

Research hotspots and trends of information disclosure at home and abroad

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Abstract: In this paper, Citespace software was used to quantitatively analysis of the relevant literature in the field of information disclosure in the 2021 and CNKI core databases from 2009 to 2021. The study found that the overseas research topics are voluntary disclosure, self-disclosure, environmental information disclosure, compulsory disclosure, stock price collapse risk and initial public offering, etc., the domestic research topics are corporate governance, financing constraints, internal control and registration. The overseas research object is broad, not only paying attention to the information disclosure of the listed company, but also paying attention to the information disclosure of the stock market and the capital market. In contrast, the object of domestic research gradually shifts from listed companies themselves to corporate social responsibility, environmental information disclosure and political connections, i.e., from the internal to the external environment. Both at home and abroad attach importance to the integration of the Internet, green technology innovation, social responsibility and environmental information disclosure, which are the common research trends at home and abroad.

Keywords: information disclosure; citespace; visual analysis

1. Introduction

The separation of ownership and management requires the enterprise to disclose information regularly^[1]. With the development of Internet economy and the renewal of information technology, the connotation of "Information disclosure" has been enriched. The aggravation of environmental problems also requires enterprises to disclose more environmental information^[2]. It was only in 2016, with the publication of the guiding opinions on building a green finance system, that research on such topics as green finance and environmental performance began in China. With the deepening of the research, many scholars have summarized the contents and methods of information disclosure in China, but few scholars compare the research hotspots and research trends of information disclosure at home and abroad, it provides reference for future research. Therefore, this paper uses CITESPACE software to analyze the literature in WOS and CNKI database, in order to grasp the development trend of the field of information disclosure by combing and summarizing the domestic and foreign information disclosure, provide reference for future research.

2. Data sources and research methods

The foreign data in this paper come from the core collection database of Web of Science (WOS), and all the data come from SSCI database, which constructs retrieval "TS = (Information disclosure)", and the language is English "LA = (English)", the literature type is "DT = (Article)". Since the literature in WOS core database began to be collected in 2009, the uniform retrieval time was "Accurate retrieval" from 2009 to 2021, and 9,947 articles were initially 2021. After repeated screening, finally, 1499 papers with the highest correlation were selected. Domestic data come from CNKI database, using "Advanced Retrieval", the subject of CSSCI literature retrieval is "Information disclosure", the retrieval condition is "Accurate". The search time was "2009-2021". The 2021 type was "Thesis". After repeated searches, 1460 articles with the highest correlation were selected.

In this paper, CITESPACE software is used to analyze, by comparing the volume of domestic and foreign publications, authors and institutions, keyword co-occurrence, clustering analysis and time-line map, etc., to explore the hot spots and trends of information disclosure in the future.

3. The visualization analysis of domestic enterprise information disclosure research

3.1. Analysis of the distribution of the number of publications

The number of papers published over the years reflects the theme change and research direction in the field of information disclosure at home and abroad. As can be seen from Figure 1, the volume of publications in the field of information disclosure abroad has been in a steady upward trend. In contrast, the volume of domestic information disclosure can be divided into three stages: 2009-2016 as the first stage, the volume of articles showed a wave of growth, and in 2016 reached the first peak, the volume of 179 articles. 2017-2019 is the second phase, the number of articles dropped, and a gradual decline in the trend. 2020-the third phase of the 2021 cycle saw a rapid increase in the number of 2021, reaching a second peak of 206. From 2009 to 2012, fewer than 100 articles on information disclosure were published in domestic journals; from 2009 to 2014, fewer than 100 articles on information disclosure were published in foreign journals, during this period, the domestic and foreign academic circles have conducted exploratory research on information disclosure. Since 2013, the number of domestic research articles on information disclosure has exceeded 100 for the first time, reaching 102, while the number of foreign journals has also exceeded 100, reaching 112 in 2015.

As can be seen from Figure 1, the research results and research enthusiasm of scholars on information disclosure change with the change of state's relevant policies on enterprises. In 2016, the China Securities Regulatory Commission (CSRC) has issued guidelines on the content and format of corporate information disclosure of publicly issued securities No. 2, No. 3, No. 9, No. 13, No. 38, and the first batch of cases filed with the CSRC for special enforcement actions on IPO fraudulent issuance and information disclosure violations. The publication of these policies promotes the truthfulness, accuracy and completeness of information disclosure in the securities market, and arouses the research enthusiasm of scholars in the field of information disclosure, the volume of publications in this field reached the peak of the first stage. From 2016 to 2019, the number of papers published in China continued to decline. This shows that the content of domestic research on information disclosure is gradually increasing, and the difficulty is gradually increasing. At the same time, the research perspective is also more diversified, and gradually forms a cross-discipline, mature systems across organizations. From 2019 to 2020, with the advent of the epidemic, the China Securities Regulatory Commission and the Shenzhen Stock Exchange successively published guidelines on the content and format of corporate information disclosure for publicly issued securities No. 35, No. 37, and No. 45, "Rules No. 24 for the compilation and reporting of company information disclosure of publicly issued securities" and "Measures for the assessment of information disclosure of listed companies", the social responsibility of corporate disclosure reports will be included in the scope of Information Disclosure Assessment of listed companies, and further strengthen the assessment of information disclosure requirements. Researchers' enthusiasm for disclosure has been rekindled, with the number of articles 2021 reaching a second peak.

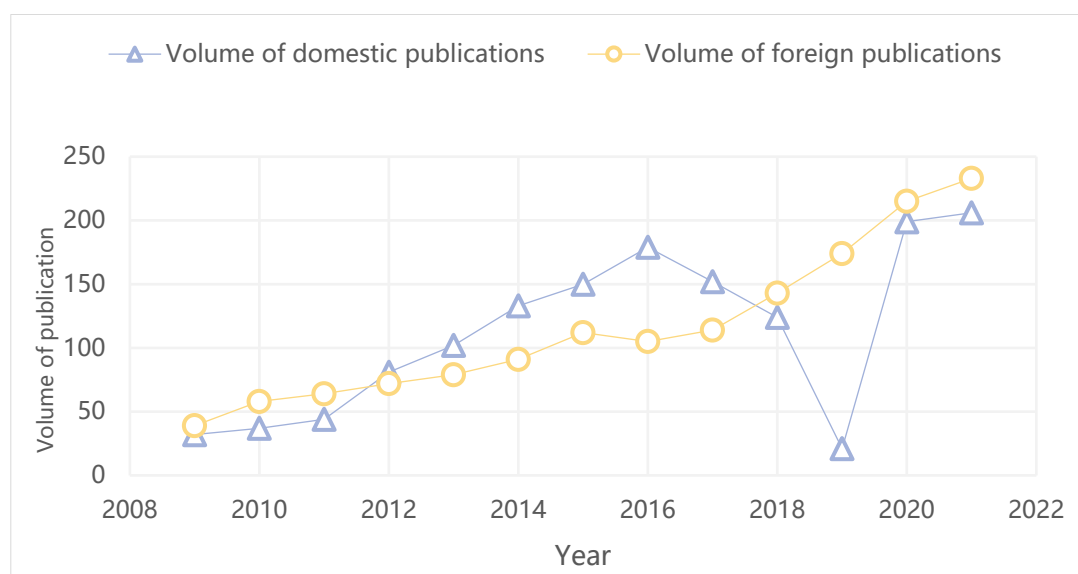


Figure 1: Distribution of publications of Information Disclosure Research

3.2. Analysis of authors

Through the visual analysis of the authors, the authors with the largest circulation in China are Li Huiyun, Huang Hongbin, Zhang Zhengyong and so on. The authors with the largest circulation in foreign countries are Raimo and Nicola, Vitolla and Filippo, Bertomeu and Jeremy, etc. . The connections between the nodes in the graph represent the co-operation between the authors. The more connections there are, the closer the co-operation is. Through the analysis of the number of connections between nodes, it can be found that there are few studies on information disclosure by domestic and foreign researchers. The Density of nodes in the co-occurrence map is only 0.0016. A total of 425 nodes and 141 connections are formed in the analysis of domestic author cooperative networks. Therefore, the author cooperative networks are relatively thin, mainly formed Li Huiyun, Fu Shaoyan and Zhang Zhengyong, Geely, Mao Hongtao and Huang Hongbin, Hu Weiyan and other three groups of cooperation networks. On the whole, the researchers are scattered and do not form an obvious cooperative network. The cooperative networks of foreign researchers are also scattered, with a total of 388 nodes and 122 connections, forming three cooperative networks of Raimo, Nicola and Bertomeu, Jeremy, Garcia-sanchez, Isabel-maria and so on, among them, the cooperative network of Raimo and Nicola is the most outstanding and the most closely connected, and the cooperative network of other researchers is scattered.

3.3. Analysis of research institutions

The distribution of information disclosure research institutions at home and abroad has obvious agglomeration effect, which indicates that the academic achievements in the field of information disclosure research mainly come from universities and scientific research institutions, and a few come from companies and other administrative agencies. Among them, there are five Zhongnan University of Economics and Law with more than 25 articles published by domestic information disclosure research institutions, namely, Southwestern University of Finance and Economics (53 articles) , Renmin University of China (33 Articles) , Xiamen University (31 Articles) , central South University (25 pieces) . As can be seen from Figure 5, the organizations with a large number of articles published abroad are Penn State Univ (20 articles) , Univ Penn (20 articles) , Univ Michigan (18 Articles) , NYU (18 Articles) , Tel Aviv Univ (17 articles) and so on. Generally speaking, the domestic and foreign cooperation network on information disclosure research has gradually formed but needs to be improved.

4. Research hotspots and trend analysis

4.1. Keyword co-occurrence analysis

In this paper, each time slice is chosen to draw a keyword co-occurrence map for 1 year. The bigger the keyword node is, the more frequently the keyword appears. The results show that there are significant differences between domestic and foreign research hotspots on information disclosure (Table 1) , information disclosure, corporate governance, internal control, listed companies, financing constraints, the nature of property rights, registration system, corporate value, political relevance, market reaction, social responsibility are the themes of domestic journal Information Disclosure Research, the research focus is relatively concentrated. Among them, information disclosure, corporate governance, internal control and so on are the links and bridges connecting other research topics. Information Disclosure Research Abroad is relatively balanced, research topics include voluntary disclosure, corporate social responsibility, corporate disclosure, information asymmetry, corporate governance, the Internet and environmental information disclosure, among other Information asymmetry. Voluntary Disclosure, corporate social responsibility, corporate disclosure and information asymmetry are the Information asymmetry and bridges to other research topics.

Compared with the domestic and foreign information disclosure co-occurrence map, foreign journals have more keywords with node and intermediary role, the co-occurrence is more obvious, and the research topics are more abundant, focusing on the stock market, capital market, enterprises and the quality of information disclosure itself as the perspective of research, focus on the impact of voluntary disclosure, social networking sites, environmental performance and the risk of a stock price crash on disclosure. The research topics of domestic journals have changed from internal enterprises to external environment, from enterprises themselves to banks and markets, from corporate social responsibility to political relevance, and environmental performance. China is mainly concerned about the impact of

corporate governance, internal control and financing constraints on information disclosure research, but in recent years with the convening of various environmental conferences, environmental performance, more and more scholars pay attention to carbon information disclosure.

Table 1: Information disclosure studies high-frequency keywords and centrality

Ranking	Domestic			Abroad		
	Keywords	frequency	centrality	Keywords	frequency	centrality
1	Information disclosure	434	1.12	voluntary disclosure	245	0.04
2	Corporate governance	94	0.09	corporate social responsibility	111	0.04
3	Internal control	58	0.08	corporate disclosure	109	0.04
4	Listed companies	55	0.05	information asymmetry	104	0.02
5	Financing constraints	33	0.07	corporate governance	97	0.03
6	The nature of property rights	24	0.06	internet	51	0.05
7	Registration system	23	0.11	environmental information disclosure	44	0.01
8	Enterprise value	22	0.02	discretionary disclosure	42	0.02
9	Political connections	19	0.03	institutional investor	39	0.02
10	Market reaction	19	0.03	earnings management	38	0.02
11	Social Responsibility	18	0.04	investment	33	0.02
12	Earnings Management	15	0.05	social media	30	0.03
13	Text analysis	13	0.02	accountability	30	0.04
14	Pledge of stock rights	10	0	economic consequence	30	0.02
15	Environmental performance	10	0	firm value	27	0.01

4.2. Keyword cluster analysis

Keyword clustering map can indicate different research concerns in this field. The larger the number of cluster number in the graph, the fewer keywords are included in the cluster. The q-value and s-value of domestic information disclosure cluster analysis chart are 0.4723 and 0.8647, which show that the cluster is reasonable. The graph shows 10 clusters: # 0 Disclosure, # 1 corporate governance, # 2 listed companies, # 3 financing constraints, # 4 Internal Control, # 5 registration, # 6 Social Responsibility, # 7 Equity Pledge, # 8 earnings management, # 9 information environment. Next, the research labels are removed and merged: # 0 disclosure this is the subject of the study and does not require repeated attention; # 2 listed companies are the subject of the study; # 7 Equity Pledge and # 9 information environment are included in # 3 financing constraints, incorporate # 6 social responsibility and # 8 earnings management into # 1 corporate governance. Therefore, the following 4 hot spots: # 1 corporate governance, # 3 financing constraints, # 4 internal control, # 6 registration system. Therefore, the q-value and s-value of foreign information disclosure cluster analysis graph are 0.3854 and 0.714 respectively, which shows that the clustering is also reasonable. There are six clusters: # 0 (Voluntary Disclosure), # 1 (self-disclosure), # 2 (Environmental Information Disclosure), # 3 (mandatory disclosure), cluster # 4 (stock price crash risk) and cluster # 5 (initial public offering initial public offering) are the remaining six research hotspots.

Through the comparison, we can see that the research topics of information disclosure at home and abroad are relatively concentrated, and the contents of information disclosure related to listed companies are generally concerned, but the research direction is slightly different. In foreign countries, companies pay more attention to the impact of voluntary information disclosure and environmental information disclosure on the value of the company, so if the enterprises want to improve their reputation, they will increase their investment in environmental information disclosure, so Cluster # 2 includes keywords like firm value, accountability, carbon disclosure and sustainability. However, in China, the impact of corporate governance and financing constraints on information disclosure has been paid more attention, and the research on environmental information disclosure system has been delayed. In 2016, with the publication of the "Guiding opinions on the construction of a green financial system," domestic research on Green Finance, environmental performance and other hot spots began.

In addition, the object of study at home and abroad is also slightly different. The overseas research object is broad, not only pays attention to the listed company's information disclosure, but also pays attention to the stock market, the capital market information disclosure and so on. As a result, the # 0 cluster includes keywords such as institutional investor, social media and discretionary disclosure. But the domestic research object from the listed company to the bank, the market, and then to the enterprise's social responsibility and the environmental information disclosure and so on. It also pays attention to the relationship between the government and enterprises, to the impact of government subsidies and political connections on enterprises, which are inevitable in state-owned enterprises, and to the efforts of private enterprises to obtain more resources and facilities, they also tend to get in touch with government officials, receive government subsidies, and improve their reputations. Thus # 1 clustering (corporate governance) includes the keywords "Earnings management, information disclosure quality, financing costs and political relevance" and so on.

4.3. Keyword clustering time-line trend analysis

In this paper, citespace is used to analyze the time-line of the key words in the field of information disclosure, and these key words are spread out in the cluster according to the year in which they appear in the corresponding time, show the development of keywords in each cluster. Therefore, foreign information disclosure field has good mutual support, each cluster tag can maintain a continuous in-depth study, and has a large number of commonly cited keywords. Taking the "Voluntary disclosure" cluster label as an example, the early (2009-2012) research focuses on disclosure regulation, managers' forecasts, and institutional investors, later (2013-2016) gradually extended to financial information disclosure, ownership, earnings management, market risk and agency costs, etc. , and then to the later period (2017-2021) , which includes 2021 costs, emerging markets, boards of directors and risk disclosure. In contrast, in the domestic research, except "Information Disclosure, corporate governance, listed companies, internal control" and other keywords show strong relevance, other clustering keywords weak links. Among them 2009-2012 appeared more concentrated keywords, mainly "Listed companies, internal control, the nature of property rights, influencing factors" and so on. From 2013 to 2016, keywords such as "Intermediary effect, environmental information, voluntary disclosure, financial supervision and financing constraint" appeared. In the 2017-2021, there were a lot of keywords, such as "Investment efficiency, Green Finance, Equity Pledge and information environment", and there were a lot of links between the keywords, including intra-cluster and inter-cluster links, it shows that the research hotspots in the field of information disclosure have been expanded and enriched during this period.

4.4. Keyword emergence analysis

Keyword emergent map can indicate the future research trends, in which the emergent nodes represent the future research hot spots, and the emergent time segment is the red bold part of the map. From Table 2, the domestic research, "Listed companies" as early as 2009 has become a hot research companies, research heat for a long time. "Influencing factors" continued to emerge in 2011-14. "Social responsibility" came to the fore in 2012, "Market reaction" came to the fore in 2012-2014, and "Environmental information" came to the fore as early as 2013, but then the research content gradually increased and the difficulty gradually increased, the number of publications dropped, and it wasn't until 2016 that the issue of environmental performance related to green finance received renewed attention from academics. The emergence intensity of "Registration System" was the highest, at 5.43. The emergence intensity of "Equity crowdfunding and investment efficiency" was 2.89 and 3.1 respectively, the emergence time is 2016-2017 and 2017-2018 respectively, the duration is shorter. In 2017, the most prominent words were "Investment efficiency, financing constraints and information environment". By the end of the 2021, the emergence of "Financing constraints, the information environment, equity pledges and intermediation effects" continued, indicating that these areas of research are still hot and will be the trend of the future.

In foreign research, the emergence time of "Internet" is from 2009 to 2015, and the emergence time of "Industry" is from 2009 to 2017, with the longest emergence time. Corporate disclosure has been a hot research topic since 2009. "Privacy user privacy" has the highest burst strength at 5.43. Privacy, capital market, discretionary disclosure, Self Disclosure, and management earnings forecast all started to emerge in 2010, with the most prominent terms appearing in that year. "Agency cost" had the shortest burst, 2017-2018. "Corporate Social Responsibility (CSR)" had the lowest intensity at 3.18. As of this 2021, the emergence of "Quality Disclosure, environmental information disclosure, Corporate

Social Responsibility (CSR)" continues, indicating that research in these areas has continued unabated, and it will be a trend in the future.

By comparing the emergent Atlas of information disclosure at home and abroad, this paper will analyze the similarities and differences of the research hotspots and the future trends of information disclosure at home and abroad. First, similarity: first, environmental information disclosure will be the focus of information disclosure research both at home and abroad in the future. Lewis, for example, examined corporate responses to the Carbon Disclosure Project (CDP) and found that the characteristics of executives affect the quality of environmental information that companies voluntarily disclose^[3]. The GIANNARAKIS study found that better environmental performance has a positive impact on the level of climate change information disclosure^[4]. Meng found that the environmental performance of the company has an impact on the degree of detail of environmental information disclosure^[5]. The Lu study found that environmental performance can improve the quality of CSR disclosure^[6].

Table 2: Key word salience table of information disclosure

Top 12 Keywords with the Strongest Citation Bursts in China					
Keywords	Year	Strength	Begin	End	2009 - 2021
Listed companies	2009	4.51	2009	2014	
Impact factors	2011	3.26	2011	2014	
Social Responsibility	2012	4.74	2012	2016	
Market reaction	2012	2.99	2012	2014	
Environmental Information	2013	3.55	2013	2015	
Registration system	2014	5.43	2014	2016	
Equity crowdfunding	2016	2.89	2016	2017	
Investment efficiency	2017	3.1	2017	2018	
Financing constraints	2013	2.85	2017	2021	
Information environment	2017	1.63	2017	2021	
Pledge of stock rights	2018	4.48	2018	2021	
Mediating effect	2013	3.49	2018	2021	
The top 12 keywords cited abroad					
Keywords	Year	Strength	Begin	End	2009 - 2021
internet	2009	5.18	2009	2015	
industry	2009	4.26	2009	2017	
corporate disclosure	2009	3.49	2009	2012	
privacy	2010	5.43	2010	2014	
capital market	2010	4.69	2010	2014	
discretionary disclosure	2010	4.38	2010	2014	
self disclosure	2009	4.02	2010	2012	
management earnings forecast	2010	3.8	2010	2015	
agency cost	2014	3.46	2017	2018	
quality disclosure	2018	3.26	2018	2021	
environmental information disclosure	2010	4.24	2019	2021	
csr	2019	3.18	2019	2021	

Secondly, both domestic and foreign research on information disclosure prefer to expand the research on information disclosure from the perspective of social responsibility. Dhaliwal used independent corporate social responsibility (CSR) reports as part of non-financial disclosure, and found that the publication of independent CSR reports was associated with lower analyst prediction error^[7]. Na et al. studied the correlation between the quality of corporate social responsibility information disclosure and financial performance^[8]. Liu et al believe that social responsibility information disclosure is closely related to the long-term development of enterprises^[9]. Hu et al selected Chinese a-share listed companies from 2007 to 2017 as the research object, and studied the relationship between corporate social responsibility information disclosure and innovation sustainability from the perspective of information effect and reputation effect^[10]. Qian Ming studies the impact of big data on social responsibility information disclosure from the aspects of pattern, foundation and Path^[11].

The difference between domestic and foreign research on information disclosure mainly lies in the different development direction of the chosen research field, the quality disclosure, environmental information disclosure and Corporate Social Responsibility (CSR) are regarded as the research trends in the future. The domestic financing constraints, information environment and equity pledge for the future trend of research.

5. Conclusion and suggestion

In this paper, Citespace visual analysis software is used to analyze the co-occurrence of articles, authors, organizations and keywords, cluster analysis and pop-up word analysis were used to visualize the CSSCI literature on information disclosure published in the 2009-2021 core journals and CNKI, and to compare and analyze the research in the field of information disclosure, the following conclusions were reached:

In terms of volume of publications, authors, and institutional maps, the majority of institutions engaged in disclosure research at home and abroad are universities and other research institutions, with the emergence of Zhongnan University of Economics and Law such as Renmin University of China, Xiamen University and Penn State Univ, Univ Penn, Univ Michigan and other strong research teams. However, the domestic and foreign cooperation network on information disclosure research still needs to be improved, and academic exchanges among research institutions should be strengthened to avoid duplication of efforts.

According to keyword co-occurrence analysis and cluster analysis, the overseas research topics are voluntary disclosure, self-disclosure, environmental information disclosure, compulsory disclosure, stock price collapse risk and initial public offering. The domestic research topics are corporate governance, financing constraints, internal control, registration, social responsibility, Equity Pledge, Earnings Management and information environment. The overseas research object is broad, not only pays attention to the listed company's information disclosure, but also pays attention to the stock market, the capital market information disclosure and so on. But the domestic research object from the listed company to the bank, the market, the enterprise's social responsibility, the environmental information disclosure and the political connection, the research object shifts from the enterprise internal environment to the external environment.

Looking at the future research trend from the keyword clustering time line chart and the emergence chart, environmental Information Disclosure, financing constraints, information environment, equity pledge and intermediary effect have gradually become the focus of information disclosure research in China, and also the trend of information disclosure research in the future. The overseas research focus has shifted to the fields of quality disclosure, environmental information disclosure and Corporate Social Responsibility (CSR), therefore, in the future, environmental performance can be considered in the planning of enterprise sustainable development. Both at home and abroad attach importance to the integration of Internet, Green Technology Innovation, Social Responsibility and environmental information disclosure, which are the common research trends at home and abroad.

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