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Knowledge mapping in the area of corporate social responsibility and financial performance: a bibliometric and visualisation analysis

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Abstract: The increasing number of laws towards corporate social responsibility (CSR) around the globe are increasing the involvement of CSR in financial performance (FP) in research as well as business domain. To analyse and visualise the knowledge map of CSR related to FP, this study collects bibliometric information from the Web of Science database. Further, the study used bibliometric and network visualisation methods to analyse the bibliometric information through VOSviewer software. Analysis of 1752 documents reveals that CSR and FP is an emerging research topic, and a substantial amount of research is performed by developed countries. The study also found that environmental management, gender diversity, board composition, board of directors, data envelopment analysis, meta-analysis, family firms, and information asymmetry are the primeval area of study among the researchers. The study proposes a novel contribution to the existing literature by conducting the first bibliometric and visualisation analysis in CSR and FP.

Keywords: bibliometric analysis; CSR; corporate social responsibility; financial performance; knowledge map; VOSviewer; co-citation analysis; co-occurrence analysis.

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1 Introduction

Corporate social responsibility (CSR) is widely lauded for increasing attention to an effective strategy that comprises an organisation's commitment to accelerate long-term environmental, economic, and societal well-being through exemplary business practices, sound policies, and friendly resources (Du et al., 2011). CSR increases corporate contributions for the betterment of society (de Camargo et al., 2019; Behringer and Szegedi, 2016; Lopes de Sousa Jabbour et al., 2020), resulting in a sound business model which provides an advantage in different ways (Porter and Kramer, 2006). Nowadays, CSR is a philanthropic attribute and has changed to obligatory and mandatory in the past decade (Carroll, 2008). The increasing recognition of CSR in the business world has made CSR an integral part of corporate strategy. The moral argument for CSR is that the existence of an organisation and the expectations of the community and the broader society in which it functions need to be balanced (Frerichs and Teichert, 2021). This balanced position will ultimately lead to efficiency and impact the financial performance (FP) of the organisation (Orlitzky et al., 2003).

CSR increases the public image of the organisation, which may lead to an increase in profits. While on the other hand, higher profits lead to greater CSR (Werther and Chandler, 2010). Numerous studies establish positive (Magrizos et al., 2021; Al-Malkawi and Javaid, 2018) and negative (Fahad and Busru, 2021; Sharma and Aggarwal, 2021) relationships between CSR and FP of organisations. Many research studies have tried to explain why the empirical literature has reached conflicting results on the CSR and FP relationship. Still, the area of CSR and FP is a point of contention among researchers.

Beyond the fundamentals of the relationship between CSR-FP, this study argues that there is a need to conduct a full assessment of the CSR-FP research. However, previous studies explored the area of CSR-FP through meta-analysis (Margolis et al., 2009; Orlitzky et al., 2003; Wang et al., 2016; Gupta and Das, 2022). However, the prior work was constrained to insights from their theoretical perspectives, notably stakeholder theory, agency theory, resource-based perspectives, institutional theory, and signalling theory (Moratis, 2018; Yekini and Jallow, 2012). Notably, no review on CSR-FP has used bibliometric analysis for review, which is a good tool for identifying essential bibliometric features and research themes. Such details are undoubtedly important and relevant in assisting academicians in identifying the pioneering authors, papers, countries, institutions, and themes of CSR-FP, thereby gaining a better understanding of the knowledge structure of CSR-FP and where the expertise can be found.

Thus, this study attempts to address the following research questions to map the area of CSR-FP through a bibliometric review:

RQ-1: What is the publication trend in the field of CSR and FP?

RQ-2: Which authors are most influential in the area of CSR and FP?

RQ-3: Which countries are performing more collaboration in the area of CSR and FP?

RQ-4: Which are the most influential articles in the area of CSR and FP?

RQ-5: Which theme or sub-theme is most popular among the researchers?

This study contributes to the existing literature in different ways; first, this is the foremost study to conduct a bibliometric and visualisation analysis on CSR and FP, which is likely to deliver an understanding of the focal field of research through the various network and visualisation analyses. The VOSviewer software is used to visualise and analyse themes and relationships in scientific literature based on the database collected from Web of Science (WOS) to achieve the study's goal. This allows for the identification of key aspects in the expansion of the CSR and FP domain, as well as the comprehension and interpretation of network patterns.

The remaining part of the study is organised as follows: the following section deals with a brief literature review related to CSR and FP, further with sources of data collection and analytical tools. Then, a descriptive analysis of data is presented through tables and graphs to visualise publication trends, the top source of publication, and the country highly publishing in the area of CSR and FP together with the co-author, co-country, citation, keyword co-occurrence, and bibliographic coupling analysis. Finally, the main findings and this study concludes, accompanied by the limitations and future research recommendations.

2 Literature review: CSR and FP

Several theories in the literature describe why firms involve them deliberately in CSR practices. The assessment of CSR has recently attracted attention in sustainability literature. Some of them argue that under the pressure of civil society and different stakeholders (Kumar and Das, 2021), firms use the disclosures of their CSR as a tool of window dressing and impression management which enhances their reputation in society (Higginson et al., 2006).

Some scholars think that information asymmetry among stakeholders is the main force for voluntary CSR reporting (Verrecchia, 2001). Others argue that voluntary CSR reporting is a discretionary approach, reflecting top management's discretionary authority over what to report and when to submit based on market favourable and unfavourable conditions (Verrecchia, 2001). Some researchers find a positive relationship between Corporate Social Performance (CSP) and FP (Reverte et al., 2016), while others find ambiguous (Kasseeah, 2020) or non-significant relationships (Barnett and Salomon, 2006). The direction of the link between CSR and FP is still a hot topic of dispute among corporate sustainability academics (Lee et al., 2016). The desire to develop a strong relationship between CSP and FP is not new, and there is a long-held assumption that trade-offs exist between these two entities (Palmer et al., 1995).

A substantial amount of research has been conducted through meta-analysis to uncover the complexities of the relationship between CSR and FP (Gupta and Das, 2022;

Orlitzky et al., 2003; Wang et al., 2016) by exploring the different moderators. Still, there is a need to explore the area of CSR and FP; to what extent is CSR related to FP, and how has this relationship grown over time? Furthermore, how is the knowledge structure formed between them? Moreover, how have they evolved throughout time?

3 Methodology

3.1 Sources of data

The data used in this study were extracted from WOS with the search terms ‘corporate social responsibility’ and ‘financial performance’ on 14 September, 2020. The field of search is limited to ‘topic’, which includes searching in ‘title’, ‘abstract’, and ‘keyword’. A total number of 1876 articles are found with the abovementioned search string. However, after applying the filter of ‘document type’ and ‘languages’, 1752 articles are found relevant for this study. The WOS database is selected for the collection of the articles as it includes reputable journals with excellent publications on overall academics (Ye et al., 2020). Also, this is deemed as the most appropriate for searches of the literature on CSR (Prashar, 2020).

Only scientific articles written in English are considered, and book reviews, editorial material, meeting abstracts, and book chapters are excluded. Articles that appeared in conference proceedings and magazines are also excluded due to lesser acknowledgement of scientific contribution. Table 1 summarises the search and data retrieved process.

Table 1 Search and data retrieved

<i>Particulars</i>	<i>No. of articles</i>
Total number of articles found with search string ‘corporate social responsibility’ and ‘financial performance’	1876
Number of articles eliminated after applying the filter of ‘document type’	106
Number of articles eliminated after applying the filter of ‘languages’	18
Total number of articles collected for analysis	1752

Source: Authors’ compilation

3.2 Analytical tool

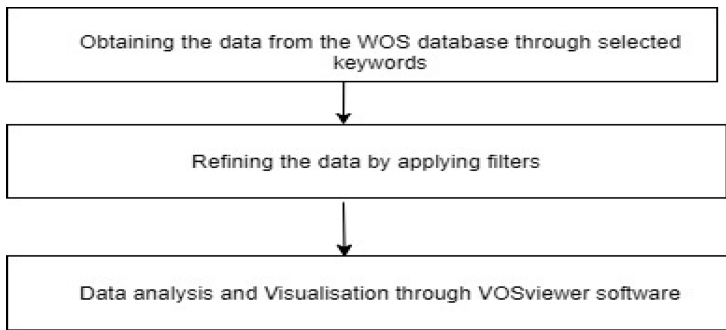
The data collected from the Web of Science database containing the bibliographic information of the articles are analysed through VOSviewer software (Low and Siegel, 2020; Prashar, 2020). VOSviewer software, developed by (Van Eck and Waltman, 2010), is an open-source software tool used to analyse and visualise the links between authors, regions, keywords, and co-citations. The VOS (visualisation of similarities) mapping technique was used to quantify and identify each topic in a two-dimensional map depending on the distance between two entities; this correctly shows the similarity or relatedness of the items. The VOS clustering approach was used to categorise topics into separate groupings, with each cluster denoted by a different colour (Van Eck and Waltman, 2010).

4 Research overview

4.1 Number of publications

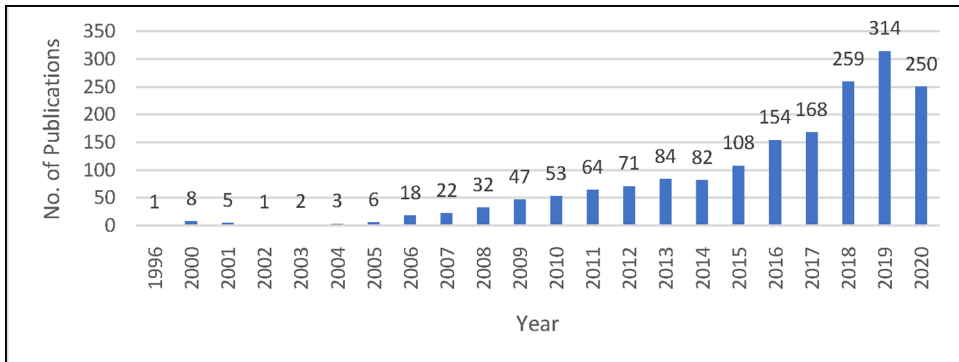
Figure 2 presents the year-wise number of publications (1996 to 2020) in CSR and FP to analyse the development trend. Figure 1 indicates that research in CSR and FP is in the exponential growth stage. The above chart depicts that the first article in this area was published in 1996, and the number of publications over the years shows an increasing trend. The rising trend indicates the curiosity of researchers and academicians in this area. In the last decade, 91% of publications have been done, but fewer were published in 2020 due to the data collection date, i.e., 14-09-2020. The sharp increase in research is due to the initiation of the United Nations Global Compact (UNGC) Principles that guide corporations to adopt socially responsible policies to create an integrated corporate culture (Rubio-Andrés et al., 2020).

Figure 1 Steps for performing analysis



Source: Authors compilation

Figure 2 Number of publications over years



Source: Authors compilation from WOS database, Dated 14-09-2020

4.2 Source of publication

Table 2 presents the top journals in which the articles concerned with CSR and FP have been published. The WOS database has observed that a total of 1752 articles are published in 348 journals. Additionally, 48.75% of the total articles are published in the

top journals. Besides, 14.783% of articles were published in “*Journal of Business Ethics*” followed by ‘*Sustainability*’ (10.103%), “*Corporate Social Responsibility and Environmental Management*” (7.934%), and “*Journal of Cleaner Production*” (4.395%). The abovementioned journals are considered the top journals in the area of CSR and FP only on the basis of some document parameters.

Table 2 Top 10 journals publishing in CSR and FP

<i>Journal name</i>	<i>No. of articles</i>	<i>%*</i>
Journal of Business Ethics	259	14.783
Sustainability	177	10.103
Corporate Social Responsibility and Environmental Management	139	7.934
Journal of Cleaner Production	77	4.395
Business Strategy and The Environment	51	2.911
Business Society	34	1.941
Journal of Business Research	32	1.826
Strategic Management Journal	32	1.826
Management Decision	29	1.655
Business Ethics; A European Review	24	1.37

*% of the total publication.

Source: Authors compilation from WOS database

4.3 Country/region analysis

Table 3 presents the top 10 countries/regions publishing in the area of CSR and FP. The USA has contributed 492 publications, which account for 28.082% of total documents, followed by China with 295 publications (16.838%) and Spain with 221 publications (12.614%). The publications in the area of CSR and FP are scattered around the globe. The list of major countries recommends that a substantial amount of research is from developed countries.

Table 3 Top 10 countries publishing in CSR and FP

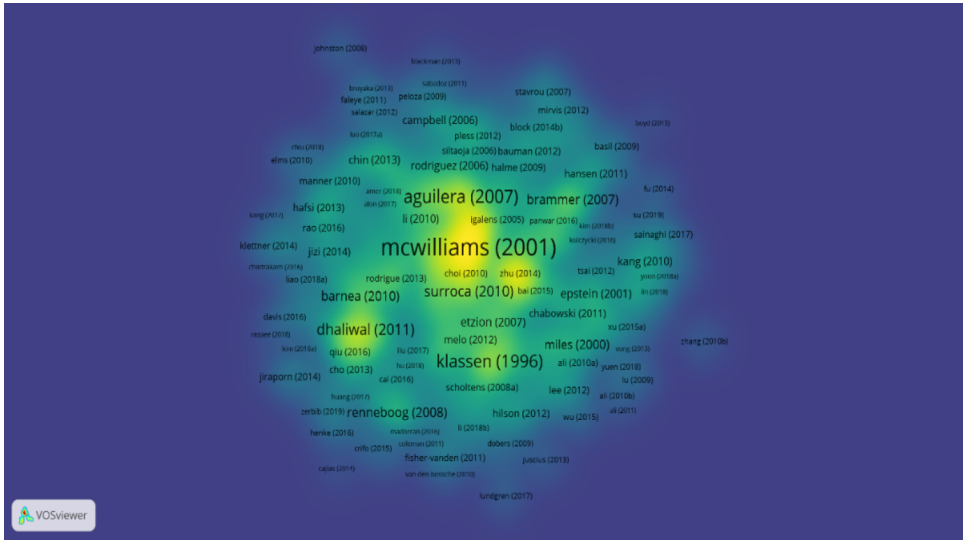
<i>Countries/regions</i>	<i>No. of articles</i>	<i>%</i>
USA	492	28.082
Peoples R China	295	16.838
Spain	221	12.614
England	163	9.304
Canada	124	7.078
South Korea	118	6.735
Australia	115	6.564
France	96	5.479
Taiwan	82	4.68
Italy	76	4.338

Source: Authors compilation from WOS database

4.6 Citation network analysis

To analyse the most influential research article on the area of CSR and FP, this study performs a citation analysis. Citation analysis is the widely used method for analysing the impact of research publications. VOSviewer software is used to construct the citation-document network through density visualisation (Figure 6). The minimum number of document citations is limited to 5; out of 1752 documents, 1152 documents meet the threshold.

Figure 6 Citation- document network through density visualisation



Source: VOSviewer

As per the analysis, the article (McWilliams and Siegel, 2001) has the highest number of citations (2556 Citations) for the scholarly work “*Corporate Social Responsibility – A theory of the firm perspective*”. This study argued that managers could identify the ideal level of CSR with the help of cost-benefit analysis and concluded that a neutral association exists between CSR and FP. The study justifies the neutral association between CSR and FP by presenting the argument that the firms engaging CSR attributes in their production have a higher cost and earn higher revenue. But the firms producing without any CSR attributes have lower costs, and their revenue decreases. The work by (Sen and Bhattacharya, 2001) with 1844 citations titled “*Does doing good always lead to doing better? Consumer reactions to Corporate Social Responsibility*” explores consumer belief about CSR and recommends CSR initiatives by organisations under certain conditions decrease the purchase intentions of consumers. The findings show the relevance of customers’ perceptions of consistency within their own values and customers’ reactions to the firm’s CSR initiative (Campbell, 2007). The study opined that the level of competition is very crucial for making firms socially responsible. The level of competition has a more nuanced, curvilinear influence, with a moderate degree of competition eliciting more socially responsible conduct and a high or low degree of competition eliciting less socially responsible conduct.

The other authors also make a significant contribution to the CSR and FP literature. (McWilliams and Siegel, 2000) examined the trade-off among CSR investment, R&D intensity, and profitability of firms and explored a neutral effect of CSR on FP. This study has highly influenced the research on CSR and FP field. Further, (McWilliams and Siegel, 2001) provide a framework for making CSR investment decisions through cost-benefit analysis (Surroca et al., 2010). Uncovered the mediating role of intangible resources in the relationship between CSR and FP. The studies listed in Table 4 are highly accepted by the researchers in the CSR and FP domain.

Table 4 Top 10 articles by the number of citations

<i>Articles</i>	<i>Citations</i>	<i>Articles</i>	<i>Citations</i>
McWilliams and Siegel (2001)	2556	Klassen and Mclaughlin (1996)	1126
Sen and Bhattacharya (2001)	1844	Dhaliwal et al. (2011)	813
Campbell (2007)	1636	Godfrey et al. (2009)	764
McWilliams and Siegel (2000)	1367	Barnett (2007)	717
Aguilera et al. (2007)	1234	Surroca et al. (2010)	698

Source: Compiled from VOSviewer

4.7 *Keyword co-occurrence analysis*

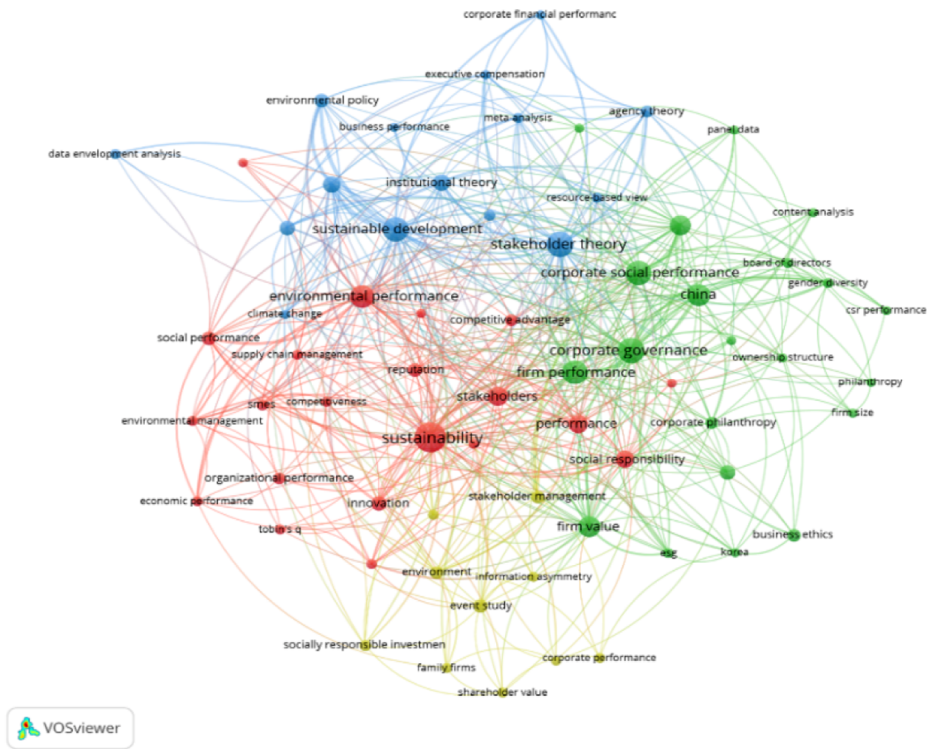
To visualise the dissemination of work in the area of CSR and FP, a keyword co-occurrence analysis is performed through VOSviewer software. The keyword co-occurrence analysis helps discover the linkage among the sub-field and trace the tendency. In the analysis mentioned above, author keywords are considered the unit of analysis by adopting the full counting method. This study doesn't consider "keyword plus" as fewer specific descriptors of the articles' content (Zhang et al., 2016). The minimum number of occurrences of a keyword is limited to 10; out of the 3697 keywords, 71 meet the threshold. As the search term included "Corporate Social Responsibility" and "Financial Performance", these two keywords are excluded in the visualisation network along with the keywords "csr" and "corporate social responsibility (csr)", which are similar to the above keywords. Network visualisation of keyword co-occurrences is shown in Figure 7.

The proximity of the keywords' positions suggests the most frequent co-occurrence of keywords in particular sets. Keywords on the edges of the visualisation have fewer ties between them, while elements in the centre have close associations with a larger and more complex set of other keywords (Lulewicz-Sas, 2017).

The keywords sustainability, stakeholder theory, corporate governance, etc., are significant and frequently used by researchers concerned with CSR and FP. The frequency of the keyword 'China' indicates the issues related to CSR in China that received growing attention from academicians. The list of the top 10 keywords and their frequency is listed in Table 5. The output is assessed based on the size of the circles, the number of clusters, and the distance between keywords. The size of the circles shows the frequency with which keywords appear. From the Figure 7, it is observed that the keywords 'sustainability', 'stakeholder theory', 'corporate governance', 'corporate social performance', 'sustainable development', and 'environmental performance' have maximum occurrences in CSR and FP research. The overall distance between keywords

indicates their relatedness. The closer two keywords are the greater their association, and vice versa (Low and Siegel, 2020). The different colours in the network visualisation indicate other clusters. The results depict that there are four (4) clusters with 67 items (Table 6).

Figure 7 Keyword co-occurrence analysis through network visualisation



Source: VOSviewer

Table 5 Top 10 keywords according to the frequency

Keyword	Frequency
Sustainability	109
Stakeholder theory	81
Corporate governance	80
Corporate social performance	75
Sustainable development	74
Environmental performance	65
China	57
Firm value	53
Stakeholders	45
Stakeholder engagement	34

Source: Compiled from VOSviewer

Table 6 Details of the items in the clusters and their main theme

<i>Cluster</i>	<i>Items</i>	<i>No. of items</i>	<i>Main theme</i>
1	Competitiveness, competitive advantage, earnings management, economic performance, environmental management, environmental performance, environmental sustainability, ethics, innovation, organisational performance, performance, reputation, SMES, social performance, social responsibility, stakeholders, strategy, supply chain management, sustainability, Tobin's q	21	Sustainability
2	Board of directors, business ethics, China, content analysis, corporate governance, corporate financial performance, corporate philanthropy, corporate reputation, corporate social performance, CSR performance, environmental disclosure, firm size, gender diversity, ESG, financial crisis, firm performance, firm value, Korea, ownership structure, panel data, philanthropy	21	Governance
3	Agency theory, business performance, climate change, corporate financial performance, corporate sustainability, data envelopment analysis, environmental policy, executive compensation, institutional theory, meta-analysis, resource-based view, Spain, stakeholder engagement, stakeholder theory, sustainable development	15	Theories and methods
4	Corporate performance, environment, event study, family firms, information asymmetry, market value, shareholder value, socially responsible investment, stakeholder management, sustainability reporting	10	Disclosure and reporting

Source: Authors compilation

4.7.1 Sustainability

Cluster-1 relates to the main theme 'Sustainability' where the study relates to economic performance, environmental, environmental management, environmental performance, environmental sustainability, ethics, innovation, organisational performance, performance, reputation, SMEs, social performance, social responsibility, stakeholders, strategy, supply chain management, sustainability, Tobin's q , competitiveness, competitive advantage, and earnings management. The frequency of the word sustainability is revealed as the highly concentrated area of research in the focused field. The co-occurrence analysis reveals CSR is significantly related to sustainability by enhancing environmental performance and the overall economic performance of firms. It also shows the area of environmental management appears like a pristine area among the researchers.

4.7.2 Governance

The key theme of cluster 2 is the ‘governance’ linked study in CSR and FP area, which comprises the board of directors, business ethics, China, content analysis, corporate governance, corporate financial performance, corporate philanthropy, corporate reputation, corporate social performance, CSR performance, environmental disclosure, firm size, gender diversity, ESG, financial crisis, firm performance, firm value, Korea, ownership structure, panel data, philanthropy. Through the network visualisation of keyword co-occurrence analysis, it reveals governance is highly interlinked with the area of CSR and FP. It also shows that Gender diversity, Board composition, and Board of Directors are less explored in the focused area.

4.7.3 Theories and methods

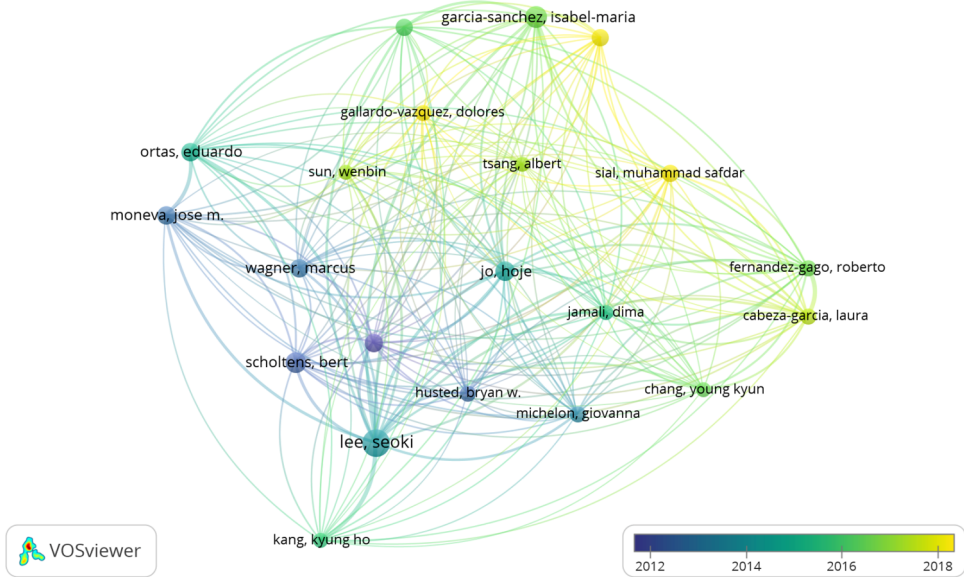
Cluster-3 relates to the main theme ‘theories and methods’, which includes agency theory, data envelopment analysis, environmental policy, executive compensation, institutional theory, meta-analysis, resource-based view, Spain, stakeholder engagement, stakeholder theory, sustainable development, business performance, climate change, corporate financial performance, corporate sustainability. The network visualisation analysis reveals that data envelopment analysis and meta-analysis are the primeval areas among the researchers.

4.7.4 Disclosure and reporting

The main theme of Cluster-4 relates to ‘CSR disclosure’ related studies in CSR and FP field, including corporate performance, environment, event study, family firms, information asymmetry, market value, shareholder value, socially responsible investment, stakeholder management, and sustainability reporting. The network visualisation analysis reveals family firms, and information asymmetry is the primeval area in the ‘disclosure and reporting’ cluster.

4.8 Bibliographic coupling analysis

Figure 8 depicts the authors’ bibliographic coupling with overlay visualisation. The minimum number of publications required for an author to be included in this analysis was six. Twenty-one of the 3943 authors met the criteria. The number of publications, citations, and total link strengths for each author was calculated. Among all the authors Lee, Seoki is the strongest author having 10,882 link strength, 20 documents, and 1191 citations. However, the author Siegel, Donald S., has the highest number of citations, i.e., 1956 with 9 documents and 4523 total link strength. Due to lesser link strength, the author stands in the 9th position in bibliographic coupling analysis. Figure 8 with different clusters depicts the authors’ publications over time. This shows Maritnez-Ferrero, Jennifer, Sial Muhammad Safdar, and Gallardo Vazquez, Dolores have more recent publications than other authors.

Figure 8 Bibliographic coupling analysis of authors through overlay visualisation

Source: VOSviewer

5 Major findings and discussion

The underlying objective of the study is to visualise and present a holistic picture of the research in the area of CSR related to FP. This study adopted the bibliometric method to achieve the abovementioned objective. The VOSviewer software is used to quantitatively analyse the publications in the area of CSR and FP. This study performs co-authorship analysis, country and co-author analysis, citation analysis, and keyword co-occurrence analysis with the help of VOSviewer software. The significant findings of this study are as follows:

Firstly, the annual publications in the area of CSR and FP show an increasing trend after 2008, which suggests building an interactive corporate culture, corporations are adopting socially responsible policies. The source of publication reveals that the research related to CSR and FP is mostly published in the *Journal of Business Ethics*, *Sustainability*, *Corporate Social Responsibility and Environmental Management*, and *Journal of Cleaner Production*. The top countries that researched CSR and FP are the USA, China, and Spain.

Secondly, the co-authorship analysis reveals research on CSR and FP conducted by highly prominent authors. Still, the network visualisation suggests that a few authors collaborate with each other. Mostly the studies are done independently except for the authors Martinez-Ferrero, Jennifer, Garcia-Sanchez, Isabel-Maria, Gallego-Alvarez, Isabel, Ortas, Eduardo, and Moneva, Jose M, who form a strong collaboration network.

Thirdly, the co-authorship and country analysis reveals the author of countries USA, China, and Spain did most of the international collaboration in CSR and FP study. Fourthly, the citation analysis reveals the most influential papers in the area of CSR and FP. The work done by McWilliams and Siegel (2001), Sen and Bhattacharya (2001),

Campbell (2007), McWilliams and Siegel (2000), Aguilera et al. (2007), Klassen and Mclaughlin (1996), Dhaliwal et al. (2011), Godfrey et al. (2009), Barnett (2007), Surroca et al. (2010) is the most influential work in the field of CSR and FP.

Lastly, the most significant is the keyword co-occurrence analysis, which reveals keywords ‘*sustainability*’ and ‘*stakeholder theory*’ are extremely concerning in the present investigation. The co-occurrence analysis categorises the keywords into four (4) clusters. These clusters are segregated into different themes, which are ‘*sustainability*’, ‘*governance*’, ‘*theories and methods*’, and ‘*disclosure and reporting*’. The network visualisation analysis reveals keywords environmental management, gender diversity, board composition, board of directors, data envelopment analysis, meta-analysis, family firms, and information asymmetry are the primeval area of study among the researchers.

6 Conclusion

The study began with analysing and visualising the knowledge map in the area of CSR and FP through various bibliometric tools such as performance analysis (publication-related metrics and citation-related metrics) and science mapping (citation network analysis, bibliographic coupling, co-authorship authors analysis, co-authorship country analysis, keyword co-occurrence analysis). The present study emphasises the increasing trend of publications in the area of CSR and FP after 2008. This trend suggests that there is ample opportunity present in the said area for more research in academics and practice in real business. The researchers of developed countries have more international collaborations in CSR and FP studies. The network visualisation of keyword co-occurrence emphasises the primeval area of study among the researchers, as noted in the findings, so that more focus can be given to those areas to explore more.

The present study also comes with a few limitations. On a positive note, future researchers may consider these limitations as critical suggestions for conducting future CSR and FP studies. Firstly, this study collects data from the WOS database. As a result, data from various databases or acquired at different times may produce different results and conclusions (Zemigala, 2019). Furthermore, while this study is confined to scientific articles and the search keywords ‘*corporate social responsibility*’ and ‘*financial performance*’, which upheld scientific significance and tried to prevent high pollution in the set of data (Kajikawa et al., 2007; Zhu and Hua, 2017; Zemigala, 2019), the evaluation may still not completely cover all available documents (Li et al., 2020), resulting in an incomplete collection of articles connected to the CSR and FP domain. Future research can address these limitations by extending the coverage of databases and types of documents and using similar terms.

Nonetheless, based on our assessment and findings in this current work, this study may offer numerous potential areas for future investigation. Although there appears to be a close academic relationship between CSR and FP, the in-depth connection remains quite poor. There are still some disagreements over the contribution of CSR to FP. Therefore, it is required to explore this area more to understand the relationship or contribution of CSR to corporate financial performance.

The current empirical literature on the relationship between CSR and FP is inconclusive due to various methodological flaws and missing variables (Liu et al., 2021). Thus, future research may explore the CSR-FP relationship by employing efficient methodology such as data envelopment analysis (DEA), benefit of doubt (BOD), etc.

Further, academicians need to explore more on SMEs rather than MNCs and large enterprises, as a smaller number of studies focused on SMEs. Apart from that, the geographical distribution of publications is uneven. The majority of CSR-FP research is conducted in developed countries, with only a few exceptions in developing countries witnessing rapid growth. The implementation of diverse non-financial disclosure regulations across nations and regions will open up a wide range of possibilities for future research.

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