modest standards; and N.R. = journal not rated.

4.8. Co-authorship analysis

To answer *RQ4* and *RQ5* (*Who are the most influential authors on board diversity and what is the present state of collaboration involving board diversity?*), we analyze the current state of collaborations and identify the most influential authors on board diversity. Collaboration among scholars is the most formal way of intellectual association in scientific research (Cisneros et al., 2018). Global collaboration networks allow developing nations to engage in the knowledge creation process that is traditionally led by developed countries (Palacios-Callender & Roberts, 2018). The meeting of any two points of view leads to the progression and maturity of ideas. It also improves the quality of a published paper with multiple authors because fewer mistakes are made and contributions occur from different disciplines (Tahamtan, Safipour Afshar, & Ahamdzadeh, 2016).

In this section, we analyze the extent of collaboration among scholars as well as identify the most influential authors within the network of collaboration among scholars. As Fig. 5 suggests, prominent authors in terms of collaborative effort are Isabel Maria Garcia-Sanchez, Morten Huse, Ferdinand A. Gul, and Ruth Sealy from Spain, Norway, Malaysia, and the United States, respectively. They form a homogeneous network of authors in which collaborative efforts are limited mostly to authors in their own nations. This network suggests that research concentrates around a few authors, and most of the nodes appear to form a network of two. The co-authorship network can thus be seen as a collection of few networks that are fairly closed and show few interactions among themselves. Collaboration among scholars is necessary to develop a field and therefore more cross-country collaborations are needed.

4.8.1. Centrality analysis of the co-authorship network

Table 11 presents the centrality measures of the top 19 papers. The degree of centrality within the co-authorship network is a measure of an author's relative importance within that network in terms of his/her relational ties (Cisneros et al., 2018). More published authors have greater relational ties and therefore a higher degree of centrality. Yet, some authors who have published less still have a relatively high degree of centrality because of their collaborative efforts. Overall, we thus conclude that an author's degree of centrality results more from his/her collaborative work with other authors than from article publication. Isabel Maria Garcia-Sanchez, Ferdinand A Gul, and Ruth Sealy are such authors who have formed multiple relational ties through co-authorship and thus have influenced research on board diversity.

The weighted degree of centrality is another measure based on the weights assigned to each relational tie. Here, the data suggest that many authors with relatively low relational ties place a high weight on each relational tie. This finding suggests that these authors belong to a collaborative group. For example, Isabel-Maria Garcia-Sanchez and Antonio Minguez-Vera work together and have formed a long partnership. In this case, the strength of all relational ties is more important than the number of such ties. Betweenness centrality indicates the degree to which an author acts as a link between two groups. These authors, who can be viewed as brokers, have access to ideas from multiple groups (Cisneros et al., 2018). Thus, they act as a gateway through which the knowledge of one group travels to another and are instrumental in developing ideas across the collaboration network. Ruth Sealy (with her relatively high betweenness centrality) appears to be one such author who has worked with multiple groups of authors who are otherwise unconnected.

Eigen-centrality measures an author's relative importance within the network. Each author receives a score assuming that a connection to nodes with a high score contributes more to the score than low scoring ones (Cisneros et al., 2018). These authors have more influence within the network and therefore better access to resources (Cisneros et al.,

Table 5
Top publishing authors and institutions on board diversity.

Author	TP	TC	Organization	TP	TC
Isabel-Maria Garcia-Sanchez	9	210	University of London	11	883
Antonio Minguez-Vera	8	412	Universiti Utara Malaysia	11	49
Collins G. Ntim	6	84	University of Salamanca	10	107
Emma Garcia-Meca	6	45	University of Sevilla	10	25
Alison Cook	6	42	University of Technology Sydney	9	248
Christy Glass	6	42	Universidad Politecnica De Cartagena	8	375
Ferdinand A. Gul	5	364	Queensland University of Technology	8	257
Morten Huse	5	285	State University System of Florida	8	223
Siri Terjesen	5	212	University of Texas System	8	147
Jeremy Galbreath	5	73	University of Murcia	8	98
Maretno Agus Harjoto	5	57	Curtin University	8	11
Juan Francisco Martin-Ugedo	5	50	Copenhagen Business School	7	617
Jennifer Martinez-Ferrero	5	45	Cranfield University	7	202
Inmaculada Bel-Oms	5	14	Indiana University System	7	195
Maria Consuelo Pucheta-Martinez	5	14	University of Southampton	7	154
Abubakr Saeed	5	11	IE University	7	9
Patricia Gabaldon	5	8	University of New South Wales Sydney	6	334
Claude Francoeur	4	234	University of Exeter	6	128
Real Labelle	4	234	California State University System	6	68
Mehdi Nekhili	4	36	Penn State University	6	60
Ruth Sealy	4	21	Utah State University	6	42
Rohail Hassan	4	8	Witten Herdecke University	6	41
Maran Marimuthu	4	8	Universitat Jaume I	6	34
Francisco Bravo	4	2	Indiana University Bloomington	6	33
Sadi Bogac Kanadli	4	1	Griffith University	6	22
Renee B. Adams	3	884	Arizona State University	5	412
Corinne Post	3	422	HEC Montreal	5	322
Bin Srinidhi	3	333	University of Bath	5	234
Stephen Brammer	3	212	Massey University	5	125
Wei Shen	3	211	University of Melbourne	5	114
R. Oystein Strom	3	106	Kent State University	5	74
Ricardo Gimeno	3	79	Cardiff University	5	71
Ruth Mateos De Cabo	3	79	Pepperdine University	5	57
Anne-Wil Harzing	3	73	University of South Australia	5	49
Isabel Metz	3	73	University of Huddersfield	5	43
Indrarini Laksmana	3	57	Hanken School Economics	5	36
Beatriz Cuadrado-Ballesteros	3	39	International Islamic University Malaysia	5	33
Muhammad Ali	3	38	City University London	5	28
Ku Nor Izah Ku Ismail	3	38	University of Leeds	5	22
Carol T. Kulik	3	37	University of Birmingham	5	20

Note: TP = total publications and TC = total citations.

2018). Morten Huse and Real Labelle have high levels of eigen-centrality. This finding suggests that networks originating from them become extensive later, which marks them as significant authors in the co-authorship network and shows their significant contribution to the field of board diversity despite having a low number of publications.

4.9. Co-citation analysis

Small (1973) defines co-citation as the number of times two articles are cited together. In bibliometric network analysis, co-citation analysis can reveal a field's intellectual structure (Rossetto, Bernardes, Borini, & Gattaz, 2018). It is also useful for revealing the structure, directions, and developments in a research domain (Liu, Yin, Liu, & Dunford, 2015). Our sixth RQ (*What is the intellectual structure of current research on board diversity?*) focuses on understanding the intellectual structure of research on board diversity using co-citation and content analysis. Using co-citation analysis, two articles represented by nodes are connected when they co-occur in any research article. We consider two publications to be similar when they are jointly cited because they are likely to have a related subject matter (Hjørland, 2013). Our initial analysis shows that 107 of the 579 articles are co-cited by other articles within the network.

Table 6
Top 20 articles by the number of global and local citations.

Article	Global Citations	Local Citations
Adams and Ferreira (2009)	738	280
Hoskisson et al. (2002)	354	6
Campbell and Mínguez-Vera (2008)	330	157
Agrawal and Knoeber (2001)	289	15
Bear et al. (2010)	272	95
Farrell and Hersch (2005)	267	125
Carter et al. (2010)	260	157
Rose (2007)	222	103
Nielsen and Huse (2010)	192	84
Dezső and Ross (2012)	191	45
Kor (2006)	187	8
Shen and Cannella (2002)	183	3
Gul et al. (2011)	177	94
Francoeur et al. (2008)	167	88
Srinidhi et al. (2011)	155	72
Kang, Cheng, and Gray (2007)	147	52
Post et al. (2011)	130	48
Adams and Funk (2012)	127	45
Van der Walt and Ingley (2003)	117	47
Terjesen and Singh (2008)	105	44

This table shows the top articles based on global and local citations.

4.9.1. Literature classification

Past studies use clustering as a tool to create groups of research works (Radicchi, Castellano, Cecconi, Loreto, & Parisi, 2004). Data clustering enables us to identify interrelation and collaboration patterns among a co-citation analysis (Xu et al., 2018). The default tool in Gephi used to create such clusters is the Louvain algorithm, which is an iterative model that optimizes the number of partitions to maximize the modularity index (Blondel, Guillaume, Lambiotte, & Lefebvre, 2008). A modularity index measures the density of the links inside and outside communities. The modularity index Q is calculated as

$$Q = \frac{1}{2m}\sum\left[A_{ij} - \frac{k_i k_j}{2m}\right]\delta(c_i, c_j)$$

where A_{ij} is the weight of the edge between i and j; k_i is the sum of the weights of the nodes attached to i; c_i is i's community; $\delta(c_i, c_j)$ is 1 if $c_i = c_j$ and otherwise 0; and m is the sum of the weight of all the edges. Applying this algorithm to filter out the 107 node co-citation networks resulted in creating three research clusters, with 51 articles in cluster 1, 15 articles in cluster 2, and 41 articles in cluster 3. Table 12 shows the top ten articles by PageRank in each cluster and Table 13 shows the number of publications in each cluster between 2001 and 2017. Fig. 6 graphs the evolution of the three clusters. Clusters 1 and 3 have grown denser over time, while Cluster 2 has remained relatively thin, suggesting a lack of attention from researchers.

4.10. Content analysis

The co-citation network analysis showed research clusters consisting of 107 studies in total. This section provides a content analysis of each cluster. To identify a common theme within each cluster, we study the top 10 articles in each, which is a common practice in bibliometric studies (Fahimnia et al., 2015; Xu et al., 2018).

4.10.1. Cluster 1: board diversity in the context of corporate governance

Cluster 1 is the largest cluster with 51 articles that focus on the impact of board diversity on a firm's financial performance. Thus, the

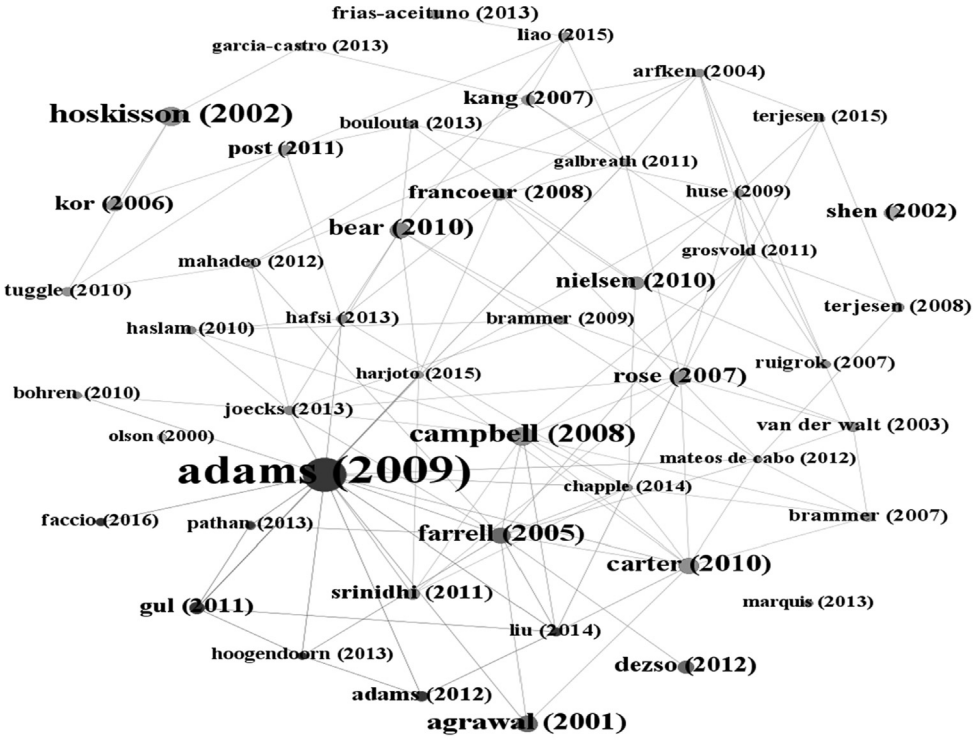

Fig. 3. Citation network on board diversity. This figure shows the citation network on board diversity using Gephi based on the number of citations with a threshold of at least 50 citations.

cluster focuses on the economic rationale behind implementing board diversity. This cluster is based on the notion that diversity may improve governance and monitoring and thus firm performance (Adams & Ferreira, 2009; Campbell & Mínguez-Vera, 2008; Farrell & Hersch, 2005; Rose, 2007). The research evidence is mixed, with some articles reporting a negative impact, some indicating a positive impact, and others suggesting an insignificant relation between board diversity and firm performance. The measures of firm performance also vary but can be classified into two broad categories: (1) accounting-based measures such as return on assets and return on equity and (2) market-based measures such as Tobin's Q and shareholders' return. The former measures are backward-looking, while the latter measures are forward-looking. A major problem of market-based measures is their availability because they can only be applied to listed companies. The most prestigious article in this cluster, namely Agrawal and Knoeber (2001), discusses the political role that directors play, concluding that women directors do not play a major political role within an organization and that professional background influences the political role played by directors.

4.10.2. Cluster 2: implications of different internal and external factors on board diversity

Cluster 2 with 15 articles is the smallest of the three clusters. These articles mostly discuss the environmental context of implementing

Table 7
Centrality measures for the articles cited within the network.

Article	Degree	Weighted Degree	Betweenness Centrality (Normalized)	Eigen-Centrality
Adams and Ferreira (2009)	280	280	0.001228	1.0
Carter et al. (2010)	157	157	0.002459	0.429861
Campbell and Mínguez-Vera (2008)	157	157	0.000973	0.576924
Farrell and Hersch (2005)	125	125	0.000383	0.79642
Rose (2007)	103	103	0.000468	0.547304
Bear et al. (2010)	95	95	0.000597	0.333566
Gul et al. (2011)	94	94	0.000038	0.261708
Francoeur et al. (2008)	88	88	0.000319	0.322196
Nielsen and Huse (2010)	84	84	0.001128	0.239786
Srinidhi et al. (2011)	72	72	0.000315	0.193446
Brammer et al. (2007)	53	53	0.000195	0.33335
Joecks, Pull, and Vetter (2013)	52	52	0.001647	0.098639
Kang et al. (2007)	52	52	0.000163	0.202528
Liu, Wei, and Xie (2014)	50	50	0.000608	0.103164
Post et al. (2011)	48	48	0.001654	0.167437
Van der Walt and Ingley (2003)	47	47	0	0.325318
Dezső and Ross (2012)	45	45	0.000064	0.108403
Adams and Funk (2012)	45	45	0.000034	0.11754
Terjesen and Singh (2008)	44	44	0	0.183499
Mahadeo, Soobaroyen, and Hanuman (2012)	43	43	0.002295	0.119584

This table shows the centrality measures of the articles based on citations.

Table 8
Top 20 articles on board diversity by PageRank.

Article	PageRank	Global Citations	Local Citations
Agrawal and Knoeber (2001)	0.081163	289	15
Van der Walt and Ingley (2003)	0.062236	117	47
Adams and Ferreira (2009)	0.061156	738	280
Farrell and Hersch (2005)	0.058248	267	125
Arfken et al. (2004)	0.0293	88	29
Rose (2007)	0.023957	222	103
Campbell and Mínguez-Vera (2008)	0.021228	330	157
Brammer et al. (2009)	0.017147	65	35
Carter et al. (2010)	0.015828	260	157
Brammer et al. (2007)	0.01415	96	53
Bear et al. (2010)	0.012278	272	95
Francoeur et al. (2008)	0.012166	167	88
Hoskisson et al. (2002)	0.012118	354	6
Nielsen and Huse (2010)	0.01164	192	84
Gul et al. (2011)	0.010513	177	94
Ruigrok, Peck, and Tacheva (2007)	0.009813	90	32
Kang et al. (2007)	0.009008	147	52
Huse et al. (2009)	0.008574	72	35
Tuggle, Schnatterly, and Johnson (2010)	0.007884	99	15
Srinidhi et al. (2011)	0.007277	155	72

This table shows the top articles on board diversity by PageRank.

Table 9
Top keywords by the frequency of their occurrence.

Keywords	Occurrences
Corporate Governance	172
Gender Diversity	119
Board of Directors	96
Gender	69
Diversity	60
Board Diversity	48
Firm Performance	34
Corporate Social Responsibility	31
Board Composition	30
Board Gender Diversity	26
Boards of Directors	22
Performance	19
Women	18
Financial Performance	17
Female Directors	16
Governance	16
Women Directors	16
Leadership	13
Boards	12
China	12
Banks	10
Disclosure	10
Earnings Management	10
Firm Value	10
Gender Equality	10
India	10
Corporate Boards	9
Directors	9
Ethnicity	9
Board Independence	8
Risk Taking	8
Sustainability	8
Women on Boards	8

This table shows the top keywords based on the frequency of their occurrence.

board diversity. Cluster 2 focuses on the factors conducive to increasing board diversity. Researchers initially tried to identify criteria for selecting a board member (Van der Walt & Ingley, 2003). Then, they examined the environmental factors supporting improvements in board diversity such as a board's need to better represent the consumer population (Arfken, Bellar, & Helms, 2004), increase corporate reputation (Brammer et al., 2009), and develop better innovation strategies (Hoskisson et al., 2002). The environmental context thus plays a vital role in improving board diversity. Legislation and corporate governance guidelines also affect board diversity (Terjesen et al., 2015). Overall, we find that the common thread among the articles in this cluster is their emphasis on the external environment.

4.10.3. Cluster 3: board diversity in the context of changes in policy

Cluster 3, the second largest with 41 articles, focuses on how policy affects board diversity and thus firm performance. Some call this area a "black box" (Miller & Triana, 2009) because it addresses the mediating effects of such variables as a board's strategic control (Nielsen & Huse, 2010), corporate social performance (Bear et al., 2010; Frias-Aceituno, Rodriguez-Ariza, & Garcia-Sanchez, 2013; Huse, Nielsen, & Hagen, 2009), environmental performance (Post et al., 2011), and innovation (Kor, 2006). The articles in this cluster focus on how these changes in policies may affect firm performance. These areas are fundamental for explaining the impact of board diversity on firm characteristics.

4.11. Findings and future areas of research

In this section, we summarize our findings and suggest future research directions (*What kinds of issues hamper research on board diversity and what areas involving board diversity need additional study?*). We also identify the impediments facing current researchers. The descriptive analysis clarifies the current trend of research on board diversity (*RQ1*). We find that most research on this topic has been published since 2008, which may be partly driven by the GFC and the decision by the Norwegian parliament to legislate a gender quota for firm boards. Much research on board diversity focuses on the United States and Europe, possibly because of the role of the United States in the GFC and the crisis' impact on Europe. Malaysia, the first Asian nation to legislate a gender quota for corporate boards, has the highest degree of centrality and economic contribution of women. We also find that authors and organizations globally contribute to the literature on board diversity.

The results of our citation analysis suggest that a limited number of articles have shaped the field (*RQ2*). The study by Adams and Ferreira (2009) forms the most prominent node within the network. It has both the highest degree of centrality and the most citations locally and globally, followed by Campbell and Mínguez-Vera (2008) and Carter et al. (2010). An apparent discrepancy exists between the citation and PageRank analyses. The PageRank analysis shows that both Agrawal and Knoeber (2001) and Van der Walt and Ingley (2003) have much higher prestige despite their relatively low number of citations. In these instances, an article's prestige does not depend on the number of citations but rather on the number of times that other popular articles use its content.

Keywords and co-occurrence (or co-word) analysis suggests popular themes in the board diversity literature (*RQ3*). We find that gender diversity dominates the discourse in this field. Our evidence also shows that much research focuses on board diversity and its impact on corporate governance and firm performance. This finding seems logical because the issue of board diversity stems from the need for better corporate governance and its economic value which is a major rationale for its implementation.

The results from the co-authorship network show the current state of collaboration and the most influential authors on board diversity (*RQ4* and *RQ5*). Our evidence suggests that relatively little collaboration occurs among authors and much of this is localized. Some authors such as Ferdinand A. Gul, Ruth Sealy, and Real Labelle play an important role in the network. Despite having a relatively low number of relational ties, they act as knowledge brokers among groups. Our findings also show that Antonio Minguez-Vera has many publications on board diversity but relatively few relational ties. This result may be

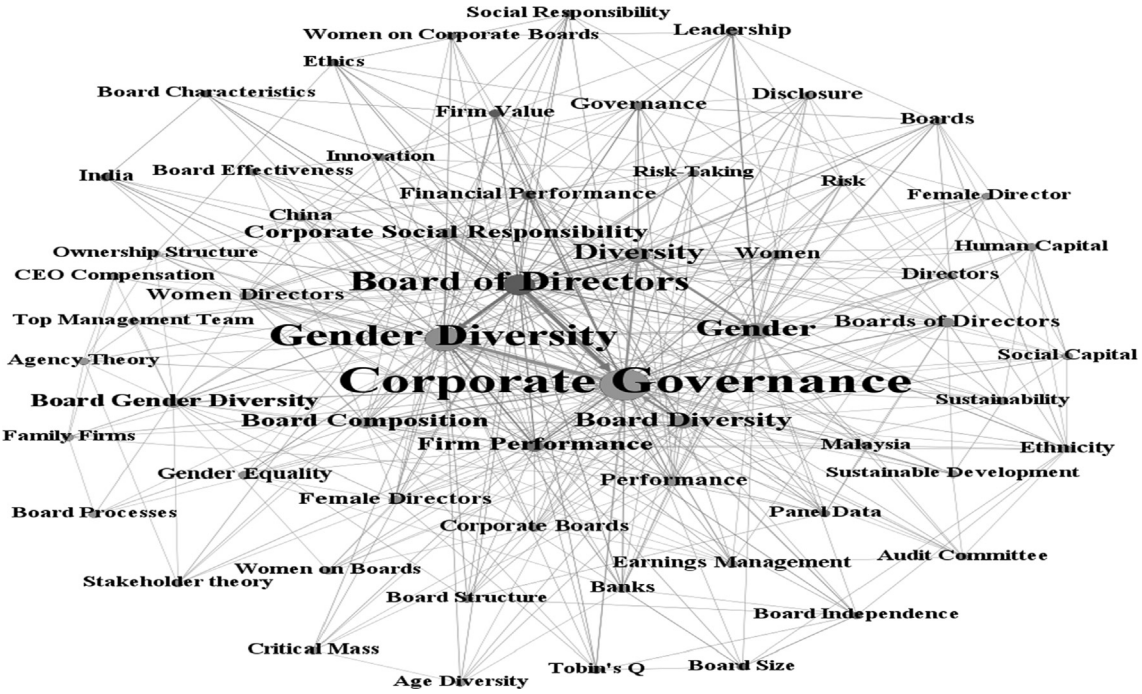

Fig. 4. Keyword co-occurrence network on board diversity. This figure presents the top keywords analysis using Gephi software. The size of the bubble indicates the most frequent keyword in the literature. A threshold of at least five occurrences is applied.

Table 10
Most frequent keyword pairs.

Keyword #1	Keyword #2	Frequency
Corporate Governance	Gender Diversity	40
Board of Directors	Corporate Governance	37
Board of Directors	Gender Diversity	32
Diversity	Gender	25
Board Diversity	Corporate Governance	23
Board of Directors	Diversity	20
Corporate Governance	Gender	16
Corporate Governance	Diversity	15
Board Composition	Corporate Governance	14
Firm Performance	Gender Diversity	13
Corporate Governance	Firm Performance	12
Board of Directors	Gender	11
Boards of Directors	Corporate Governance	10
Corporate Governance	Financial Performance	10
Corporate Governance	Women	10
Board Gender Diversity	Corporate Governance	9
Corporate Governance	Corporate Social Responsibility	9
Corporate Governance	Performance	9
Corporate Social Responsibility	Gender Diversity	8
Gender	Leadership	8
Banks	Corporate Governance	7
Board Diversity	Gender Diversity	7
Board of Directors	Corporate Social Responsibility	7
Board of Directors	Women	7
Ethnicity	Gender	7
Board Diversity	Board of Directors	6
Board Diversity	Corporate Social Responsibility	6
Board of Directors	Firm Performance	6
Boards	Diversity	6
Boards	Gender	6
Corporate Governance	Earnings Management	6
Corporate Governance	Firm Value	6
Gender Diversity	Women Directors	6

This table shows the top pairs of keywords.

driven by limited collaborations within a closed group. We conclude that better collaborative efforts among scholars are needed.

Using co-citation analysis and content analysis, we attempt to find the current intellectual structure of research on board diversity (*RQ6*). We find that this research consists of three broad clusters. Cluster 1 addresses how board diversity affects corporate governance. Cluster 2 focuses on the factors influencing board diversity. Cluster 3 contains articles on how board diversity affects firm policy on corporate social responsibility and changes in firm strategy and innovation.

4.11.1. Impediments to current research

Using a systematic review and content analysis of the literature, we find that several factors impede growth in this field despite continuing progress.

1. *Lack of systematic theory development.* Although empirical studies abound on board diversity, a need exists for more conceptual articles providing a theoretical framework to guide future research. Because no widely accepted theoretical model of board diversity exists, future research should be conducted to develop a robust framework.
2. *Lack of data availability.* The lack of data availability hampers research, especially in developing nations, where the problems faced in implementing board diversity differ from those of developed nations. A need therefore exists to develop a holistic database to help propel research globally.
3. *Lack of academic collaboration.* Collaboration among scholars facilitates the flow of information, reduces the cost of doing research, and improves the efficiency of researchers (Cisneros et al., 2018). Greater collaboration across nations is desirable to help formulate a globally accepted framework for board diversity.
4. *Lack of focus on industry-specific and cross-industry comparisons.* Some researchers prefer using multi-industry datasets to generalize the impact of board diversity across sectors. Yet, industries may differ in terms of working hours, conditions, mobility, and other factors that affect the composition of the workforce. Companies generally draw their pool of candidates for board positions from those holding senior positions and place a premium on industry experience (Brammer et al., 2007). Thus, board diversity may differ across industries because of workforce diversity. Therefore, research on cross-industry variation is essential to better understand board

Fig. 5. Co-Authorship network on board diversity. This figure shows the co-authorship network on board diversity using Gephi software with a threshold of at least two articles.

diversity.

5. *Lack of focus on smaller firms.* Not surprisingly, research tends to focus on larger industries and firms because of the accessibility of data and greater public scrutiny. Nonetheless, smaller firms have distinct issues that future researchers of board diversity should explore. These issues include the impact of board diversity on board monitoring in small firms in which ownership and control generally overlap (Shehata, Salhin, & El-Helaly, 2017), effect of board diversity on financing preferences, influence of board diversity on compliance, and impact of board diversity on workforce diversity.
6. *Lack of focus on other types of demographic diversity.* Research on board diversity often focuses on gender at the expense of other types of demographics. Although the importance of gender is undeniable, researchers need to focus on other demographics such as age, nationality, ethnicity, language, education, and professional background. Directors can be similar to or dissimilar from each other across different dimensions (Johnson, Schnatterly, & Hill, 2013); for example, two directors could be of same gender but have a different age, professional background, or ethnicity. These demographic attributes can thus lead to the formation of subgroups within a board (i.e., based on gender, age, and ethnicity), and the membership of these subgroups may moderate the effect of the other characteristics of the director (Johnson et al., 2013). In addition, the value of board diversity lies in the different perspectives from which such boards can draw. These perspectives are affected by many demographic attributes that, as mentioned before, act in concert with one

Table 11
Centrality measures of the co-authorship network.

Author	Degree	Weighted Degree	Between Centrality (Normalized)	Eigen- Centrality
Isabel-Maria Garcia-Sanchez	11	15	0.000153	0.251880
Ferdinand A. Gul	10	11	0.000125	0.308849
Ruth Sealy	10	11	0.000215	0.926079
Morten Huse	10	10	0.000111	1.000000
Antonio Minguez-Vera	9	15	0.000052	0.334662
Collins G Ntim	9	12	0.000014	0.759515
Mohamed H. Elmagrhi	7	10	0.000000	0.709029
Emma Garcia-Meca	7	9	0.000080	0.229267
Siri Terjesen	7	7	0.000174	0.339920
Juan Francisco Martín-Ugedo	6	12	0.000007	0.293680
J. Samuel Baixauli-Soler	6	9	0.000014	0.267265
Jennifer Martínez-Ferrero	6	10	0.000017	0.251880
Maria Encarnacion Lucas-Perez	6	10	0.000003	0.308849
Claude Francoeur	6	8	0.000031	0.926079
Real Labelle	6	8	0.000059	1.000000
Samuel Fosu	6	8	0.000014	0.334662
Bin Srinidhi	6	7	0.000014	0.759515
Sadi Bogaç Kanadli	6	8	0.000080	0.709029
Mariateresa Torchia	6	7	0.000097	0.229267

This table presents co-authorship based on the centrality measures.

Table 12
Top 10 articles on board diversity in each cluster by PageRank.

Cluster 1	Cluster 2	Cluster 3
Agrawal and Knoeber (2001)	Van der Walt and Ingley (2003)	Bear et al. (2010)
Adams and Ferreira (2009)	Arfken et al. (2004)	Nielsen and Huse (2010)
Farrell and Hersch (2005)	Brammer et al. (2009)	Huse et al. (2009)
Rose (2007)	Hoskisson et al. (2002)	Tuggle et al. (2010)
Campbell and Mínguez-Vera (2008)	Ruigrok et al. (2007)	Post et al. (2011)
Carter et al. (2010)	Kang et al. (2007)	Frias-Aceituno et al. (2013)
Brammer et al. (2007)	Terjesen and Singh (2008)	Kor (2006)
Francoeur et al. (2008)	Peterson and Philpot (2007)	Hafsi and Turgut (2013)
Gul et al. (2011)	Terjesen et al. (2015)	Boulouta (2013)
Srinidhi et al. (2011)	Adams and Flynn (2005)	Galbreath (2011)

This table shows the top 10 articles on board diversity in the three clusters.

Table 13
Number of articles on board diversity in each cluster between 2001 and 2017.

Year	Cluster 1	Cluster 2	Cluster 3
2001	1		
2002		1	
2003		1	
2004		1	
2005	1	1	
2006			1
2007	2	3	
2008	2	1	
2009	1	1	1
2010	5		4
2011	5	1	2
2012	4		1
2013	6		7
2014	6		4
2015	8	2	13
2016	8	2	6
2017	2	1	2
Grand Total	**51**	**15**	**41**

This table shows the number of articles on board diversity in the top three clusters between 2001 and 2017.

another. Therefore, to build a holistic framework for board diversity, it is necessary to assess the effect of other measures of demographic diversity instead of studying the impacts of gender in isolation.

7. *Lack of focus on cognitive diversity*. Cognitive diversity is an under-researched area. Diversity adds value, especially when directors bring new thought processes to the board. Although some researchers use demographic diversity as a predictor of board diversity, others hold a different view (Kilduff, Angelmar, & Mehra, 2000). Research on cognitive diversity and its impact on the quality of decision-making can provide rich insights that may help regulators and researchers build a business case for board diversity.

4.11.2. Avenues for future research

Despite much research on board diversity, several areas merit additional work. Here are some research gaps that future researchers could address.

1. *Conceptual studies*. As previously stated, a robust research framework for board diversity is needed. Although some conceptual studies are available (Fairfax, 2005; Van der Walt & Ingley, 2003), more work is required to explain the impact of board diversity and build conceptual frameworks. Past theoretical models such as those of Hambrick and Mason (1984), Zahra and Pearce (1989), and Hambrick, Misangyi, and Park (2015) do address parts of the issue well, such as strategic choices, performance outcomes, and effectiveness and monitoring. However, comprehensive studies that address board diversity specifically are needed.
2. *Cross-country and multi-country studies*. The majority of studies of board diversity focus on a single country. However, the principles in Anglo-American nations may not work in Asian nations because of institutional and socioeconomic differences (Low, Roberts, & Whiting, 2015). Although few studies attempt to examine board diversity in a multi-country context (Low et al., 2015), they are likely to promote more collaboration among scholars and help create robust frameworks for implementing board diversity.
3. *Sector-specific and cross-sector comparison*. Most studies of board diversity use datasets of firms from different sectors and generalize the impact of board diversity across industries. Such generalizations may not be robust because of differing industry characteristics (Arena et al., 2015). Thus, a need exists for industry-specific studies. Further, implementing board diversity in one industrial context may be inapplicable in others and require adjustments. Cross-sector comparison studies may thus help make appropriate decisions about such adjustments, which in turn may increase diversity initiatives.
4. *Other types of demographic diversity*. The majority of research focuses on gender rather than such characteristics as age, professional background, education, nationality, and ethnicity. A board of directors' human and social capital are affected by many associated demographic attributes that act in concert with one another. Concentrating on any one aspect in isolation will not suffice. To build a comprehensive framework, it is therefore necessary to study other demographic attributes. Hence, opportunities exist for future researchers to concentrate their efforts on these and other areas to develop a holistic picture.
5. *Cognitive diversity*. Researchers should examine cognitive diversity because studies of how cognition affects strategic decision-making are scarce (Kilduff et al., 2000; Parayitam & Papenhausen, 2016).

5. Conclusions

Researchers and regulators suggest that studies of board diversity serve as a means of improving corporate governance. The quality of corporate governance depends on developing systems that increase the accountability of firm managers (Brammer et al., 2007). Evidence suggests that board diversity improves informativeness among stockholders (Gul et al., 2011). The results of the present study suggest that while authors globally have contributed to the field, their relational ties are homogeneous according to country lines. We also identify the most influential and prestigious studies in the field. These studies have a large impact that their global and local citations do not necessarily reflect. Our keyword and co-occurrence analyses show that researchers' focus has remained on corporate governance and firm performance as well as on how board diversity affects them. Moreover, among demographic measures, gender has received the greatest attention. Through a co-citation analysis, we divided the literature into three clusters with a central focus on the implications of board diversity on firm outcomes to understand the mediating and moderating impacts of different variables on this relationship.

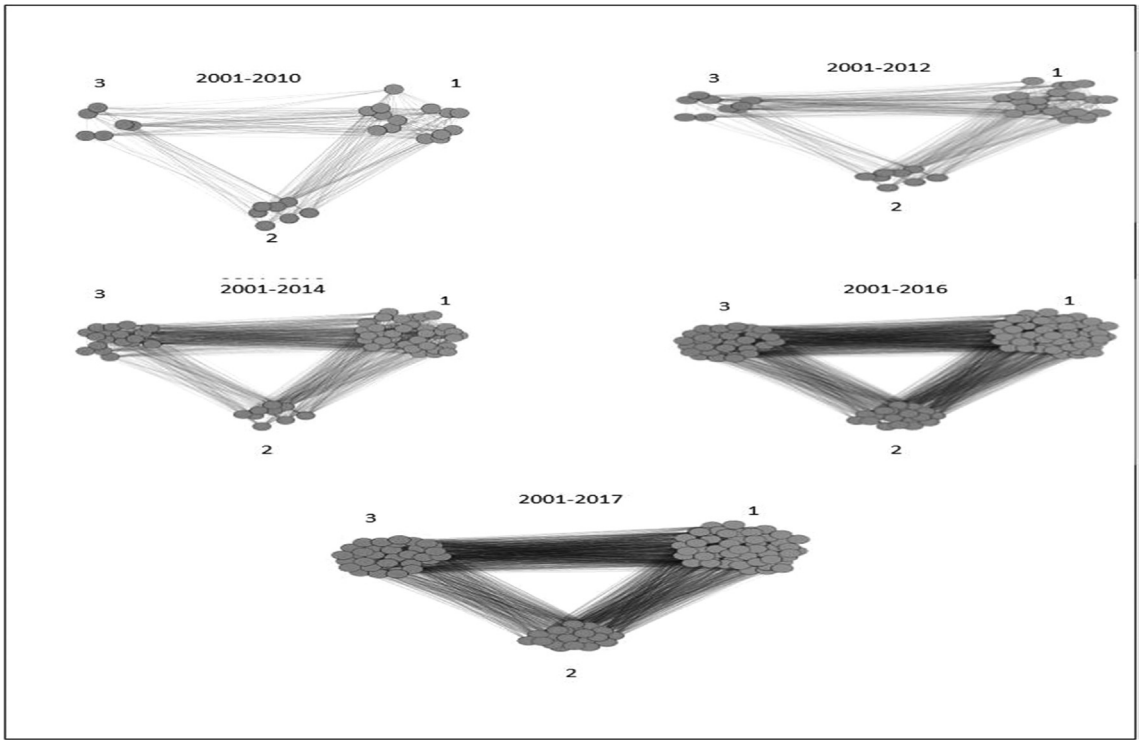

Fig. 6. Development of clusters between 2001 and 2017 on board diversity. This figure shows the temporal evolution of the top three clusters using Gephi software. Here, 1, 2, and 3 refer to Cluster 1 (how board diversity affects corporate governance), Cluster 2 (factors influencing board diversity), and Cluster 3 (how board diversity affects firm policy on corporate social responsibility and changes in firm strategy and innovation), respectively.

This study makes several contributions to the field. First, we examine the publication patterns in this area by analyzing yearly publications as well as author-, country, and institution-level contributions. Second, we identify the most influential studies and authors by mapping citation and co-authorship networks. Third, we map the intellectual structure of this area by identifying the most prominent themes and intellectual structure using co-occurrence and co-citation analyses to help researchers avoid stagnation and move the field forward. Fourth, through a combination of a bibliometric analysis and systematic literature review, this study provides a detailed and objective investigation of the literature under review. Fifth, we identify several barriers that impede the growth of knowledge in this area. Lastly, we list five potential research avenues for the future to direct research in this field.

Hence, our study provides a clear picture of research on board diversity using a bibliometric analysis and structured literature review. However, like other studies, it has limitations. First, our dataset covers articles from 1999 to early 2019 and hence excludes earlier articles. Second, other types of analyses such as co-authorship could be examined. Third, our keyword selection is based on our literature review and definition of board diversity. Other keywords could emerge in the future.

Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jbusres.2019.11.025.

References

Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics, 94*(2), 291–309. https://doi.org/10.1016/j.jfineco.2008.10.007.

Adams, R. B., & Funk, P. (2012). Beyond the glass ceiling: Does gender matter? *Management Science, 58*(2), 219–235. https://doi.org/10.1287/mnsc.1110.1452.

Adams, S. M., & Flynn, P. M. (2005). Local knowledge advances women's access to corporate boards. *Corporate Governance: An International Review, 13*(6), 836–846. https://doi.org/10.1111/j.1467-8683.2005.00474.x.

Agrawal, A., & Knoeber, C. R. (2001). Do some outside directors play a political role? *Journal of Law and Economics, 44*(1), 179–198. https://doi.org/10.2139/ssrn.224133.

Appio, F. P., Cesaroni, F., & Di Minin, A. (2014). Visualizing the structure and bridges of the intellectual property management and strategy literature: A document co-citation analysis. *Scientometrics, 101*(1), 623–661. https://doi.org/10.1007/s11192-014-1329-0.

Arena, C., Cirillo, A., Mussolino, D., Pulcinelli, I., Saggese, S., & Sarto, F. (2015). Women on board: Evidence from a masculine industry. *Corporate Governance: The International Journal of Business in Society, 15*(3), 339–356. https://doi.org/10.1108/CG-02-2014-0015.

Arfken, D. E., Bellar, S. L., & Helms, M. M. (2004). The ultimate glass ceiling: The presence of women on corporate boards. *Journal of Business Ethics, 50*(2), 177–186. https://doi.org/10.1023/B:BUSI.0000022125.95758.98.

Bastian, M., Heymann, S., & Jacomy, M. (2009). Gephi: An open source software for exploring and manipulating networks. *Proceedings of the Third International ICWSM Conference* (pp. 361–362). . https://doi.org/10.1136/qshc.2004.010033.

Bear, S., Rahman, N., & Post, C. (2010). The impact of board diversity and gender composition on corporate social responsibility and firm reputation. *Journal of Business Ethics, 97*(2), 201–221. https://doi.org/10.1007/s10551-010-0505-2.

Blondel, V. D., Guillaume, J. L., Lambiotte, R., & Lefebvre, E. (2008). Fast unfolding of communities in large networks. *Journal of Statistical Mechanics: Theory and Experiment, 10*, 1–12. https://doi.org/10.1088/1742-5468/2008/10/P10008.

Boulouta, I. (2013). Hidden connections: The link between board gender diversity and corporate social performance. *Journal of Business Ethics, 113*(2), 185–197. https://doi.org/10.1007/s10551-012-1293-7.

Brammer, S., Millington, A., & Pavelin, S. (2007). Gender and ethnic diversity among UK corporate boards. *Corporate Governance: An International Review, 15*(2), 393–403. https://doi.org/10.1111/j.1467-8683.2007.00569.x.

Brammer, S., Millington, A., & Pavelin, S. (2009). Corporate reputation and women on the board. *British Journal of Management, 20*(1), 17–29. https://doi.org/10.1111/j.1467-8551.2008.00600.x.

Brin, S., & Page, L. (1998). The anatomy of a large-scale hypertextual web search engine the anatomy of a search engine. *Computer Networks and ISDN Systems, 30*(1–7), 107–117. https://doi.org/10.1016/S0169-7552(98)00110-X.

Campbell, K., & Mínguez-Vera, A. (2008). Gender diversity in the boardroom and firm financial performance. *Journal of Business Ethics, 83*(3), 435–451. https://doi.org/10.1007/s10551-007-9630-y.

Carter, D. A., D'Souza, F., Simkins, B. J., & Simpson, W. G. (2010). The gender and ethnic diversity of US boards and board committees and firm financial performance. *Corporate Governance: An International Review, 18*(5), 396–414. https://doi.org/10.1111/j.1467-8683.2010.00809.x.

Castriotta, M., Loi, M., Marku, E., & Naitana, L. (2019). What's in a name? Exploring the conceptual structure of emerging organizations. *Scientometrics, 118*(2), 407–437.

https://doi.org/10.1007/s11192-018-2977-2.
Cisneros, L., Ibanescu, M., Keen, C., Lobato-Calleros, O., & Niebla-Zatarain, J. (2018). Bibliometric study of family business succession between 1939 and 2017: Mapping and analyzing authors' networks. *Scientometrics, 117*(2), 919–951. https://doi.org/10.1007/s11192-018-2889-1.
Comerio, N., & Strozzi, F. (2019). Tourism and its economic impact: A literature review using bibliometric tools. *Tourism Economics, 25*(1), 109–131. https://doi.org/10.1177/1354816618793762.
Conyon, M. J., & He, L. (2017). Firm performance and boardroom gender diversity: A quantile regression approach. *Journal of Business Research, 79*(1), 198–211. https://doi.org/10.1016/j.jbusres.2017.02.006.
Dezső, C. L., & Ross, D. G. (2012). Does female representation in top management improve firm performance? A panel data investigation. *Strategic Management Journal, 33*(9), 1072–1089. https://doi.org/10.1002/smj.1955.
Ding, Y., & Cronin, B. (2011). Popular and/or prestigious? Measures of scholarly esteem. *Information Processing and Management, 47*(1), 80–96. https://doi.org/10.1016/j.ipm.2010.01.002.
Ding, Y., Yan, E., Frazho, A., & Caverlee, J. (2009). PageRank for ranking authors in co-citation networks. *Journal of the American Society for Information Science, 60*(11), 2229–2243. https://doi.org/10.1002/asi.
Erhardt, N. L., Werbel, J. D., & Shrader, C. B. (2003). Board of director diversity and firm financial performance. *Corporate Governance: An International Review, 11*(2), 102–111. https://doi.org/10.1111/1467-8683.00011/full.
Eulerich, M., Velte, P., & Van Uum, C. (2014). The impact of management board diversity on corporate performance - An empirical analysis for the German two-tier system. *Problems and Perspectives in Management, 12*(1), 25–39. https://doi.org/10.11113/jt.v71.3854.
Fahimnia, B., Sarkis, J., & Davarzani, H. (2015). Green supply chain management: A review and bibliometric analysis. *International Journal of Production Economics, 162*, 101–114. https://doi.org/10.1016/j.ijpe.2015.01.003.
Fairfax, L. M. (2005). The bottom line on board diversity: A cost-benefit analysis of the business rationales for diversity on corporate boards. *Wisconsin Law Review, 3*, 795–853.
Farrell, K. A., & Hersch, P. L. (2005). Additions to corporate boards: The effect of gender. *Journal of Corporate Finance, 11*(1–2), 85–106. https://doi.org/10.1016/j.jcorpfin.2003.12.001.
Francoeur, C., Labelle, R., & Sinclair-Desgagné, B. (2008). Gender diversity in corporate governance and top management. *Journal of Business Ethics, 81*(1), 83–95. https://doi.org/10.1007/s10551-007-9482-5.
Frias-Aceituno, J. V., Rodriguez-Ariza, L., & Garcia-Sanchez, I. M. (2013). The role of the board in the dissemination of integrated corporate social reporting. *Corporate Social Responsibility and Environmental Management, 20*(4), 219–233. https://doi.org/10.1002/csr.1294.
Galbreath, J. (2011). Are there gender-related influences on corporate sustainability? A study of women on boards of directors. *Journal of Management and Organization, 17*(1), 017–038. https://doi.org/10.1017/S1833367200001693.
Grosvold, J., & Brammer, S. (2011). National institutional systems as antecedents of female board representation: An empirical study. *Corporate Governance: An International Review, 19*(2), 116–135. https://doi.org/10.1111/j.1467-8683.2010.00830.x.
Gul, F. A., Srinidhi, B., & Ng, A. C. (2011). Does board gender diversity improve the informativeness of stock prices? *Journal of Accounting and Economics, 51*(3), 314–338. https://doi.org/10.1016/j.jacceco.2011.01.005.
Hafsi, T., & Turgut, G. (2013). Boardroom diversity and its effect on social performance: Conceptualization and empirical evidence. *Journal of Business Ethics, 112*(3), 463–479. https://doi.org/10.1007/s10551-012-1272-z.
Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review, 9*(2), 193–206. https://doi.org/10.2307/258434.
Hambrick, D. C., Misangyi, V. F., & Park, C. A. (2015). The quad model for identifying a corporate director's potential for effective monitoring: Toward a new theory of board sufficiency. *Academy of Management Review, 40*(3), 323–344. https://doi.org/10.5465/amr.2014.0066.
Harjoto, M. A., & Rossi, F. (2019). Religiosity, female directors, and corporate social responsibility for Italian listed companies. *Journal of Business Research, 95*(1), 338–346. https://doi.org/10.1016/j.jbusres.2018.08.013.
Hillman, A. J., Shropshire, C., & Cannella, A. A. (2007). Organizational predictors of women on corporate boards. *Academy of Management Journal, 50*(4), 941–952. https://doi.org/10.5465/AMJ.2007.26279222.
Hjørland, B. (2013). Facet analysis: The logical approach to knowledge organization. *Information Processing and Management, 49*(2), 545–557. https://doi.org/10.1016/j.ipm.2012.10.001.
Horak, S., & Cui, J. (2017). Financial performance and risk behavior of gender-diversified boards in the Chinese automotive industry: Initial insights. *Personnel Review, 46*(4), 847–866. https://doi.org/10.1108/PR-10-2015-0274.
Hoskisson, R., Hitt, M., Johnson, R., & Grossman, W. (2002). Conflicting voices: The effects of institutional ownership heterogeneity and internal governance on corporate innovation strategies. *Academy of Management Journal, 45*(4), 697–716. https://doi.org/10.5465/3069305.
Huse, M., Nielsen, S. T., & Hagen, I. M. (2009). Women and employee-elected board members, and their contributions to board control tasks. *Journal of Business Ethics, 89*(4), 581–597. https://doi.org/10.1007/s10551-008-0018-4.
Husted, B. W., & de Sousa-Filho, J. M. (2019). Board structure and environmental, social, and governance disclosure in Latin America. *Journal of Business Research, 102*(1), 220–227. https://doi.org/10.1016/j.jbusres.2018.01.017.
Isidro, H., & Sobral, M. M. (2015). The effects of women on corporate boards on firm value, financial performance, and ethical and social compliance. *Journal of Business Ethics, 132*(1), 1–19. https://doi.org/10.1007/s10551-014-2302-9.
Joecks, J., Pull, K., & Vetter, K. (2013). Gender diversity in the boardroom and firm performance: What exactly constitutes a "critical mass?". *Journal of Business Ethics, 118*(1), 61–72. https://doi.org/10.1007/s10551-012-1553-6.
Johnson, S. G., Schnatterly, K., & Hill, A. D. (2013). Board composition beyond independence: Social capital, human capital, and demographics. *Journal of Management, 39*(1), 232–262. https://doi.org/10.1177/0149206312463938.
Kabongo, J. D., & Okpara, J. O. (2019). Timing and speed of internationalization: Evidence from African banks. *Journal of Business Research, 102*(1), 12–20. https://doi.org/10.1016/j.jbusres.2019.05.003.
Kagzi, M., & Guha, M. (2018). Board demographic diversity: A review of literature. *Journal of Strategy and Management, 11*(1), 33–51. https://doi.org/10.1108/JSMA-01-2017-0002.
Kang, E., Ding, D. K., & Charoenwong, C. (2010). Investor reaction to women directors. *Journal of Business Research, 63*(8), 888–894. https://doi.org/10.1016/j.jbusres.2009.06.008.
Kang, H., Cheng, M., & Gray, S. J. (2007). Corporate governance and board composition: Diversity and independence of Australian boards. *Corporate Governance: An International Review, 15*(2), 194–207. https://doi.org/10.1111/j.1467-8683.2007.00554.x.
Kaczmarek, S., Kimino, S., & Pye, A. (2014). Interlocking directorships and firm performance in highly regulated sectors: The moderating impact of board diversity. *Journal of Management & Governance, 18*(2), 347–372. https://doi.org/10.1007/s10997-012-9228-3.
Kilduff, M., Angelmar, R., & Mehra, A. (2000). Top management-team diversity and firm performance: Examining the role of cognitions. *Organization Science, 11*(1), 21–34. https://doi.org/10.5815/ijigsp.2012.01.06.
Kim, H., & Lim, C. (2010). Diversity, outside directors and firm valuation: Korean evidence. *Journal of Business Research, 63*(3), 284–291. https://doi.org/10.1016/j.jbusres.2009.01.013.
Kor, Y. Y. (2006). Direct and interaction effects of top management team and board compositions on R&D investment strategy. *Strategic Management Journal, 27*(11), 1081–1099. https://doi.org/10.1002/smj.554.
Korom, P. (2019). A bibliometric visualization of the economics and sociology of wealth inequality: A world apart? *Scientometrics, 118*(3), 849–868. https://doi.org/10.1007/s11192-018-03000-z.
Li, C., Wu, K., & Wu, J. (2017). A bibliometric analysis of research on haze during 2000–2016. *Environmental Science and Pollution Research, 24*(32), 24733–24742. https://doi.org/10.1007/s11356-017-0440-1.
Liu, Y., Wei, Z., & Xie, F. (2014). Do women directors improve firm performance in China? *Journal of Corporate Finance, 28*(1), 169–184. https://doi.org/10.1016/j.jcorpfin.2013.11.016.
Liu, Z., Yin, Y., Liu, W., & Dunford, M. (2015). Visualizing the intellectual structure and evolution of innovation systems research: A bibliometric analysis. *Scientometrics, 103*(1), 135–158. https://doi.org/10.1007/s11192-014-1517-y.
Low, D. C. M., Roberts, H., & Whiting, R. H. (2015). Board gender diversity and firm performance: Empirical evidence from Hong Kong, South Korea, Malaysia and Singapore. *Pacific Basin Finance Journal,, 35(Part A)*, 381–401. https://doi.org/10.1016/j.pacfin.2015.02.008.
Mahadeo, J. D., Soobaroyen, T., & Hanuman, V. O. (2012). Board composition and financial performance: Uncovering the effects of diversity in an emerging economy. *Journal of Business Ethics, 105*(3), 375–388. https://doi.org/10.1007/s10551-011-0973-z.
Miller, T., & Triana, M. (2009). Demographic diversity in the boardroom: Mediators of the board diversity – firm performance relationship. *Journal of Management Studies, 46*(5), 755–786. https://doi.org/10.1111/j.1467-6486.2009.00839.x.
Nielsen, S., & Huse, M. (2010). The contribution of women on boards of directors: Going beyond the surface. *Corporate Governance: An International Review, 18*(2), 136–148. https://doi.org/10.1111/j.1467-8683.2010.00784.x.
Palacios-Callender, M., & Roberts, S. A. (2018). Scientific collaboration of Cuban researchers working in Europe: Understanding relations between origin and destination countries. *Scientometrics, 117*(2), 745–769. https://doi.org/10.1007/s11192-018-2888-2.
Parayitam, S., & Papenhausen, C. (2016). Agreement-seeking behavior, trust, and cognitive diversity in strategic decision making teams: Process conflict as a moderator. *Journal of Advances in Management Research, 13*(3), 292–315. https://doi.org/10.1108/JAMR-10-2015-0072.
Perryman, A. A., Fernando, G. D., & Tripathy, A. (2016). Do gender differences persist? An examination of gender diversity on firm performance, risk, and executive compensation. *Journal of Business Research, 69*(2), 579–586. https://doi.org/10.1016/j.jbusres.2015.05.013.
Persson, O., Danell, R., & Schneider, J. W. (2009). How to use Bibexcel for various types of bibliometric analysis. *Celebrating Scholarly Communication Studies,* 9–24.
Peterson, C. A., & Philpot, J. (2007). Women's roles on U.S. Fortune 500 boards: Director expertise and committee memberships. *Journal of Business Ethics, 72*(2), 177–196. https://doi.org/10.1007/s10551-006-9164-8.
Post, C., Rahman, N., & Rubow, E. (2011). Green governance: Boards of directors' composition and environmental corporate social responsibility. *Business and Society, 50*(1), 189–223. https://doi.org/10.1177/0007650310394642.
Radicchi, F., Castellano, C., Cecconi, F., Loreto, V., & Parisi, D. (2004). Defining and identifying communities in networks. *Proceedings of the National Academy of Sciences, 101*(9), 2658–2663. https://doi.org/10.1073/pnas.0400054101.
Ronda-Pupo, G. A. (2017). The effect of document types and sizes on the scaling relationship between citations and co-authorship patterns in management journals. *Scientometrics, 110*(3), 1191–1207. https://doi.org/10.1007/s11192-016-2231-8.
Rose, C. (2007). Does female board representation influence firm performance? The

Danish evidence. *Corporate Governance: An International Review, 15*(2), 404–413. https://doi.org/10.1111/j.1467-8683.2007.00570.x.
Rossetto, D. E., Bernardes, R. C., Borini, F. M., & Gattaz, C. C. (2018). Structure and evolution of innovation research in the last 60 years: Review and future trends in the field of business through the citations and co-citations analysis. *Scientometrics, 115*(3), 1329–1363. https://doi.org/10.1007/s11192-018-2709-7.
Ruigrok, W., Peck, S., & Tacheva, S. (2007). Nationality and gender diversity on Swiss corporate boards. *Corporate Governance: An International Review, 15*(4), 546–557. https://doi.org/10.1111/j.1467-8683.2007.00587.x.
Shehata, N., Salhin, A., & El-Helaly, M. (2017). Board diversity and firm performance: Evidence from the U.K. SMEs. *Applied Economics, 49*(48), 4817–4832. https://doi.org/10.1080/00036846.2017.1293796.
Shen, W., & Cannella, A. A. (2002). Revisiting the performance consequences of CEO succession: The impacts of successor type, postsuccession senior executive turnover, and departing CEO tenure. *Academy of Management Journal, 45*(4), 717–733. https://doi.org/10.2307/3069306.
Small, H. (1973). Co-citation in the scientific literature: A new measure of the relationship between two documents. *Journal of the American Society for Information Science, 24*(4), 265–269. https://doi.org/10.1002/asi.4630240406.
Srinidhi, B., Gul, F. A., & Tsui, J. (2011). Female directors and earnings quality. *Contemporary Accounting Research, 28*(5), 1610–1644. https://doi.org/10.1111/j.1911-3846.2011.01071.x.
Srivastava, N. K. (2015). Does governance structure have any effect on firm performance during the financial crisis: Evidence from selected Indian companies. *Journal of Strategy and Management, 8*(4), 368–383. https://doi.org/10.1108/JSMA-02-2015-0014.
Tahamtan, I., Safipour Afshar, A., & Ahamdzadeh, K. (2016). Factors affecting number of citations: A comprehensive review of the literature. *Scientometrics, 107*(3), 1195–1225. https://doi.org/10.1007/s11192-016-1889-2.
Terjesen, S., Aguilera, R. V., & Lorenz, R. (2015). Legislating a Woman's seat on the board: Institutional factors driving gender quotas for boards of directors. *Journal of Business Ethics, 128*(2), 233–251. https://doi.org/10.1007/s10551-014-2083-1.
Terjesen, S., Couto, E. B., & Francisco, P. M. (2016). Does the presence of independent and female directors impact firm performance? A multi-country study of board diversity. *Journal of Management and Governance, 20*(3), 447–483. https://doi.org/10.1007/s10997-014-9307-8.
Terjesen, S., Sealy, R., & Singh, V. (2009). Women directors on corporate boards: a review and research agenda. *Corporate Governance: An International Review, 17*(3), 320–337. https://doi.org/10.1111/j.1467-8683.2009.00742.x.
Terjesen, S., & Singh, V. (2008). Female presence on corporate boards: A multi-country study of environmental context. *Journal of Business Ethics, 83*(1), 55–63. https://doi.org/10.1007/s10551-007-9656-1.
Thams, Y., Kelley, K., & Von Glinow, M. A. (2018). Foreigners in the boardroom: The implications of attitudes toward immigration and conservatism in firms' sub-national context. *Journal of Business Research, 91*(1), 8–18. https://doi.org/10.1016/j.jbusres.2018.04.028.
Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management, 14*(3), 207–222. https://doi.org/10.1111/1467-8551.00375.
Triana, M., Miller, T., & Trzebiatowski, T. (2014). The double-edged nature of board gender diversity: Diversity, firm performance, and the power of women directors as predictors of strategic change. *Organization Science, 25*(2), 609–632. https://doi.org/10.2139/ssrn.2627729.
Tuggle, C. S., Schnatterly, K., & Johnson, R. A. (2010). Attention patterns in the boardroom: How board composition and processes affect discussion of entrepreneurial issues. *Academy of Management Journal, 53*(3), 550–571. https://doi.org/10.5465/amj.2010.51468687.
Tunger, D., & Eulerich, M. (2018). Bibliometric analysis of corporate governance research in German-speaking countries: Applying bibliometrics to business research using a custom-made database. *Scientometrics, 117*(3), 2041–2059. https://doi.org/10.1007/s11192-018-2919-z.
Upadhyay, A., & Zeng, H. (2014). Gender and ethnic diversity on boards and corporate information environment. *Journal of Business Research, 67*(11), 2456–2463. https://doi.org/10.1016/j.jbusres.2014.03.005.
Van der Walt, N., & Ingley, C. (2003). Board dynamics and the influence of professional background, gender and ethnic diversity of directors. *Corporate Governance: An International Review, 11*(3), 218–234. https://doi.org/10.1111/1467-8683.00320.
Velte, P. (2017). Do women on board of directors have an impact on corporate governance quality and firm performance? A literature review. *International Journal of Sustainable Strategic Management, 5*(4), 302–346. https://doi.org/10.1504/IJSSM.2017.10010121.
Wellalage, N. H., & Locke, S. (2013). Women on board, firm financial performance and agency costs. *Asian Journal of Business Ethics, 2*(2), 113–127. https://doi.org/10.2139/ssrn.1904072.
Wormell, I. (2000). Bibliometric analysis of the Welfare topic. *Scientometrics, 48*(2), 203–236. https://doi.org/10.1023/A:1005696722014.
Xu, X., Gong, Y., Jia, F., Brown, S., & Xu, Y. (2018). Supply chain finance: A systematic literature review and bibliometric analysis. *International Journal of Production Economics, 204*, 160–173. https://doi.org/10.1016/j.ijpe.2018.08.003.
Zahra, S. A., & Pearce, J. A. (1989). Boards of directors and corporate financial performance: a review and integrative model. *Journal of Management, 15*(2), 291–334. https://doi.org/10.1177/014920638901500208.