

Exploring the Hotspots and Frontiers of Voluntary Disclosure Studies around the World Using Bibliometric Analysis

(Meninjau Kawasan Hotspot dan Had Kajian Pendedahan Sukarela di Seluruh Dunia Menggunakan Analisis Bibliometrik)

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ABSTRACT

Voluntary disclosure is additional information beyond mandatory disclosure. Nowadays, the information sources available for stakeholders to make informed decision are not limited to annual reports. The first publication on voluntary disclosure started in 1979. As of January 12, 2020, a total of 520 publications on voluntary disclosure in the subject areas business, management, accounting, economics and finance were retrieved from Scopus core collection and analyzed. The study used bibliometric analysis to summarize the state of knowledge and development trends of voluntary disclosure. The study enhanced our understanding of the firms' information environment which is critical for the functioning of an efficient capital market in promoting corporate transparency.

Keywords: Voluntary disclosure; bibliometric analysis; disclosure choice; accounting choice

ABSTRAK

Pendedahan sukarela adalah maklumat tambahan melangkaui pendedahan yang diwajibkan. Di masa kini, sumber maklumat yang tersedia bagi pihak berkepentingan untuk membuat keputusan yang jitu bukan lagi terhadap kepada laporan tahunan semata-mata. Permulaan penerbitan mengenai pendedahan sukarela telah bermula pada tahun 1979. Pada 12 Januari 2020, terdapat sebanyak 520 penerbitan berdasarkan pendedahan sukarela dalam bidang perniagaan, pengurusan, perakaunan, ekonomi dan kewangan yang diperolehi daripada sumber penerbitan Scopus untuk dianalisis. Kajian ini menggunakan analisis bibliometrik untuk merumuskan keadaan pengetahuan dan perkembangan semasa mengenai pendedahan sukarela. Kajian ini juga dapat merungkakan pemahaman mengenai persekitaran maklumat syarikat yang amat penting kepada pasaran modal yang cekap dalam meningkatkan ketelusan korporat.

Kata kunci: Pendedahan sukarela; analisis bibliometrik; pilihan pendedahan; pilihan perakaunan

INTRODUCTION

There are two types of corporate reporting namely mandatory and voluntary disclosure. Mandatory disclosure is the financial and non-financial information that are required to be disclosed or reported by regulations and legislations. Meanwhile, additional or extended information beyond the mandatory items is considered as voluntary disclosure. Scholars have argued that voluntary disclosure is fundamental in narrowing the information gap between companies and the capital market or between the informed insiders and minority shareholders (Healy & Palepu 2001). Thus, voluntary disclosure can enhance the information environment and is critical for the functioning of an efficient capital market (Tsang et al. 2019). It also promotes corporate transparency (Wan-Hussin 2009). In Malaysia, the media has highlighted excessive remuneration of the top management in Sapura Energy Berhad (The Star Online 2018). This exposure of corporate governance transgression is made possible

following calls for a more transparent and meaningful disclosure of executive directors' remuneration (Malak 2015).

Meta-analysis studies by Samaha et al. (2015) and Garcia-Meca and Sanchez-Ballesta (2010) suggested that most prior studies on voluntary disclosures tend to focus on corporate social responsibility (CSR) and environmental disclosures. There had been other voluntary disclosure studies that included executive compensation practices (Laksmana 2008), forward-looking statements such as management earnings forecasts (Wang & Hussainey 2013; Hung et al. 2018), intellectual capital (Guthrie et al. 2004; Cerbioni & Parbonetti 2007; Dumay 2016), risk management practices (Beretta & Bozzolan 2004) and segment reporting (Prencipe 2004; Wan-Hussin 2009). More recently, the studies on voluntary disclosure had shifted to political spending disclosures (Goh et al. 2019), integrated reporting (De Villiers et al. 2014), anti-corruption practices (Joseph et al. 2016) and climate change risk (Flammer et al. 2021). Despite

the abundant literature on voluntary literature, there had been very few studies that systematically review prior literature on voluntary disclosure (Zaini et al. 2018; Saha & Kabra 2020). In addition, Lombardi and Secundo (2020) argue that studies analyzing how digital and smart technologies, including social media, could enhance and improve companies' corporate reporting processes is under researched. To gain a better understanding in this emerging field of research, they reviewed 43 papers published during 2000-2020 that are related to the use smart and digital technologies in reporting both financial and non-financial corporate information to stakeholders through content and bibliometric analysis.

However, none of these reviews use bibliometric tools such as keywords network and co-citations network analysis to identify trends and patterns in the knowledge development in the area of corporate reporting, particularly voluntary disclosure. Our study extended Zaini et al. (2018), Saha and Kabra (2020) and Lombardi and Secundo (2020) by reviewing voluntary disclosure publication data covering a longer time period 1979-2019, using bibliometric analysis instead of systematic literature reviews. The bibliometric analysis has been regarded as a complement to the qualitative systematic literature review by painting a picture of the state of art in a particular line of research, through visualisation and quantitative bibliometric tools (Liao et al. 2018). Liu et al. (2019) contended that the attractiveness of the bibliometrics is that it allows researcher to study specific research topic by analyzing citations, co-citations, geographical distribution and word frequency, and draw insightful conclusions such as the most influential journals, authors and institutions, and provide a visual of the development of knowledge, current research trends and future pathways on the topic. In this study, we also extended Zaini et al. (2018) and Saha and Kabra (2020) by presenting the research hotspots and frontiers in voluntary disclosure studies.

Using bibliometric analysis, this paper addressed the following research questions: The first question (RQ₁) is, "What are the trends in existing publications on voluntary disclosure? The second question (RQ₂) is, "What are the most popular themes in studies on voluntary disclosure? The third question (RQ₃) is, "Which are the most influential countries that generate publications on voluntary disclosure? The fourth question (RQ₄) is, "Which are the most influential authors and articles on voluntary disclosure? Finally, the fifth question (RQ₅) is, "What are the most active sources of current research on voluntary disclosure? Thus, this paper reports and discusses the results of a comprehensive and quantitative review of the literature in voluntary disclosure around the world, covering both developed and developing countries.

To answer the research questions, we used bibliographic coupling as the aggregation mechanism for the publications and co-occurrence of keywords analysis. Bibliographic coupling occurs when two studies both

cite a third study, indicating a probability that the two studies discuss a common topic (Ferreira 2018). The author's provided keywords in an article reflect the significant content of the study and the co-occurrence and intensity analysis of keywords of a research field enable the identification of the research hotspots and frontiers. Co-occurrence analysis of keywords shows the affinity of specific terms occurring together to indicate the conceptual structure of the field. The output of the keywords clustering analysis is a map representing the network of interrelations between the terms (Zupic & Cater 2015). Affinity depends on the distance between the items. Thus, the smaller the distance is between the terms, the stronger the interrelation is between them (Van Eck & Waltman 2014). Meanwhile, co-citation analysis allows researchers to investigate when two articles are both independently cited by one or more articles. This paper utilized the information collected from the Scopus core collection as Scopus core collection remains the main source for citation data (Mongeon & Paul-Hus 2016). Additionally, this paper also used tools such as VOSviewer¹ and Harzing's Publish or Perish² softwares to present bibliometric analysis results (Harzing 2007; Van Eck & Waltman 2010; Wu et al. 2021).

The rest of the paper is structured as follow; firstly, it explores the wide range of literature on voluntary disclosure and the rise of bibliometric analysis in academic studies. Secondly, it provides details of the methodology that was adopted in this study. Next, the results of the study are presented based on the relevant bibliometric indicators. Lastly, the final section summarizes the findings to identify future research areas and presents some limitations of this study.

LITERATURE REVIEW

Disclosure can be defined as "*an ex gratia act, by those with knowledge, to convey information to others... (with) the intention to orientate, or to motivate, to create a climate of understanding, acceptance, involvement and participation, consensus between otherwise conflicting views*" (Tricker 1984: 123). Wallace (1987) further explained that voluntary disclosure was an abstract concept. This was supported by Owusu-Ansah (1998) who argued that voluntary disclosure does not adhere with any specific or known time pattern. It is evolving and what is regarded as voluntary disclosure in the past, such as CSR, is now mandatory in many jurisdiction.

Nyahas et al. (2018) regarded voluntary disclosure as a comprehensive source of information that provides a mutual relationship between the firm and a myriad of stakeholders. They argued that voluntary disclosure provides useful information to various parties which can assist them in decision-making. Any information disclosed besides the financial statements or mandatory items in the annual reports is considered as a voluntary disclosure (Akhtaruddin & Rouf 2012). Examples of

corporate disclosures made voluntarily at the discretion of managers include management earnings forecasts (Jog & McConom 2003), environmental impact assessment (Elsayed and Hoque 2010), statement on relationship with stakeholders (Ghazali 2008; Huang & Kung 2010) and ethical matters (Sah & Loewenstein 2014).

Manager owns superior information about firm's risk and opportunities and its expected future performance as compared to others, and has discretion whether to disclose such information or not (Healy & Palepu 2001; Flammer et al. 2021). The disclosure enables the firm's investors, business partners, and other stakeholders to engage with the firm in a more informed fashion. Prior studies have elucidated the benefits and downsides of being transparent. Disclosing firms enjoy lower cost of capital as increased disclosure reduces investors' and lenders' uncertainty about the disclosing firms (Botosan 1997; Guidara et al. 2014) and higher stock liquidity as increased disclosure reduces information asymmetry between informed and uninformed investors (Diamond & Verrecchia 1991; Schoenfeld 2017). In addition, disclosing voluntary information such as firm's exposures to climate change risks and how to manage and mitigate these risks can increase firm's accountability in the public's eye and potentially enhance its reputation, as well as foster trust, allowing firm to solidify and sustain its relationships with investors and other stakeholders (Flammer et al. 2021). However, the costs to disclosing firms for revealing proprietary information is that investors, competitors, business partners, and other stakeholders may respond to the disclosed information in a way that hurts the company. For example, disclosing segmental information may reveal the existence of business opportunities to competitors and harm the disclosing firm's competitive position (Nichols & Street 2007). Disclosing firms also need to dedicate human capital to compiling and reporting additional information, which may explain why some managers are reluctant to disclose their firm's exposure to climate risks (Flammer et al. 2021).

To date, the three most recent studies that review prior literature specifically on the various types of voluntary disclosure are Samaha et al. (2015), Zaini et al. (2018) and Saha and Kabra (2020). Samaha et al. (2015) conducted meta-analysis on a sample of 64 empirical studies on voluntary disclosure published between 1997 to 2013 to assess the impact of board and audit committee characteristics on voluntary disclosure, given that they are the key determinants of corporate reporting policy. They also examined whether the associations are affected by disclosure index construction, types of voluntary disclosure, methods of disclosure, operationalization of the explanatory variables, strength of investor protection, and country geographic location.

Zaini et al. (2018) performed systematic literature review of 51 empirical studies published between 1998 and 2016 on voluntary disclosure in emerging economies comprising ASEAN countries, Bangladesh, China, Fiji,

India, Sri Lanka and the Middle East. The focus of Zaini et al. (2018) study is to examine the relative influence of external factors, such as government/regulatory policy, stakeholder pressure and business environment, on voluntary disclosure. The results indicate that greater regulatory enforcement and increased stakeholders' demands of their rights do influence the majority of companies in emerging countries to provide voluntary disclosure. The literature review also revealed that social responsibility and environmental information are the most popular types of voluntary disclosure, while risk and human capital/intellectual capital are the least popular categories.

Acknowledging that there is lack of comprehensive literature survey about the relationship between corporate governance and voluntary disclosure in annual reports, that encompasses "different regulatory regimes over varying times with different corporate governance attributes", Saha and Kabra (2020) embarked on a systematic literature review of empirical research globally to synthesize and identify intervening factors that could explain the conflicting results in prior studies. Reviewing empirical studies published between 1998 to 2018, their study seeks to answer two research questions, namely (1) does the relationship between corporate governance and voluntary disclosure vary under different corporate governance systems and (2) does the difference in measurement of variables influence their relationship? To date, to the best of our knowledge, scholars who synthesized the voluminous literature in the field of voluntary disclosure mostly focused on systematic literature analysis, whilst the use of bibliometric methods was largely unexplored. We advanced the voluntary disclosure literature by undertaking a bibliometric analysis of the copious literature to detect patterns in the dataset and contributed to a greater understanding of the main streams of research currently existing, emerging themes and future trends in the field of corporate reporting.

In recent years it has become very popular to assess the state of the art of a scientific discipline using bibliometric analysis (Baker et al. 2020). The object of bibliometric studies is to provide quantitative analysis of the knowledge created by business scholars, notably from publications in journal articles, and the network of their bibliometric connections. The bibliometric diagnosis paints a picture of the main clusters of accumulated literature and their scholarly stature (Stewart 2018). Bibliometric studies are very useful in identifying the most influential research, determining hotspots and identifying the main trends over time. Some of the metrics generated to indicate the scholarly standing of the units of analysis (author, institution, source, country) are citation counts, citation per publication (CPP), impact per publications (IPP), the impact factor (IF) and the h-index. As noted by Stewart (2018), most bibliometric studies use co-occurrence methods, such as co-citation and co-word, to detect networks of influence

among scholars, the main streams of research currently existing, and trends and research frontiers in a particular research discipline. As pointed out by Merigo and Yang (2017), the number of papers indicates productivity, the number of citations indicates influence in a research area, and the h-index is a combination of both of these. With the current accessibility and richness of data available for academic publications, there are various tools that have been developed to analyze and transform this bibliometric data. The transformation of bibliometric research has moved towards visualisation primarily using VOSviewer and CiteSpace.

Merigo and Yang (2017) summarized some of the earliest bibliometric studies in the accounting discipline, such as Brown and Gardner (1985a, 1985b), Brown (1996), Coyne et al. (2010), Pickerd et al. (2011) and Chakraborty et al. (2014). These studies identified the most influential articles, authors and institutions, and developed several rankings by accounting topics and methodology. The bibliometric analysis by Merigo and Yang (2017) indicated that the most influential accounting journals were The Journal of Accounting and Economics (JAE), Journal of Accounting Research (JAR), The Accounting Review (TAR), and Accounting Organizations and Society. More recent examples of bibliometric studies in Business and Management fields were Merediz-Sola and Bariviera (2019), Zhang and Managi (2019), Pasko and Li (2020), Naciti et al. (2021) and Stefanescu (2021).

Some of the research questions that are suited for bibliometric studies include: “*What are the key interests of these studies and the major themes that have emerged?*”, “*What areas are missing?*”, “*What degree of convergence do we see in the field?*”, “*What concepts/topics has the field converged around?*” and “*What are the hotspots in the research fields and how did they evolve over time?*”

METHODOLOGY

In this paper, we searched for the term “voluntary disclosure” from “*article title*” in Scopus core collection on January 12, 2020. The sampling period is 1979 to 2019. Records from the identification through the Scopus core collection showed that there were 520 documents on voluntary disclosure in the three subject areas namely (a) business, management, and accounting, (b) economics, econometrics and finance, and (c) social sciences, including one synthesis literature review and two meta-analysis documents. Thirty of these documents were open access and 19 were articles in press.

We then performed an in-depth review of these documents using VOSviewer and Harzing’s Publish or Perish softwares. Co-occurrence analysis and bibliographic coupling were used for data processing. Both techniques assume a greater degree of overlap in the references of a pair of articles implies a greater degree

of relation or similarity between the two publications. In fact, Vogel and Guttel (2013) also reported that the co-citation technique analyzed the references or cited documents and considered the stronger relationship if they are cited altogether. Several of the bibliometric indicators and network visualization are presented in the subsequent section.

RESULTS

In order to understand the knowledge structure of the research related to voluntary disclosure, the following descriptions of the datasets are presented based on bibliometric format. All the related publications that met the search query were evaluated from the following aspects:

Document and Source Types As shown in Table 1, out of the 520 documents, the article documents dominate with 435 (84 percent), followed by conference papers with 34 (7 percent), and reviews with 28 (5 percent). The remaining 23 documents were from notes, book chapters, short surveys, books, letters and undefined documents. Journals represented 92 percent with 478 documents followed by conference proceedings with 5 percent (24 documents). The remaining 4 percent were book series, books and trade publications.

Trends in Publication The trends in the publication over time is shown in Table 2 and Figure 1. The earliest publication was “*The Impact of Size, Stock Market Listing, and Auditors on Voluntary Disclosure in Corporate Annual Reports*” by Michael Firth from Lingnan University, published in Accounting and Business Research in 1979. There was a noticeable surge in articles published since the mid 1990s, and the term corporate governance became common in the voluntary disclosure literature shortly after the publication of the Cadbury Report (1992). The volume of voluntary disclosure documents peaked during the first decade of the new Millennium with 237 documents in total, in the aftermath of the sudden collapse of Enron which was partly attributable to the disclosure deficits (Sale 2003; Macey 2003; Schwarcz 2004).

Although the number of publications dropped slightly in the next decade to almost 200 articles but the annual publications exceeded 40 articles in each of the last three years of the sample period (2017, 2018 and 2019). This implies substantially greater interests from academics on emerging corporate reporting topics which are related to climate change and Sustainability Development Goals such as carbon/greenhouse gas and sustainability disclosure. This greater attention is also inspired by the development of sustainability disclosure frameworks such as the Global Reporting Initiatives, and the availability of sustainability disclosure scores from

TABLE 1. Document and Source Type

Document Type	No.	% (N=520)	Source Type	No.	% (N=520)
Article	435	83.65	Journals	478	91.92
Conference Paper	34	6.54	Conference Proceedings	24	4.61
Review	28	5.38	Book Series	12	2.3
Note	7	1.34	Books	5	0.96
Book Chapter	5	0.96	Trade Publications	1	0.19
Short Survey	2	0.38			
Book	1	0.19			
Letter	1	0.19			
Undefined	7	1.34			
Total	520	100.00	Total	520	100.00

TABLE 2. Trend of Publications

Duration	Frequency	% (N=520)	Cumulative Percent
1970 to 1979	3	0.38	0.38
1980 to 1989	14	2.28	2.66
1990 to 1999	67	13.42	16.08
2000 to 2009	237	45.14	61.22
2010 to 2019	199	38.78	100.00
	520	100.00	

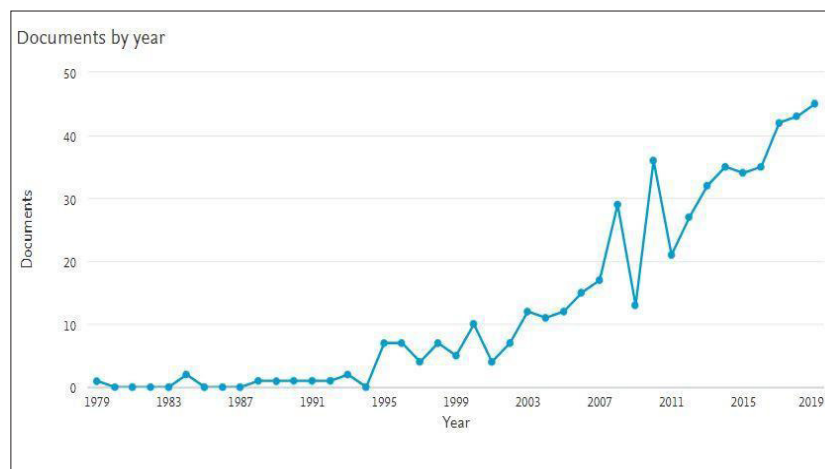


FIGURE 1. Publications on voluntary disclosure by year

various data providers, including Bloomberg, Thomson Reuters and Sustainalytics. Recent publications on these hot topics include Luo and Tang (2014), Lee et al. (2015), Borghei et al. (2016), Chen et al. (2016), Depoers et al. (2016), Hummel and Schlick (2016), Kalu et al. (2016), Castillo-Munoz et al. (2017), Rezaee and Tuo (2017), Broadstock et al. (2018), Jaggi et al. (2018), Krishnamurti and Velayutham (2018), Sassen and Azizi (2018), and Luo (2019). The above descriptions addressed the first research question (RQ₁) of this study which is to observe the publication trends in voluntary

disclosure (including the research hotspots and frontiers of voluntary disclosure).

Keywords Clustering Figure 2 presents a network visualization of the keywords clustering plotted using VOSviewer, a software tool for constructing and visualizing bibliometric networks, in which color, circle size, font size, and thickness of connecting lines were used to present the relationships with other keywords. One of the main objectives of our study is to identify the main themes, based on keywords, that have been used

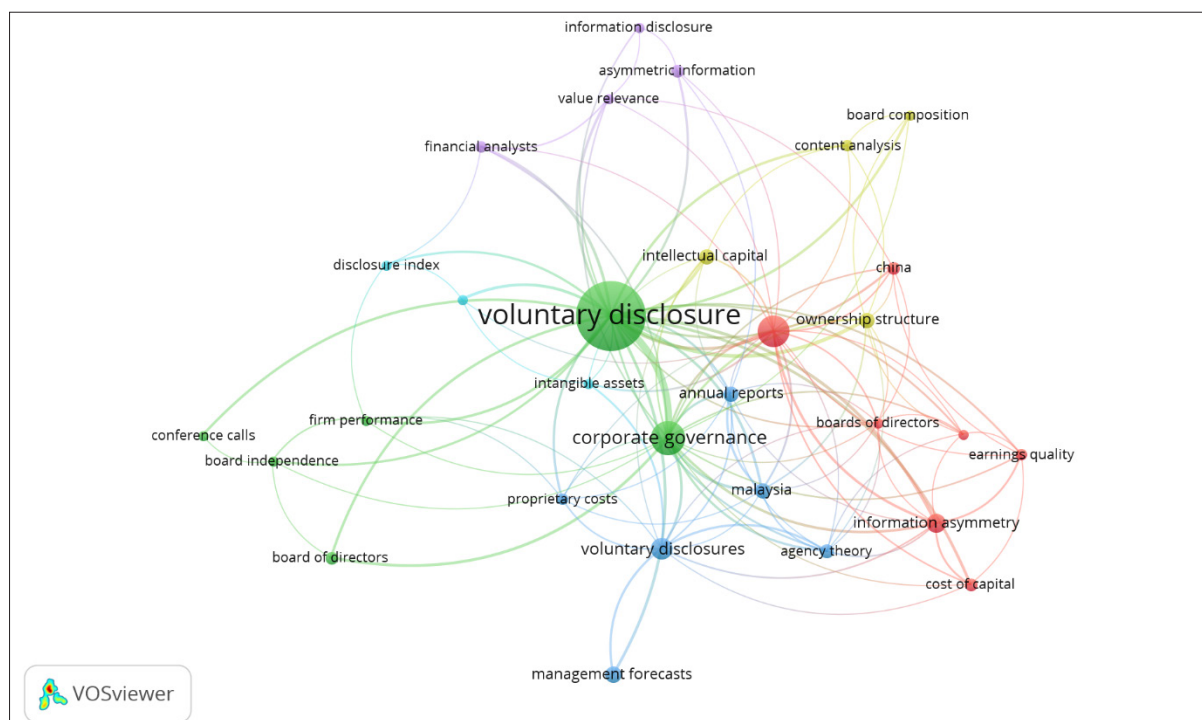


FIGURE 2. Network visualization map of the keywords clustering

TABLE 3. Top keywords

Keyword	Occurrences	Percentage	Total Link Strength
voluntary disclosure	233	8.32	166
corporate governance	58	2.07	96
disclosure	48	1.71	40
voluntary disclosures	24	0.86	28
information asymmetry	19	0.68	30
management forecasts	14	0.50	11
annual reports	12	0.43	21
Malaysia	12	0.43	25
ownership structure	12	0.43	23
intellectual capital	11	0.39	15

most frequently in literature on voluntary disclosure and how they are interconnected (RQ₂). The occurrence and co-occurrence of keywords show the prominence of the themes and the strength of the connections between them, respectively. Both the prominence and the strength of the connections can be represented as a network, depicted by the size of the nodes (circle), and the thickness of the lines between them, respectively. The prominence of a keyword is simply the frequency of publications containing the keyword. The strength of the connections between two keywords (co-occurrence) is the number of publications that contain both keywords in their titles and abstracts (Naciti et al. 2021).

Figure 2 combined with Table 3 (keywords clustering with at least 12 occurrences) show the most

frequent keywords were voluntary disclosure, corporate governance, information asymmetry, management forecasts, annual reports, Malaysia, ownership structure, board and conference calls. The association between corporate governance and voluntary disclosure was a prominent theme, especially the roles of board and ownership structure in determining corporate transparency given that types of ownership and board composition are the main drivers of the disclosure decision. Figure 2 also indicates that types of voluntary disclosure commonly examined were management forecasts and intellectual capital/intangible, whereas analysts' conference calls were frequently used as a medium to disseminate voluntary disclosures (Tasker 1998; Frankel et al. 1999). Voluntary disclosure studies were also popular among

TABLE 4. Top 20 most influential countries

No.	Country	Citations	Country	Documents
1	United States	4854	United States	156
2	Australia	1533	Australia	52
3	Hong Kong	1420	United Kingdom	43
4	United Kingdom	1226	Canada	33
5	Singapore	932	Malaysia	32
6	New Zealand	866	China	31
7	Canada	562	Hong Kong	20
8	Italy	440	New Zealand	19
9	China	430	Italy	16
10	Spain	383	France	16
11	Malaysia	359	Spain	14
12	France	281	Germany	14
13	Israel	211	Israel	12
14	Bangladesh	210	South Korea	12
15	Indonesia	172	Singapore	11
16	Germany	129	Brazil	10
17	Tunisia	100	Bangladesh	9
18	Sweden	66	Tunisia	9
19	Egypt	57	Taiwan	9
20	Taiwan	46	Indonesia	8

TABLE 5. Top 5 most influential articles

No	Author(s)	T/C	N.P	Title	Source	Y.P
1	Hossain M.	558	9	• Voluntary Disclosure of Reasons for Auditor Changes and The Capital Market Reaction to Information	Research in Accounting Regulation	2014
				• The Voluntary Disclosure of Internet Financial Reporting (IFR) In an Emerging Economy: A Case of Digital Bangladesh	Journal of Asia Business Studies	2012
				• The Determinants and Characteristics of Voluntary Disclosure by Indian Banking Companies	Corporate Social Responsibility and Environmental Management	2007
				• Stock Ownership Structure and Voluntary Disclosure of Quarterly Foreign Sales Data of U.S. Multinational Corporations	Multinational Business Review	2006
				• The Effect of Voluntary Disclosure, Ownership Structure and Proprietary Cost on The Return–Future Earnings Relation	Pacific-Basin Finance Journal	2006
				• Investment Opportunity Set and Voluntary Disclosure of Prospective Information: A Simultaneous Equations Approach	Journal of Business Finance and Accounting	2005
				• Firm Characteristics and Voluntary Disclosure of Geographic Segment Data by US Multinational Companies	International Journal of Accounting	2004
				• Managerial Discretion and Voluntary Disclosure: Empirical Evidence from The New Zealand Life Insurance Industry	Journal of Accounting and Public Policy	1998
				• Voluntary Disclosure in The Annual Reports of New Zealand Companies	Journal of International Financial Management & Accounting	1995

cont.

cont.

2	Gray S.J.	432	6	<ul style="list-style-type: none">• Country-Specific Risks and Geographic Disclosure Aggregation: Voluntary Disclosure Behaviour By British Multinationals• Reporting Intangible Assets: Voluntary Disclosure Practices of Top Emerging Market Companies• Family Ownership, Board Independence and Voluntary Disclosure: Evidence from Hong Kong• Voluntary Disclosures of Quoted Pharmaceutical Companies in Sweden And The UK: The Development Over the Period 1984–98• Ownership Structure and Corporate Voluntary Disclosure in Hong Kong And Singapore• Environmental Influences on Voluntary Disclosures in The Annual Reports of Hong Kong And Singapore Companies: A Cultural Perspective	British Accounting Review	2019
					International Journal of Accounting	2011
					Journal of International Accounting, Auditing and Taxation	2010
					European Accounting Review	2004
					International Journal of Accounting	2002
					Asian Review of Accounting	2001
3	Einhorn E.	156	5	<ul style="list-style-type: none">• Biased Voluntary Disclosure• Intertemporal Dynamics of Corporate Voluntary Disclosures• Unbalanced Information and The Interaction Between Information Acquisition Operating Activities, And Voluntary Disclosure• Voluntary Disclosure Under Uncertainty About the Reporting Objective• The Nature of The Interaction Between Mandatory and Voluntary Disclosures	Review of Accounting Studies	2012
					Journal of Accounting Research	2008
					The Accounting Review	2007
					Journal of Accounting and Economics	2007
					Journal of Accounting Research	2005
4	Hussainey K.	106	5	<ul style="list-style-type: none">• The Substitutive Relation Between Voluntary Disclosure and Corporate Governance in Their Effects on Firm Performance• The Determinants of Voluntary Disclosure in Saudi Arabia: An Empirical Study• The Impact of Board and Audit Committee Characteristics on Voluntary Disclosure: A Meta-Analysis• An Empirical Study of The Determinants of UK Oil and Gas Voluntary Disclosures• The Effects of Voluntary Disclosure and Dividend Propensity on Prices Leading Earnings	Review of Quantitative Finance and Accounting	2019
					International Journal of Accounting	2016
					Journal of International Accounting	2015
					Applied Economics	2015
					Accounting and Business Research	2009
5	Langberg N.	55	5	<ul style="list-style-type: none">• Voluntary Disclosure and Strategic Stock Repurchases• Voluntary Disclosure with Informed Trading in The IPO Market• Voluntary Disclosures, Corporate Control, And Investment• Voluntary Disclosures and Analyst Feedback• Voluntary Disclosures and Information Production by Analysts	Journal of Accounting and Economics	2017
					Journal of Accounting Research	2016
					Journal of Accounting Research	2012
					Journal of Accounting Research	2010
					Journal of Accounting and Economics	2008

*Notes: T/C is total citations, N.P is number of publications, Y.P is year of publications.

Malaysian scholars, as exemplified by Ghazali and Weetman (2006) and Akhtaruddin et al. (2009) and Ho and Taylor (2013). The keywords map is able to answer the second research question (RQ₂) relating to identifying the prominent themes that attract the attention of scholars in understanding the subject matter.

Geographical Distribution of Publications In order to create a global picture of voluntary disclosure research, in this section we present the top 20 countries that are most influential, to answer RQ₃. Table 4 shows the top 20 countries based on Scopus citations received and number of documents published. The five most influential countries based on highest citations consisted of United States, Australia, Hong Kong, United Kingdom, and Singapore. Meanwhile, based on number of documents, the five largest contributors were United States, Australia, United Kingdom, Canada, and Malaysia.

Most Influential Author and Articles Table 5 show the most influential authors based on number of publications related to voluntary disclosure. Mohammed Hossain had the highest number of publications (nine), followed by Gray (six). Einhorn, Hussainey and Langberg had five documents each related to voluntary disclosure in the Scopus core collection over the period 1979-2019.

Highly Cited Documents The most influential articles are plotted in Figure 3 based on co-citations. As can be seen, the three articles that dominate were Eng and Mak (2003) with 762 citations and 107 links, tailed by Ho and Wong (2001) with 465 citations and 55 links, and Aboody and Kasnik (2000) with 426 citations and 27 links. Over the years, it showed that documents- *Corporate Governance and Voluntary Disclosure* by Eng and Mak

(2003) had become the pioneers in amplifying voluntary disclosure from the viewpoint of accounting, finance, and economics as shown in Figure 4. The findings depicted in Figure 3 and Tables 4 and 5 addressed RQ₄.

Citation Analysis In addition, Table 6 summarizes the citation metrics for the retrieved Scopus core collection documents as of January 12, 2020 using Harzing’s Publish or Perish software. As indicated, there were 13,736 citations during the 40 years (1979 to 2019) for the 520 voluntary disclosure publication, giving an average of 335 citations/year. The Hirsch *h*-index indicate that there were at least 57 publications with 57 citations or more.

TABLE 6. Citation Metrics

Metrics	Data
Publication years	1979-2019
Citation years	40
Papers	520
Citations	13,736
Citations/year	335.02
Citations/paper	26.42
Authors/paper	2.29
Hirsch <i>h</i> -index	57

Most Active Source Titles

Finally, to answer RQ₅, we tabulated the Top 20 source titles that received the highest citations on their voluntary disclosure publications. The top 3 source titles were elite accounting journals namely JAR, JAE and TAR. The next two were elite journals from the

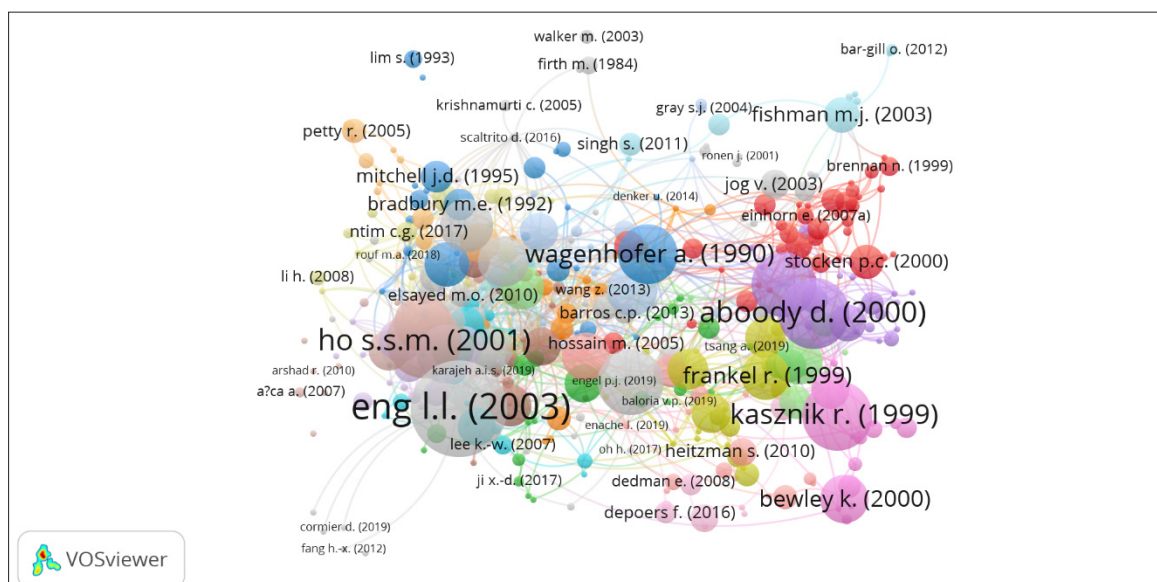


FIGURE 3. Network visualization map of the highly cited documents

TABLE 7. Top 20 most active source title

Source Title (Academic Journal Guide Rating 2021)	No. of citation
Journal of Accounting Research (4*)	1,821
Journal of Accounting and Economics (4*)	1,521
The Accounting Review/Accounting Review (4*)	1,395
Journal of Financial Economics (4*)	812
Journal of Finance (4*)	650
Contemporary Accounting Research (4)	460
Journal of Accounting and Public Policy (3)	448
Accounting and Business Research (3)	309
The International Journal of Accounting (3)	284
European Accounting Review (3)	222
Journal of Intellectual Capital (not rated)	215
Journal of Business Ethics (3)	196
Review of Accounting Studies (4)	193
Journal of International Financial Management and Accounting (2)	169
Journal of International Business Studies (4*)	166
Accounting Horizons (3)	165
Accounting, Organizations and Society (4*)	152
Journal of International Accounting, Auditing and Taxation (3)	137
Review of Financial Studies (4*)	136
Econometrica (3)	136

finance discipline (Journal of Financial Economics and Journal of Finance). Interestingly, specialist journal such as Journal of Intellectual Capital which is not rated by Academic Journal Guide also attracted voluntary disclosure scholars as a publication outlet and source of citation, given that intellectual capital disclosure is an important theme under corporate voluntary disclosure, as mentioned earlier.

DISCUSSION AND CONCLUSION

Despite a plethora of research on corporate voluntary disclosure spanning a 40-year period since the publication of Firth (1979), there were very limited studies that synthesized this vast literature. In this study, we were among the first to provide a state of the art of the knowledge created in this field using bibliometric mapping approaches to visualize results. We noted that since the mid 1990s, there has been an increasing number of publications on voluntary disclosure, and this trend continued unabated especially over the last few years. The sharp increase since 2015 was likely due to the calls for more informative carbon disclosure as stakeholders demand to know how corporations manage and mitigate the climate change risk to combat global warming (Borghesi 2021). This study also identified the major research themes and most influential authors and articles in more detail, and outlined emerging research trends. Although annual reports were the main medium of voluntary disclosure, a few literature also

examined the dissemination of voluntary disclosure via conference calls and social media, which we believe is a topic that would attract much attention from scholars as well as managers going forward (Zhang, 2015; Hales et al. 2018).

This study made a couple of contributions to the field. First, this study examined the publication patterns of voluntary disclosure by analyzing yearly publications as well as using author, cited reference, source title, and country, as unit of analysis to assess the contributions to the field from multiple perspectives. Second, it also mapped the intellectual structure by identifying the most prominent themes in voluntary disclosure, using co-occurrence and bibliographic mapping analysis to help researchers avoid stagnation and move the field forward. Although our studies provided the current state of the art on voluntary disclosure, this study also had a few limitations. First, our dataset covered only voluntary disclosure publications from Scopus core collection. Future researchers may want to consider Web of Science datasets. Second, we limit our search to article title with the phrase “voluntary disclosure”. In future, this can be expanded to include synonym terms such as “corporate transparency”.

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ENDNOTES

- ¹ VOSviewer is a software for constructing and visualizing bibliometric networks analysis. By using this software, networks such as journals, researchers or individual publications can be constructed based on citation, bibliographic coupling, co-citation or co-authorship relationship. VOSviewer offers a freely available tool for constructing and visualizing the networks. VOSviewer also offers text mining features that can be used to construct and visualize co-occurrence networks of crucial terms extracted from a body of scientific literature (Source: <https://www.vosviewer.com/>).
- ² Harzing's Publish or Perish is a software that utilised citation from Scopus, Web of Science and Google Scholar databases to obtain the raw citations and presented using metrics statistics and scholarly metrics including *h*-index and others.

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