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To cite this article: Aladdin Dwekat, Elies Seguí-Mas & Guillermina Tormo-Carbó (2020) The effect of the board on corporate social responsibility: bibliometric and social network analysis, *Economic Research-Ekonomika Istraživanja*, 33:1, 3580-3603, DOI: [10.1080/1331677X.2020.1776139](https://doi.org/10.1080/1331677X.2020.1776139)

To link to this article: <https://doi.org/10.1080/1331677X.2020.1776139>



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Published online: 24 Aug 2020.



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# The effect of the board on corporate social responsibility: bibliometric and social network analysis

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## ABSTRACT

This is the first study that presents a full picture of the field by using a combination of two methodologies, bibliometric and social network analysis (SNA). Thus, this work maps the knowledge of previous research and suggest new avenues for future research for the relationship between board characteristics and corporate social responsibility (CSR) and CSR disclosure (CSRd). We analysed 242 articles published on Web of Science database (WoS) journals for the period 1992–2019. The results show that board characteristics have a significant impact on CSR literature in terms of citations and high-quality journals. Moreover, the trend of the papers published in the field is increasing in the last five years. Our work clusters the literature according to keywords and draws the primary authors' networks. This study also draws potential future avenues for research in the field in terms of research gaps (governance mechanisms, variables, countries, etc.). Furthermore, our results suggest some potential areas of interest for future political reforms of board of directors' guidelines.

## ARTICLE HISTORY

Received 13 January 2020  
Accepted 26 May 2020

## KEYWORDS

board of directors;  
corporate social  
responsibility (CSR);  
CSRdisclosure (CSRd);  
bibliometric analysis; social  
network analysis (SNA)

## JEL CODES

M14; M41; G34

## 1. Introduction

Corporate social responsibility (CSR) has become a familiar debate among researchers, organisations, and standard setters. Even stakeholders are increasingly becoming more aware of its importance, particularly concerning its role in ensuring a proper balance in the long run between the commercial viability of a firm and its loyalty to society (Galant & Cadez, 2017; Harjoto & Jo, 2011; Skare & Golja, 2012; Zemigala, 2019). Moreover, CSR is a management concept connected to quality and environmental management (Zemigala, 2017). Specifically, one of the main areas that has attracted attention during recent years is CSR disclosure (CSRd) (Khan et al., 2013). Companies have several reasons behind their CSRd, such as enhancing their image and reputation (Siregar & Bachtiar, 2010), strengthening their relationship with

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clients, government and community (Williams & Pei, 1999), reducing the asymmetric of information between the companies' managers and their stakeholders (Jizi et al., 2014) and to legitimise their activities (Deegan et al., 2002). All these reasons ensure economic viability in the long run.

Shareholders elect board of directors to control and manage companies' matters (Monks & Minow, 1995). As a fundamental corporate governance feature, the board of directors has an essential role in aligning management concerns with those of stakeholders (Harjoto et al., 2015). However, the efficiency of the board supervising is measured among various board characteristics (Brick et al., 2006). Thus, board characteristics (such as independence, gender, size, CEO duality, and meetings) are expected to affect the level of CSR

The literature on the connection between CG and CSR has grown expeditiously in recent years. Besides, most of these efforts have been dedicated to examining the effect of board characteristics on CSR (i.e., Bear et al., 2010; Jizi et al., 2014; Jo & Harjoto, 2011; Khan et al., 2013; Zaid, Abuhijleh, et al., 2020; Zaid, Wang, et al., 2020). Board independence would enhance the controlling and monitoring of the management's behaviour (Fama & Jensen, 1983), and is more capable of meeting stakeholders interests (Zahra & Stanton, 1988); thus, the existence of an independent board would lead to more information disclosure, fewer information asymmetries and better corporation image (Fama & Jensen, 1983). According to Barako and Brown (2008), the participation of women on the board gives a broader experience and knowledge, which improves the decision-making process. Furthermore, females pay more attention to charitable and philanthropic activities (Angelidis & Ibrahim, 2011). Thus, the existence of women on the board would enhance the level of CSR Board size affects the role of controlling and monitoring (Liao et al., 2018). Adams et al. (2005) argued that larger boards would have a variety of knowledge and experiences, which enhances the board's ability to supervise and control the company's disclosures. It is suggested that CEO duality leads to concentration of decision-making and control; this, in turn, would lead to compromising the governance performance function (Haniffa & Cooke, 2002); this consequently reduces the disclosure policy, including CSR (Li et al., 2010). Jizi et al. (2014) point out that companies with active board would be more interested in providing information regarding CSR

Given the preceding discussion, this study makes significant contributions to the current literature by synthesising several new insights and offer deeply rooted discussions of avenues for further future research. More clearly, previous bibliometric studies have either introduced CSR (Carroll, 1999; Wood, 2010; Zemigala, 2015), sustainable development (Zemigala, 2019), or corporate governance (Terjesen et al., 2009). However, to the best of our knowledge, there is no bibliometric study that analyses the link between CG and CSR Therefore, it is worthwhile exploring what was ignored by ancestors and open the black box, which, in turn, helps in supporting and enriching the current literature. In this vein, this study contributes to the literature by offering a comprehensive scenery of the previous studies regarding the link between board and CSR More precisely, a bibliometric and social network analysis (SNA) techniques were applied in this study to produce a persuasive analytical view

and build robust implications. Besides, depending on the Web of Science (WoS) database, a prolonged period was covered in this study (1992–2019).

Moreover, Zemigala (2015) shows different countries perspective by performing a bibliometric study on the CSR articles published in Scopus database from 2000–2009. Feng et al. (2017) studied a literature review and bibliometric analysis to evaluate the CSR for supply chain management. Moreover, Jaén et al. (2018) conducted a bibliometric study on CSR in Latin America. More recently, Zemigala (2019) analyse the tendencies of sustainable development studies in management sciences. He examines the articles published in WoS and Scopus form the period 1974–2016. On the other hand, there are also bibliometric studies of CG, such as Huang and Ho (2011), they conducted a bibliometric analysis study for all CG articles published in WoS (SSCI) from 1992–2008.

Our study is different from it is former in different ways. *First*, as we mentioned earlier, as far as our knowledge goes, this is the first bibliometric study that examines the link between board and CSR. *Second*, to provide a more in-depth view and presents a full picture of previous research; our study uses a combination of bibliometric and SNA techniques. *Third*, this study covers a prolonged period (1992–2019), it is worth mentioning that almost 63% of our sample is from 2017–2019, and have not been covered by the previous literature review and bibliometric studies. Moreover, this study aims to cover studies related to board characteristics and different measures of CSR (i.e., CSR performance, CSRD quality, and quantity).

Additionally, our study is expected to be valuable and beneficial not only for academicians but also for policymakers and professionals. More pointedly, it provides new directions and insights for future research by summarising the empirical results of the impact of board characteristics on CSR and offering some favourable variables that could be reflected. Moreover, it provides the most influential articles, authors, institutions, journals, and countries in the field. Our results also suggested some critical attributes concerning the analysis and progress of the Board–CSR guidelines.

### **1.1. Study objectives**

Given the previous discussion, the objectives of this study are to fill the literature gap by applying bibliometric and SNA techniques to a collection of scholarly articles in the field of board and CSR. To achieve these objectives, we explore the published articles on Board–CSR from (1992–2019) and attempts to use cited references to analyse/identify:

1. The distribution patterns of papers.
2. *Top players*: authors, networks, institutions, and journals.
3. The core articles that influence international literature.
4. The relevant topics in the literature.
5. The main measures of dependant (CSR) and independent variables (board characteristic) used in the scientific literature (and its relations).

This article is structured as follows: First, an introduction and objective of the study are provided. Second, the methodology and data collections method of the

study, while the third section analyses the result of bibliometric and SNA. Finally, the last section provides discussion, conclusions, limitations, and recommendations for future research.

## **2. Methodology**

### **2.1. Bibliometric and social network analysis**

Bibliometric analysis is a research technique that describes patterns in literature with a specific subject and time using quantitative data (Sarkar & Searcy, 2016). In general, there are two methodological approaches to quantify the flow of information. First, using a whole publication or using its features, such as citations, keywords, author's name, etc. Second, by identifying the links among objects, their networks, and co-occurrences (Ding et al., 2001).

In general, scalar techniques are used in the first approach. In our research, such techniques are based on direct counts (occurrences) of particular bibliographic items, (Ding et al., 2001), provide the significant characteristics of various representatives (individual researchers, countries, fields, etc.) and research performance (Verbeek et al., 2002), as well as its evolution and trends over time. For scientific production, this approach is considered satisfying, but it can only be treated as a partial indicator of contributions to knowledge.

The SNA is the second approach used to recognise and classify related nodes of keywords, authors or research institutions to assess associations and collaborations (DeNooy et al., 2005). Thus, these procedures identify the relations (co-occurrences) of certain items, such as the number of times that keywords (co-word), citations (co-citation), and authors (co-authorship) are mentioned together in publications in a particular research field. This approach is mainly used to understand the underlying frame of the interrelationships between articles (Ding et al., 2001).

Citations show the relation between the investigation and the work of another author. Thus, citation analysis deals with the links among the citations (Sandison, 1989). On the other hand, Diodato (1994) identifies co-citation when two or more works (also authors or journals) are cited by another document simultaneously. The co-citation strength depends on the number of times that two earlier documents are cited together by a new article.

Bibliographic coupling was introduced by Kessler (1963), and it happens when two papers use a reference as a unity of coupling between those two papers. Its strength depends on the number of references the two papers have in common (Egghe & Rousseau, 1990).

To achieve a global view of the effect of the boards on CSR in the literature, we have used a combination of both techniques (scalar and analytical).

### **2.2. Data collection**

In line with previous bibliometric and social networks analysis studies (Franceschini et al., 2016; Seguí-Mas et al., 2019; Zhu & Hua, 2017); we search the WoS database, it includes different citation indices in it is core collection and we used all indexes from

1992 to 2019 because the first articles in this search appear in 1992. We use WoS because is the world's leading scientific citation search and analytical information platform, used in thousands of academic papers over the past decades (Li et al., 2018). In the last 50 years WoS has covered all the publications and corresponding citations from more than 34,000 professional journals, which constitute the core of the international scientific serial literature for many fields (Clarivate, 2020). Thus, the journals included in WoS database are recognised as 'top journals' (Merigó-Lindahl, 2012).

To cover all possible related articles on the field of board and CSR, we developed a combined keyword includes Board with CSR, Sustainab\* and Philanthrop\*. Sustainab\* (to ensure that all the possible variations such as 'Sustainable development,' 'Sustainability Reporting,' and 'Sustainability' were included in our sample). Philanthropy was previously used to refer to CSR because, in the past, companies used to focus mainly on philanthropic activities such as charitable activities and donations (Wang & Coffey, 1992). Therefore, we have used 'Philanthrop\*' to cover all possible variations such as 'Philanthropy' and 'Philanthropic activities.' The search criteria included the joint appearance of the words ('board' and 'CSR' OR 'Sustainab\*' OR 'Philanthrop\*') in one area or jointly of the title, abstract, and keywords. After eliminating all results other than articles and English language and choosing the fields that of our interests, which are: Business, Management, Business Finance, Economics, and Environmental Studies, the result of this search showed 580 articles. We then reviewed 580 articles for their abstract and title to exclude the irrelevant articles that were not tightly focused on the relationship between board and CSR Thus, the remaining sample included 242 articles. Afterword, we used Bibexcel software to make a bibliometric analysis and VOSviewer to analyse the social networks and the visualisation tool for our research.

### 3. Results

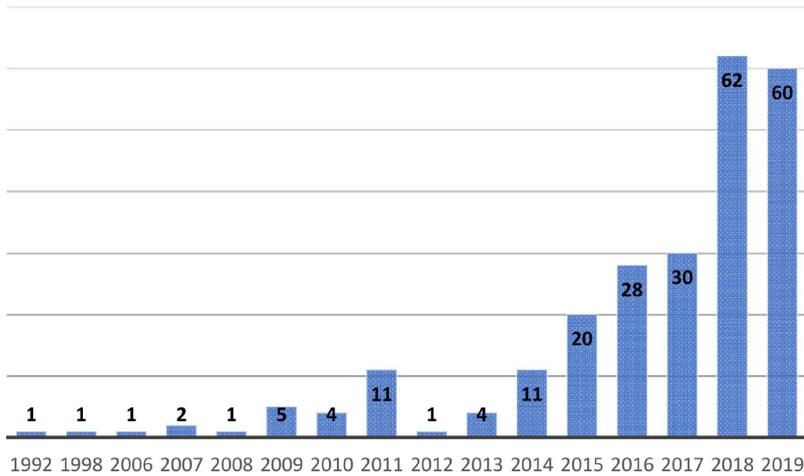
First, we develop a descriptive analysis to study the structure of the literature in the field by counting its years of publication and contributing authors, institutions, countries, and journals.

#### 3.1. Study objective 1: Distribution pattern of the literature

We analysed the trend of publications in the periods from 1992 to 2019.

Figure 1 shows the publications trend from 1992 to 2019. Only almost 11% (26 of 242) articles published between 1992 and 2011; the leading research period can be considered after 2011. Figure 1 can be split into two periods: the initial period from 1992 to 2011, and the second is the growth period from 2012 to 2019. It shows that the interest from researchers on board of directors and CSR are increasing with a rising number of published researches.

Interestingly, there is a massive growth of published researches in the last six years, which accounts for almost 86% of the total publications in this field. This result is in line with Montiel and Delgado-Ceballos (2014), they reported that after 2012, when



**Figure 1.** Publications Trend. Source: Created by the authors based on WoS database.

**Table 1.** Most productive country and institution.

Rank	No	Institutions	Country
1	19	University of Salamanca	Spain
2	10	Jaume I University	Spain
3	8	University of Granada	Spain
4	5	Pepperdine University	USA
5	5	Deakin University	Australia
6	5	Lebanese American University	Lebanon
7	5	Polytechnic University of Cartagena	Spain
8	5	University of Leon	Spain
9	5	American University of Beirut	Lebanon

Source: Created by the authors based on WoS database.

the studies of CSR started to increase. Moreover, some journals such as JBE have even published special issues related to CSR in 2013 (Montiel & Delgado-Ceballos, 2014). The increase in the number of publications may be due to the 2008 financial crisis, and its effect on CSR and CG Velte (2017) reported that the international and national standers initiated various amendments to improve the quality of board characteristics and CSR disclosure after the 2008–2009 financial crisis. Besides, the strengthening of an institutional framework aimed to enhance the research activity and reflects the recognition of scholars to field importance. The trend also shows that publications will continue to grow.

### **3.2. Study objective 2: Top players: authors, networks, institutions, countries, and journals**

#### **3.2.1. Authors and Institutions**

Five hundred and forty-two different authors from 323 different institutions participated in 242 articles. Table 1 shows the top nine institutions with five publications or more. The most productive institutions were from four countries (Spain, the US, Australia, and Lebanon). The top three institutions were from Spain, which are: University of Salamanca, Jaume I University, and University of Granada with 19, 10,

**Table 2.** Top authors.

Ranking	Number	Author	Country
1	16	Garcia-Sanchez IM	Spain
2	11	Martinez-Ferrero J	Spain
3	8	Pucheta-Martinez MC	Spain
4	6	Cuadrado-Ballesteros B	Spain
5	5	Cabeza-Garcia L	Spain
6	5	Fernandez-Gago R	Spain
7	5	Garcia-Meca E	Spain
8	5	Harjoto MA	USA
9	5	Khan I	Australia
10	5	Muttakin MB	Australia
11	5	Rodriguez-Ariza L	Spain
12	4	Jizi M	Lebanon
13	4	Jo H	USA
14	4	Khan A	Australia
15	4	Nieto M	Spain
16	4	Post C	USA

Source: Created by the authors based on WoS database.

**Table 3.** Authors co-occurrence.

10	Garcia-Sanchez IM	Martinez-Ferrero J
5	Garcia-Sanchez IM	Cuadrado-Ballesteros B
5	Cabeza-Garcia L	Fernandez-Gago R
4	Khan A	Muttakin MB
4	Garcia-Sanchez IM	Rodriguez-Ariza L
3	Fernandez-Gago R	Nieto M
3	Martinez-Ferrero J	Cuadrado-Ballesteros B
3	Cabeza-Garcia L	Nieto M
3	Al-Shaer H	Zaman M
3	Chang YK	Oh WY

Source: Created by the authors based on WoS database.

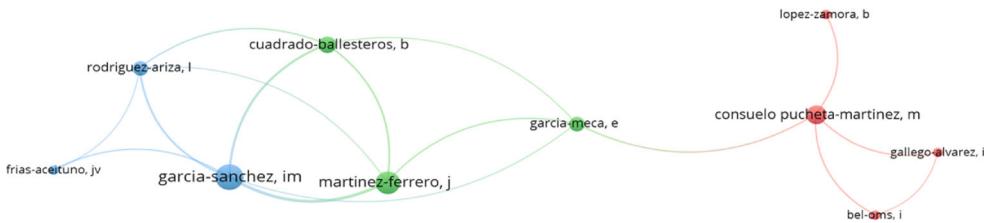
and eight, respectively. It is worth mentioning that the top two leading authors (see [Table 2](#)) are Garcia-Sanchez with 16 publications from University of Salamanca and Pucheta-Martinez with eight publications from Jaume I University.

### 3.2.2. Authors networks

[Table 3](#) shows the authors co-occurrence with at least three frequencies. The leading author Garcia-Sanchez have 10 collaborations with Martinez-Ferrero, five collaborations with Cuadrado-Ballesteros and four with Rodríguez-Ariza. The research group of Cabeza-Garcia and Fernandez-Gago with has five collaborations in common, presents three collaboration with Nieto. It is worth mentioning that most collaborations between researchers were from the same institution, which is the University of Salamanca that was previously mentioned in [Table 1](#), which is the most productive institution in this field. While other researchers with four collaborations, for example, Khan and Muttakin from Australia. [Figure 2](#) shows the main links among the authors' network.

### 3.2.3. Countries

Almost 67% of the publications in the field of the board of directors and CSR are conducted in developed countries. Most of the publications are from Spain, the US, China, Australia, and the UK (see [Table 4](#)). A high number of developed countries are interestingly focusing on this topic, which reflects the importance and the impact of it. While research in developing countries is still relatively small, with a percentage of



**Figure 2.** Authors Co-occurrence. Source: Created by the authors based on WoS database using VOSviewer software.

**Table 4.** Most productive country.

Rank	Country	Developed/Developing	Common/Civil law	No
1	Spain	Developed	Civil	55
2	USA	Developed	Common	38
3	China	Developing	Civil	32
4	Australia	Developed	Common	30
5	UK	Developed	Common	23
6	Italy	Developed	Civil	11
7	Malaysia	Developing	Civil	10
8	Pakistan	Developing	Civil	10
9	New Zealand	Developed	Civil	9
10	Lebanon	Developing	Civil	9

Source: Created by the authors based on WoS database.

33%. Furthermore, we noticed that Common Law countries (e.g., the US, the UK, Australia, and Canada) are the top countries producers in this filed. Zemigala (2015) conclude that CSR research mainly concentrated on the Common Law countries. According to Chung et al. (2012), Common Law countries pay more attention to corporate governance structure, and it focuses more on stakeholder protection than civil law countries.

### 3.2.4. Journals

Table 5 shows the most productive journals, 242 articles published in 83 journals; this result reflects the high diversity of articles produced in this field. However, almost 56% (136 of 242) of the articles were concentrated in 10 journals. As shown from the table, the scope of the most productive journals is on CSR and corporate governance. The *Journal of Business Ethics (JBE)* is the most productive journal with 35 publications, while *Corporate Social Responsibility and Environmental Management (CSREM)* and *Sustainability* journals are the second and third most productive with 27 and 18 publications, respectively.

On the other hand, we also developed a more evaluative assessment to study the use of the literature in the field by using citation analysis. Thus, it can be identified that the most cited papers are the most useful, and the most co-cited papers are the most related papers.

### 3.3. Study objective 3: Identify the core literature in the international literature

Table 6 ranks the most cited articles. 'The Impact of Board Diversity and Gender Composition on Corporate Social Responsibility and Firm Reputation' by Bear et al. (2010), which was published in the *Journal of Business Ethics*, was the most cited article (370 times) with an average of 37 citations per year. Almost 83% (201 of 242) articles

**Table 5.** Most productive journals.

Journals	Record count	Scope	% of 242	IF 2018	Q
<i>Journal of Business Ethics (JBE)</i>	35	Ethical issues related to business. (e.g. CSR, Social and Environmental disclosure)	14.46%	3.796	Q1
<i>Corporate Social Responsibility and Environmental Management (CSREM)</i>	27	Social and environmental responsibilities, sustainable development	11.15%	5.513	Q1
<i>Sustainability</i>	18	Challenges relating to sustainability and Socio-economic, scientific and integrated approaches to sustainable development	7.44%	2.592	Q2
<i>Journal of Cleaner Production (JCP)</i>	13	Social and environmental responsibilities, sustainable development	5.37%	6.395	Q1

Source: Created by the authors based on WoS database.

were cited at least once, and nearly 42% (102 of 242) articles were cited more than 10 times. The most cited articles are from the *Journal of Business Ethics (JBE)*, *Corporate Governance – An International Review (CGIR)*, *Corporate Social Responsibility and Environmental Management (CSREM)*, and *Business and Society*.

### 3.3.1. Co-citation

Figure 3 identifies two main groups of cited documents in the literature. The first cluster is focused on stakeholders and agency theory, and it is formed by five very relevant works cited frequently together in our sample (lead by Jensen, Fama, Freeman, Waddock, and Johnson). The green group is made up of four articles on corporate governance, usually cited jointly (Bear, Post, Haniffa, and Khan's works).

### 3.3.2. Bibliographic coupling

For a better understanding of the academic background of the 242 articles of the sample, we analysed the network of articles referenced, and it revealed that the largest set of connected papers contained 102 publications (i.e., 42.15% of the sample). Figure 4 presents the articles with the highest link strength of bibliographic coupling.

Figure 4 shows that the three studies with the highest indices of bibliographic coupling are:

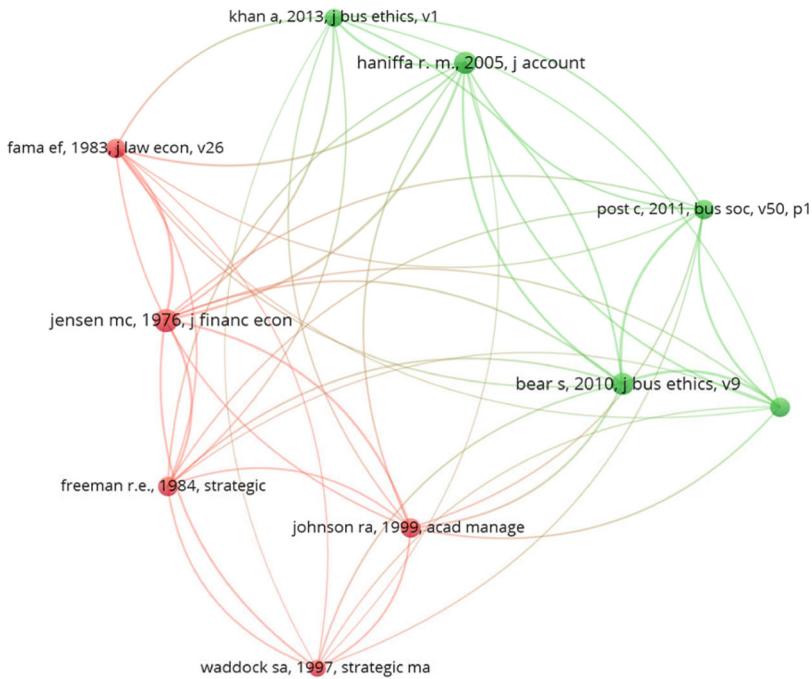
- Jain, T., & Jamali, D. (2016). Looking inside the black box: The effect of corporate governance on corporate social responsibility. *Corporate Governance: An International Review*, 24(3), 253–273.
- Rao, K., & Tilt, C. (2016). Board Composition and Corporate Social Responsibility: The Role of Diversity, Gender, Strategy, and Decision Making. *Journal of Business Ethics*, 138(2), 327–347.
- Fuente, J. A., García-Sánchez, I.M., & Lozano, M.B. (2017). The role of the board of directors in the adoption of GRI guidelines for the disclosure of CSR information. *Journal of Cleaner Production*, 141, 737–750.

Trying to complete the Bibliographic coupling analysis of articles, Figure 5 presents a network visualisation. The figure reveals three main clusters of documents that are commonly cited together. Jain and Jamali, (2016) has the biggest link strength and belongs to the red cluster with other articles, such as Mallin et al. (2014), Zhang et al.

**Table 6.** Rank of the most cited articles.

Rank	Title	Authors	Journal	Publication Year	Total Citations	Average per Year
1	The Impact of Board Diversity and Gender Composition on Corporate Social Responsibility and Firm Reputation	Bear, Rahman, and Post	<i>JBE</i>	2010	370	37
2	Corporate Governance and Firm Value: The Impact of Corporate Social Responsibility	Jo and Harjoto	<i>JBE</i>	2011	278	30.89
3	Corporate Governance and Corporate Social Responsibility Synergies and Interrelationships	Jamali, Safieddine, and Rabbath	<i>CGIR</i>	2008	251	20.92
4	Corporate Governance and Corporate Social Responsibility Disclosures: Evidence from an Emerging Economy	Khan, Muttakin, and Siddiqui	<i>JBE</i>	2013	228	32.57
5	Corporate Governance and CSR Nexus	Harjoto and Jo	<i>JBE</i>	2011	191	21.22
6	Green Governance: Boards of Directors' Composition and Environmental Corporate Social Responsibility	Post, Rahman, and Rubow	<i>Business &amp; Society</i>	2011	180	20
7	The Role of the Board in the Dissemination of Integrated Corporate Social Reporting	Frias-Aceituno, Rodriguez-Ariza, and Garcia-Sanchez	<i>CSREM</i>	2013	154	22
8	Board Composition and Corporate Philanthropy	Wang and Coffey	<i>JBE</i>	1992	150	5.36
9	The Effect of Ownership Structure on Corporate Social Responsibility: Empirical Evidence from Korea	Oh, Kyun and Martynov,	<i>JBE</i>	2011	144	16
10	Corporate Governance and Corporate Social Responsibility (CSR): The Moderating Roles of Attainment Discrepancy and Organization Slack	Arora and Dharwadkar	<i>CGIR</i>	2011	130	14.44

Source: Created by the authors based on WoS database.



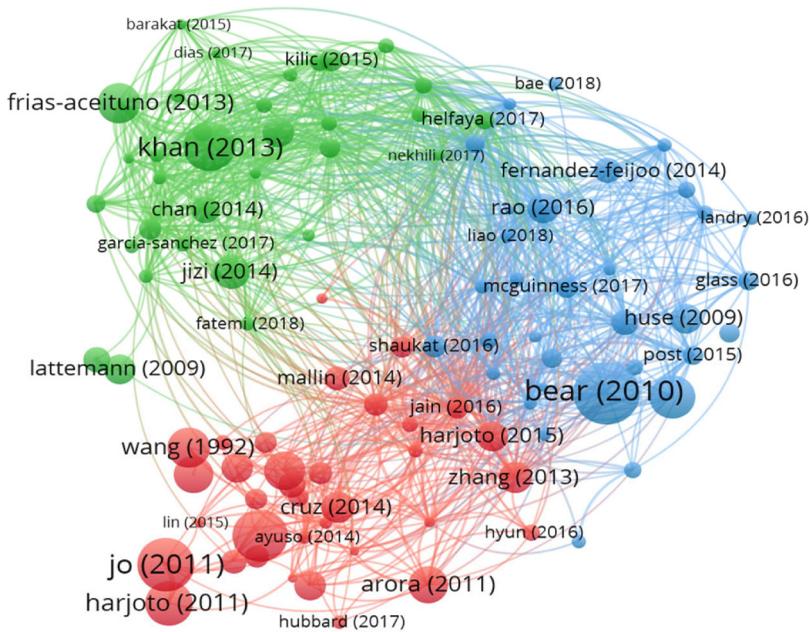
**Figure 3.** Co-citation (Minimum of 50). Source: Created by the authors based on WoS database using VOSviewer software.

 **Verify selected documents**

Selected	Document	Citations	Total link strength
<input checked="" type="checkbox"/>	jain (2016)	46	921
<input checked="" type="checkbox"/>	rao (2016)	86	900
<input checked="" type="checkbox"/>	fuentes (2017)	40	622
<input checked="" type="checkbox"/>	rao (2016a)	31	613
<input checked="" type="checkbox"/>	galbreath (2018)	14	602
<input checked="" type="checkbox"/>	garcia-sanchez (2014)	44	591
<input checked="" type="checkbox"/>	arayssi (2016)	19	582
<input checked="" type="checkbox"/>	mallin (2011)	47	568
<input checked="" type="checkbox"/>	chang (2017)	25	548
<input checked="" type="checkbox"/>	cucari (2018)	28	539
<input checked="" type="checkbox"/>	seto-pamies (2015)	61	513
<input checked="" type="checkbox"/>	fernandez-gago (2016)	17	500
<input checked="" type="checkbox"/>	shaukat (2016)	47	486
<input checked="" type="checkbox"/>	zhang (2013)	98	464
<input checked="" type="checkbox"/>	ibrahim (2016)	14	462
<input checked="" type="checkbox"/>	dienes (2016)	22	446
<input checked="" type="checkbox"/>	nekhili (2017)	11	434

**Figure 4.** Bibliographic Coupling (Minimum of 10). Source: Created by the authors based on WoS database using VOSviewer software.

(2013), and Shaukat et al. (2016). On the other hand, Rao and Tilt (2016) is close to the leader in terms of bibliographic coupling and belongs to the blue cluster, like Nekhili et al. (2017). Finally, Fuentes et al. (2017) leads the green cluster, where we can find documents with a relevant link strength such as Khan et al. (2013).



**Figure 5.** Bibliographic Coupling (Minimum of 10). Source: Created by the authors based on WoS database using VOSviewer software.

Finally, after the evaluative assessment, this section will finish studying the variables used in the research in the field. Thus, it can be identified as the most used variables and the potential gaps in the field.

### **3.4. Study objective 4: Most relevant topics in the literature**

After a homogenisation process, [Table 7](#) shows the most frequent keywords with 10 times or more in the field of board and CSR/Sustainability and Corporate Governance are the most keywords studied in the area with 151 and 93 times, respectively. Regarding CSR, we notice that researches in this field were focused on both CSR disclosure and performance with keywords frequency 48 and 13, respectively. Consistent with our results, the keywords frequency table shows that most researchers examine board gender diversity and board independence with frequency of 25 and 20, respectively. This result is also reflected in keywords' co-occurrence. Thus, [Table 8](#) indicates that most studies focus on the concept of diversity in general and specifically on gender diversity. Concerning the theoretical framework, the studies on this field mainly concentrate on stakeholder and agency theory to explain the associations between board and CSR with a frequency of 13 and 10, respectively. We can also notice that the keyword 'China' appears 14 times; this indicates that China is one of the most influential countries in this field, and this is consistent with our result (see [Table 4](#)). However, China appears neither in most productive authors nor in most productive institutions, which may reflect that there are no clear collaborations between Chinese authors and institutions.

According to the keyword co-occurrence, [Table 8](#) presents keywords indicate a powerful co-occurrence, which meant that they were gist keywords in the board of directors and CSR literature

**Table 7.** Keyword frequency.

Ranking	Number	Keyword
1	151	CSR/Sustainability
2	93	Corporate Governance
3	48	CSR/Sustainability disclosure
4	44	Board of directors
5	16	Disclosure
6	14	China
7	14	Gender diversity
8	13	Corporate Social Performance
9	13	Stakeholder theory
10	12	Ownership structure
11	11	Diversity
12	11	Women directors
13	10	Agency theory
14	10	Board diversity
15	10	Board independence
16	10	Independent directors
17	10	Banking sector

Source: Created by the authors based on WoS database.

**Table 8.** Keyword co-occurrence.

Number	Keyword Co-occurrence	
40	Corporate Governance	Corporate Social Responsibility
11	Board of directors	Corporate governance
11	Corporate Social Responsibility	Disclosure
10	Board of Directors	Corporate Social Responsibility
8	Corporate governance	Corporate Social Responsibility
7	Corporate governance	Disclosure
7	Corporate Social Responsibility	Ownership structure
7	Corporate Governance	CSR Disclosure
7	Board diversity	Corporate Social Responsibility
6	Corporate Social Responsibility	Gender diversity
6	China	Corporate Governance
6	Corporate Social Responsibility	Diversity
6	Corporate Social Responsibility	Stakeholder theory
6	Corporate governance	CSR
6	Corporate governance	Gender diversity
6	China	Corporate Social Responsibility

Source: Created by the authors based on WoS database.

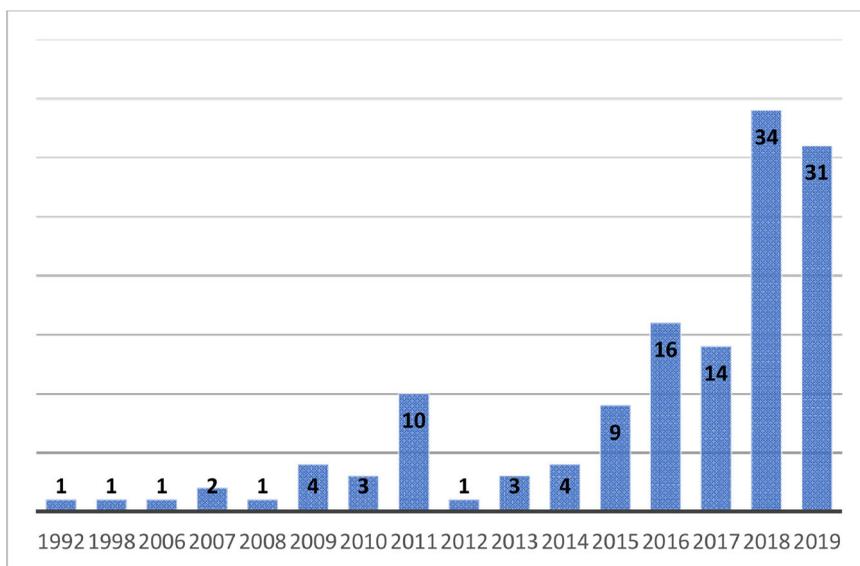
Figure 6 shows four main thematic clusters where each ball represents a keyword, and the size of each ball is proportional to the co-occurrence frequencies of keywords. The first cluster (the blue one) is devoted to the link between CSR, Board of Directors, diversity, and disclosure, and the red one deals with topics such as Board composition, CSR Committee, and the stakeholder theory. On the other hand, the green cluster is focused on the banking sector and environmental disclosure under the lens of agency and legitimacy theories. Finally, the yellow one analyses the state of the field in developing countries, using an institutional approach.

### **3.4. Study objective 5: Main measures of dependent (CSR) and independent variables (board characteristics) used**

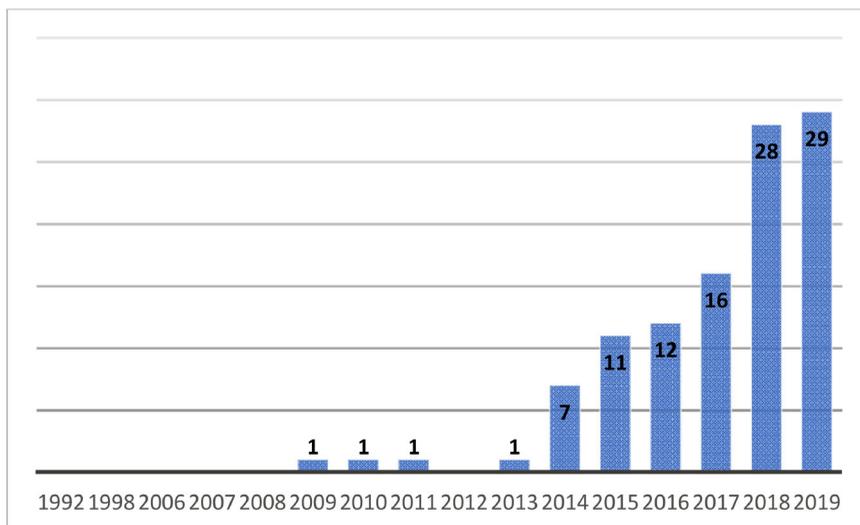
#### **3.4.1. Dependent variables**

Most of the studies measure CSR in two ways: CSR Performance (CSRP) and CSR Disclosure/Reporting (CSRSD). CSR Performance and CSRSD are different, and we





**Figure 7.** CSR Performance Publications Trend. Source: Created by the authors based on WoS database.



**Figure 8.** CSRD Publications Trend. Source: Created by the authors based on WoS database.

checklist, counting words and sentences (Appuhami & Tashakor, 2017; Barakat et al., 2015; Jizi et al., 2014; Khan et al., 2013; Kolsi & Attayah, 2018; Sharif & Rashid, 2014; Zaid et al., 2019). Other studies measure CSRD using ESG rating depending on Bloomberg database (Al-Dah et al., 2018; Cucari et al., 2018; Giannarakis et al., 2014), and by using KPMG international surveys of CSR reporting (Fernandez-Feijoo et al., 2014), using a dummy variable (Liao et al., 2018; Pucheta-Martinez & Chiva-Ortells, 2018), Dow Jones Sustainability Indices (Chang et al., 2017), and GRI database (Cabeza-Garcia et al., 2018; Fuente et al., 2017).

**Table 9.** Dependent variable – country analysis.

Country	CSR D	CSR performance	Total
Spain	36	19	55
USA	4	34	38
China	8	24	32
Australia	14	16	30
UK	10	13	23
Other countries	37	35	72
<b>Total</b>	<b>109</b>	<b>141</b>	<b>250</b>

Source: Created by the authors based on WoS database.

Almost 44% of the sampled articles used CSR D as a dependent variable (see Table 9), while nearly 54% used CSR (performance, practices, actions, engagement, and strategies). For example, Macaulay et al. (2018), Harjoto et al. (2015) and Zhang et al. (2013), used CSR performance rating as a measurement of CSR

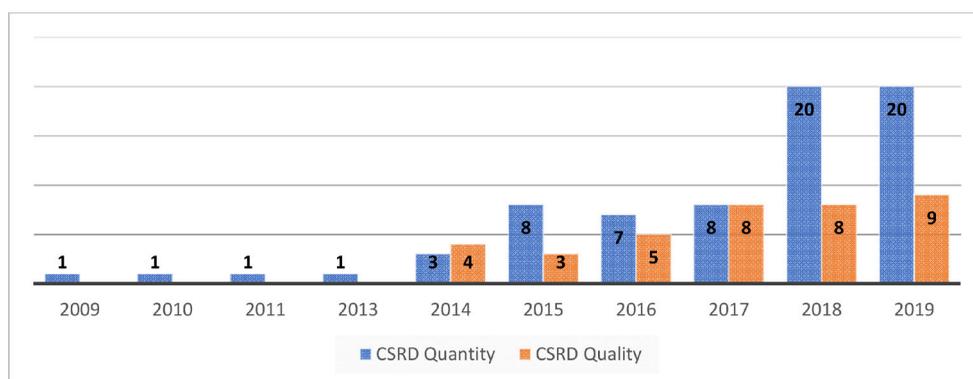
Table 9 shows the dependent variable (CSR/CSR D) across different countries. Forty-eight countries studied 242 articles, and almost 67% of the studies, as mentioned earlier conducted in developed countries. However, CSR disclosure studies are focused on developing countries; this result is consistent with Velte (2017), while studies in developed countries mainly focused on CSR performance. The US is the second most producer country with 38 articles; 34 of them are focused on CSR performance and mainly depending on KLD database as the primary data source to measure CSR. Future research in developed countries such as the US could pay more attention to studying CSR D. Moreover, studies in developing countries in CSR (disclosure/performance) are relatively low; it could be more interesting for future research in these countries to consider this point.

### 3.4.2. CSR disclosure

Almost 44% (107 of 242) of the sampled articles used CSR D as a dependent variable, nearly 65% (70 of 107) of these articles used CSR D quantity, while almost 35% (37 of 107) focus on CSR D quality. According to Velte (2017), most of the studies in CSR D depend on CSR D quantity because it is simpler to measure, by using a checklist, counting words and sentences, and using unweighted code to limit subjectivity and bias problem. However, few researchers used both (see, for example, Alotaibi & Hussainey, 2016; Cuadrado-Ballesteros et al., 2015; Appuhami & Tashakor, 2017; Helfaya & Moussa, 2017). As shown in Figure 9, the interest of CSR D quantity has started earlier than CSR D quality. Moreover, the trend was almost alike. However, the variation between the trend of publications have reached its peak in the last two years (2018–2019), and CSR D quantity research have gained much more interest from researchers. However, the quantity of disclosed CSR items is not always enough, and sometimes the quality of disclosed information could give a more accurate measurement. Future research may, therefore, give more interest to CSR D quality.

### 3.4.2. Most used independent variables

Table 10 shows the top independent variables used with a frequency of more than 18. However, we avoid three variables from the table above (ownership concentrations, government ownership and institutional ownership with frequency of 13, 11 and nine



**Figure 9.** CSRD quantity and quality Publications Trend. Source: Created by the authors based on WoS database.

**Table 10.** Top six independent variables used.

1	Board Independence	101
2	Gender Diversity	95
3	Board Size	71
4	CEO Duality	37
5	CSR Committee	31
6	Board Meeting (activity)	21

Source: Created by the authors based on WoS database.

**Table 11.** Measurement of independent variables.

Variable	Operational Definition	Reference
Board independence	Percentage of (non-executive, outside, independent) directors on the board.	Jizi et al., 2014; Khan et al., 2013; Jo & Harjoto, 2011
Board Gender Diversity	Percentage of female directors on the board.	Liao et al., 2018; Giannarakis et al., 2014; Harjoto & Jo, 2011.
Board Size	Number of the board of directors	Dwekat et al., 2018; Kolsi & Attayah, 2018; García-Sánchez and Martínez-Ferrero, 2017; Barakat et al., 2015
CEO Duality	A dummy variable which equals one if the CEO is the chairman of the board, or 0 otherwise.	Liao et al., 2018; Giannarakis et al., 2014; Jizi et al., 2014; Khan et al., 2013.
The existence of CSR committee	A dummy variable which equal, one if the company exist CSR committee, or 0 otherwise.	Cucari et al., 2018; Fuente et al., 2017;
Board activity	A frequency of boards meeting	Liao et al., 2018; Cuadrado-Ballesteros et al., 2015

Source: Created by the authors based on WoS database.

respectively), because this study focuses on board characteristics, not other CG variables such as ownership structure. As shown in Table 10, board independence, gender diversity, and board size are the most used variables with frequency of 101, 95, and 71, respectively. On the other hand, few studies on the field of the board of directors and CSR have studied other board variables for example; audit committee characteristics (Dwekat et al., 2020), board age, board education and experience, board tenure, board interlocking, board compensations, CSR committee characteristics. Thus, it could be useful for future research to focus on these variables. Table 11 shows the most used independent variables measurement.

## 4. Conclusion

In general, the growing literature shows how the interest of the relationship between board and CSR are increasing, especially since 2014. Besides, most of the most productive journals in the field are of high-quality with a high scientific impact, which emphasise the increasing awareness of the importance of the research on the topic. Our results also indicate the significant impact of the literature since almost 83% of articles are cited at least once, and nearly 42% are cited more than 10 times. Bear et al. (2010), Jo and Harjoto (2011) and Jamali et al. (2008) have the most important value on the literature, since they are the most cited articles in the field (with more than 250 citations).

Although the research on this field is distributed worldwide, almost 67% of the academic articles are in developed countries and concentrated mainly in Spain, the US, China, Australia, and the UK. Thus, the most productive institutions and authors are primarily located in the same countries. While, on the other hand, research in the field is still relatively low in developing countries. Therefore, future research may consider focusing on these countries.

Regarding topics of interest in the literature, the most used keywords were 'CSR' (or Sustainability), 'Corporate Governance', 'CSR Disclosure' (or Reporting) and 'Board of directors'. Besides, the keywords co-occurrence identifies 'Corporate governance and corporate social responsibility', 'Board of directors and corporate social responsibility' and 'Corporate social responsibility and Disclosure' are the most used keywords.

SNA results also show that two or more than authors study almost 93% of sampled articles; this means that researchers in this field tend to work cooperatively. Garcia-Sanchez and Martinez-Ferrero have the highest Authors co-occurrence with ten articles, noting that they both are from University of Salamanca. On the other hand, the collaborations in other countries such as Khan and Muttakin in Australia and Harjoto and Jo in the US are relatively low with four and two collaborations, respectively. Thus, the literature structure does not identify a robust network of collaborations between authors. The study identifies only one significant network of authors, all of whom are Spanish.

The co-citation analysis indicates two main groups of cited documents in the literature. The first cluster is focused on theory (stakeholders and agency theory), and the second group is made up by four articles on the impact of corporate governance on CSR, usually cited jointly (Bear, Post, Haniffa, and Khan's works). The results of the keywords and co-citation analysis show that agency theory and stakeholder are the most popular theories used by researchers to explain the relationship between board and CSR. According to Clarkson (1995), the best way to understand CSR is to analyse how companies manage their relationship with stakeholders. Moreover, stakeholder theory has been used in most areas of CSR and has given rise to a large body of literature. Agency theory suggested that the primary function of the corporate board is to supervise the management to protect shareholders' interests, therefore, reducing conflict of interests (Jensen & Meckling, 1976).

One critical contribution of this investigation has been to identify the key variables to explain the relationship between board and CSR. In this sense, literature measures CSR in two ways: CSR Performance and CSRD. CSRD depends on standards such as GRI guidelines, and CSR Performance is measured using a database such as KLD and Asset4(Eikon). They both have started to overgrow after 2012, but the researchers

become more interested in CSRD than CSRP. Across countries, most of the studies were conducted in developed countries. Nevertheless, CSRD works are focused mainly on developing countries, while CSRP studies are commonly focused on developed countries. Therefore, there are different gaps for future research, for studies on CSRD in developed countries and on CSR Performance in developing countries. Moreover, the interest of CSRD quantity have started earlier than CSRD quality, although sometimes the quality of disclosed information could give a more accurate measurement. Therefore, future research may give more interest to CSRD quality.

On the other hand, as the independent variables, the academic literature has studied the impact of a wide range of board characteristics, highlighting the board independence, gender diversity, board size, CEO duality, board meetings, and CSR committee. While a few studies take into consideration the attributes of these variables. Thus, future research could give more consideration to some characteristics of board independence (such as gender, education, experience, age), of women on the board (independent, experience, education, age), and CSR Committee (age, gender, independent, experience, education, duality). Most of the researchers' as mentioned earlier, concluded that the level of CSR/CSRD would increase with a high percentage of independent directors, the presence of women in the board, larger board size, non-CEO duality, and the existence of the CSR committee. On the other hand, there are some board characteristics that studies did not draw enough attention towards their relationship with CSR/CSRD, such as audit committee characteristics, board age, board education, experience diversity, and board interlocking.

Finally, this study might have some limitations in the search because of the bibliometric technique used. A significant limitation is the possibility of non-inclusion of one or more of critical vital articles, in a substantial database, which was not due to a lack of methodology.

Another limitation is related to the database used (WoS). Due to its characteristics, some exceptions may be found throughout the results. On the other hand, database characteristics will be reproduced in the measurements, and they can change (Van Raan, 2000). Thus, WoS has been working for decades and has changed over the years (the number of journals has grown notably).

## Disclosure statement

The authors declare that there is no conflict of interest regarding the publication of this article

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