

Environmental Accounting Information Disclosure in China: A Review of Research

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Abstract: *This paper focuses on the relevant literature on environmental accounting information disclosure in China, attempts to analyze the four aspects of disclosure method, disclosure content, disclosure quality evaluation method and influencing factors of disclosure quality, and reviews the new research progress in academia in this regard according to the development context and logical relationship of literature. This paper discusses the development direction of relevant theories and analyzes the latest trends in the methods and contents of environmental accounting information disclosure theory, hoping to provide reference and enlightenment for the research on environmental accounting information disclosure in China. Finally, this paper puts forward the direction of possible further research in the future based on the current research situation in China.*

Keywords: *Environmental accounting, Information disclosure, Literature review*

1. Introduction

The prelude of environmental accounting research was represented by *Research on Social Cost Transformation of Pollution Control* (F. A. Beams, 1971) and *Accounting Problems of Pollution* (J.T. Marlin, 1973)(Zhu Xueyi, 1999).^[1] In 1972, the United Nations called for global attention to the natural environment and adopted *the Environmental Declaration*, which emphasized that there is only one earth for human beings and began to crack down on the abuse and destruction of the natural environment. Since then people began to pay attention to environmental problems, environmental accounting information disclosure developed from this.

In recent years, the world has emitted about 51 billion tons of greenhouse gases into the atmosphere every year, and environmental problems such as melting glaciers and the greenhouse effect have followed. China is facing huge environmental challenges, and environmental issues have gradually become the focus of public attention. In the report of the 20th National Congress, President Xi Jinping proposed that we must firmly establish and practice the concept that green waters and green mountains are golden mountains and silver mountains, and plan and develop from the perspective of harmonious coexistence between man and nature.

With the strengthening of global environmental awareness in modern society, as well as the intensification of the relative role and influence of production, development and the real environment of enterprises, it is urgently required that the financial reports of enterprises not only reflect social environmental information, but also disclose information on natural environmental protection (Bian Xuejun, 1995).^[2] As the final result of environmental accounting work, environmental accounting information disclosure has attracted extensive attention from many scholars and industry insiders. This paper attempts to summarize the existing research results from four aspects: disclosure method, disclosure content, disclosure quality evaluation method and influencing factors of disclosure quality, and on the basis of a review of these studies, combined with the latest policies and backgrounds, point out possible further research directions in the future, in order to provide some references for this research.

2. Some Progress in Environmental Accounting Information Disclosure Research

From the latest literature research content, the research on environmental accounting information disclosure in recent years has enriched the theoretical foundation, expanded the research method, and carried out in-depth research from different perspectives, and has developed in the following aspects.

2.1. Development of methods for environmental accounting information disclosure

The way of environmental accounting information disclosure of Chinese enterprises is not uniform, which can be divided into two parts: independent report and supplementary form report. At present, most enterprises in China tend to include environmental information data in their annual reports (Cui Cheng, 2017),^[3] but the disclosure method of independent reports will become the direction of future development.

To meet the needs of external information users for environmental protection information security, an independent environmental reporting system is required and the integrity of environmental accounting information is ensured (Nie Jianping, 2018).^[4] By comparing the new progress of independent environmental reporting and government financial reporting in four aspects, Chinese scholars put forward the opinion demand for independent environmental reporting for Chinese companies (Gao Lihong and Li Shanmei, 2007).^[5] Independent reporting can enhance the transparency and timeliness of corporate environmental accounting information (Zhong Liwen, 2017)^[6] and prevent stakeholders from taking on hidden environmental risks (Zhao Haixia, 2018).^[7] In addition, some scholars have proposed that different companies can choose different disclosure templates to reveal accounting information in different environments and accept the company's internal environmental accounting information disclosure model stipulated by various regulatory authorities (Liu Jinbin, 2016).^[8] For heavily polluting industries, a separate environmental report of a heavily polluting listed company can be considered (You Xiaoqin, 2019).^[9]

According to the existing literature, scholars' research on environmental accounting information disclosure methods mainly starts from the perspective of stakeholders, which mainly describes the role of independent reporting and compensates for some shortcomings of traditional disclosure. However, at present, there are no mandatory provisions on the disclosure method of environmental accounting information in China, which is mainly disclosed by enterprises, and most listed companies mainly use supplementary reports, which are expressed in annual reports, financial reports and notes. The independent report of environmental accounting information disclosure can maximize the environmental information of the enterprise, which helps the public to understand the supervision of the government. China's disclosure method for environmental accounting information will eventually evolve to independent report.

2.2. Development of the content of environmental accounting information disclosure

The environmental accounting information disclosed by Chinese enterprises is mostly some general textual descriptions, lacking quantitative analysis. This obscures the true situation of the enterprise to a certain extent, so the information it discloses is often unreliable.

Companies should increase the disclosure of quantitative analysis content and environmental information content that can be measured in money (Chen Bijun, 2019).^[10] For example, enterprises can actively disclose environmental issues, especially the actual environmental costs incurred and the estimated liabilities they have assumed (Wang Nan and Yang Wen, 2015).^[11] For agrochemical enterprises, it is especially necessary to pay attention to the description of compensation fees, resource use costs, beautification expenditures and other information generated by environmental pollution, and mainly based on accounting information, focusing on data description (Tan Qingmei and Xu Huamin, 2015).^[12] Fu Feixiang (2018) suggested guiding enterprises to combine accounting with environmental accounting, and clearly stipulating the content elements of environmental accounting for enterprises.^[14] Financial information on the environment can be reflected by using the balance sheet and income statement on the environment, and environmental costs and benefits should be disclosed in monetary terms (Qin Jun, 2020),^[15] and enterprises should focus on disclosing relevant information that is not good for the environment (Li Yuhang, 2021).^[16]

It can be seen that scholars have different research results based on the content of environmental accounting information disclosure, but they are consistent in their view of requiring enterprises to ensure the accuracy and effectiveness of environmental accounting information disclosure. The disclosure of environmental accounting information must not only be "quantitative" but also "qualitative". Most companies' disclosure reports only include large text descriptions, and try to ignore disclosing their unfavorable information. As a result, the disclosure status of most companies today is below the expectations of scholars. Therefore, the disclosure content combining "quantity" and "quality" can improve the quality of enterprise environmental accounting information disclosure.

2.3. Development of quality assessment methods for environmental accounting information disclosure

China basically adopts the content analysis method, the analytic hierarchy method and the assignment method for the evaluation of environmental accounting information disclosure.

Zhu Wei (2019) used the content analysis method to design the quality index system of environmental accounting information disclosure from six levels: company environmental management, resource consumption, capital investment, environmental protection effectiveness, pollution discharge, and environmental protection production.^[17] Xu Yawen and Zeng Huafeng (2020) combined with multivariate regression model to study the quality of environmental accounting information disclosure and the factors influencing the quality of 53 listed mining companies.^[18]

Feng Bo (2014) combined the content analysis method and the analytic hierarchy method. He designed the quality evaluation system of enterprise environmental information disclosure from the two dimensions: form and substance. Through the reasonable selection of evaluation indicators and the use of analytic hierarchy method to determine the weight of each index, a set of enterprise environmental information disclosure quality evaluation system in line with national conditions has constructed.^[19] Zhao Xuanmin and Sun Wufeng (2015) used the analytic hierarchy method to construct an environmental accounting information disclosure quality evaluation system based on the salience, quantification and temporality of disclosure information, and conduct evaluation studies on heavily polluting listed enterprises.^[20]

After establishing the quality evaluation system, Wang Lei (2020) used the theory of partial order sets to assign values to relevant information, and used the formula to calculate $hav(x)$ while generating a HASSE diagram, which visually showed the information disclosure quality of the sample companies.^[21] Liu Xiaowei (2022) discussed the quality of information disclosure of listed companies and its mechanism from the perspectives of accounting quality evaluation, market evaluation and institutional evaluation, and analyzes the assessment results of complex and abstract information disclosure quality assessment with intuitive measurement models.^[22]

In the current stage of research, scholars in the quality evaluation of environmental accounting information, most of them generally use the assignment method, analytic hierarchy method and content analysis method to study the quality of environmental accounting information disclosure of enterprises. With the continuous progress of research, some scholars use fuzzy comprehensive evaluation method for research. Different industries have different industry characteristics, and the existing evaluation methods need to be strengthened for industry pertinence.

2.4. Development of influencing factors for environmental accounting information disclosure

The reason why companies disclose environmental information is largely due to the mandatory requirements of the government and in order to establish a good corporate image in front of the public and gain the goodwill of investors and the public. There are many factors affecting the quality of environmental accounting information disclosure, which can be roughly divided into two types: positive impact and negative impact.

Some scholars found that there was a significant positive correlation between the shareholding ratio of supervisors and the quality of environmental accounting information disclosure at the level of 5% (Xu Yawen, 2020).^[18] Financial debt contracts (Lv Mingqi, 2018),^[23] green innovation investment (Xu Xiuyan, 2019)^[24] and short-term value of enterprises (Shen Jianfei, 2022)^[25] can facilitate disclosing environmental accounting information. In addition, the asset-liability ratio of listed companies, the importance attached by the government to listed companies, the preparation of corporate social responsibility reports and the certification of listed companies to ISO environmental management system (Zhao Haixia, 2018),^[7] external regulatory pressure, company reputation (Zhu Wei, 2019),^[17] female directors (Xue Wei, 2019),^[26] and government supervision intensity (He Baocheng, 2020) are all positively correlated with the level of environmental accounting information disclosure of companies.^[27]

Other scholars found that operating debt contracts (Lv Mingqi, 2018)^[23] and corporate environmental performance (Zhu Wei, 2019) have a negative impact on corporate environmental information disclosure, and the level of corporate environmental accounting information disclosure is negatively correlated with the short-term value of enterprises (Shen Jianfei, 2022).^[25] In addition, factors such as corporate profitability and social responsibility fulfillment (Chen Dongling, 2019),^[28]

total assets, liabilities and integrity of corporate governance structure (Liu Kun, 2019),^[13] and executive shareholding ratio (Xu Yawen, 2020) will also affect the quality of information disclosure to varying degrees.^[18]

For the research on the influencing factors of environmental accounting information disclosure quality, scholars have studied and analyzed the relationship between various indicators, performance, external factors and disclosure quality of enterprises. Affected by the legal systems, social economy, market supply and demand, and cultural traditions of different countries and regions, the final research results are different, and it is difficult to achieve complete consistency. However, most scholars believe that the quality of environmental accounting information disclosure mainly depends on factors such as the size of the enterprise, public opinion pressure and regulatory requirements.

3. Review and revelation

Through the combing and analysis of the research results of environmental accounting information disclosure, it can be seen that the research on environmental accounting information disclosure is still developing in recent years, and scholars have put forward new views. Due to many factors, it is difficult for scholars to reach a consensus on their views, but these studies enrich the research perspective and theoretical basis of environmental accounting information disclosure from many aspects.

In recent years, Chinese scholars have developed rapidly in this regard, and have also achieved fruitful results. However, it is undeniable that domestic related research started late, and there are still some differences with foreign research.

According to the current research status of environmental accounting information disclosure in China, this paper puts forward possible future research directions and prospects:

(1) Improve the environmental information disclosure system.

China has not made uniform mandatory provisions on the form and content of environmental information disclosure, which makes some enterprises choose to disclose more information beneficial to enterprises and conceal some negative information, thereby reducing the reliability of information. Standardizing and unifying its disclosure methods and contents will help improve the reliability and comparability of information, increase investors' understanding of enterprises, and facilitate the unified supervision of third-party departments such as governments and external audit institutions.

(2) Explore a set of quality evaluation system that can be widely used.

Most of China's research on the evaluation of the quality of disclosed information is carried out on the basis of drawing on existing foreign systems and indicators, and because of the influence of different industries, regions and enterprise scales, it is difficult to have a system that can be applied to all enterprises. Therefore, according to the characteristics of different industries, an evaluation system that can be applied to enterprises in different industries is designed.

(3) With the increasing attention to environmental issues in China, the stakeholders of enterprises gradually pay attention to the disclosure of environmental accounting information of enterprises, and analyzing the relationship between environmental accounting information disclosure and enterprise value and performance can make enterprises realize the importance of environmental accounting information disclosure, and encourage enterprises to actively disclose environmental accounting information.

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