

A Study on the Current Situation of Environmental Accounting Information Disclosure of Listed Companies in Pharmaceutical Industry under the Background of "Double Carbon"

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Abstract: *The rapid development of China's economy has been accompanied by the continuous deterioration of the ecological environment, a situation to which all sectors of society have attached great importance. The Twenty Tenth Report has clearly defined the strategic tasks of China's ecological civilization construction in the new era, with the general tone being to promote green development and harmonious coexistence between man and nature. The pharmaceutical industry is one of the heavily polluting industries stipulated by the Ministry of Environmental Protection in China. An analysis of the disclosure of environmental accounting information in the pharmaceutical industry to discover the problems in the disclosure process and make corresponding recommendations is of great significance in promoting green development.*

Keywords: *Environmental accounting; Information disclosure; Pharmaceutical industry*

1. Introduction

In recent years, haze, carbon emissions, green low-carbon and other words frequently appear in the public view, the issue of ecological protection has become a hot issue in society, caused great attention from all walks of life. Environmental problems seriously affect the sustainable development of the economy and society. In this regard, the state is also vigorously improving and implementing various relevant policies and regulations. China will adopt more stringent policies and measures to reach a peak in carbon dioxide emissions by 2030, and strive to achieve carbon neutrality by 2060. It can be seen that China holds a very positive attitude towards protecting the ecological environment [1]. In this context, enterprises must assume and exercise greater responsibility for environmental protection.

At the same time, the pharmaceutical industry is also a heavy pollution industry, and its environmental pollution and protection issues have also attracted the attention of all sectors of society. Among the many tools to control enterprise pollution, the disclosure of environmental accounting information is as effective as command and control, which can effectively limit the environmental pollution of enterprises and improve their awareness of environmental protection and social responsibility [2]. If this kind of enterprises do not take the attitude of having nothing to do with themselves on environmental issues, it will cause serious problems to the ecological environment. It is expected to improve the disclosure quality of disclosure enterprises, avoid environmental risks, make the decision-making of enterprises more scientific, pay attention to the effect of environmental protection work, improve the efficiency of environmental protection work and help achieve the goal of "dual carbon" [3].

2. Review of environmental accounting

2.1. The concept of environmental accounting

Environmental accounting is a new discipline, which combines environmental science and accounting, and uses financial management and professional accounting knowledge to coordinate economic development and environmental protection. It considers that ecological resources are very valuable, assigns monetary value to them, considers various environmental costs, offsets the value of

environmental resources, and ultimately evaluates the economic benefits of enterprises in a more scientific and comprehensive way. It establishes modern and socially responsible enterprises from the micro subjects and enterprises of market economy, encourages enterprises to solve the connection between production development and environmental protection, and finally realizes the sustainable development of society and economy [4].

2.2. Disclosure of environmental accounting information

Environmental accounting information refers to the information elements related to the environment generated in the process of production, operation and management of enterprises. Environmental information disclosure refers to the process that listed enterprises disclose environmental information related to enterprise production and operation to the public in the form of reports in a certain period of time in accordance with relevant laws and regulations. Under normal circumstances, enterprises will disclose their internal environmental and economic management, environmental protection structure and pollution status to the public within a certain period of time according to the prescribed requirements [5].

Researchers at home and abroad generally believe that disclosure of environmental accounting information in the annual financial reports of enterprises is of low quality and less effective information, and advocate the use of independent reports prepared by enterprises to disclose relevant information, focusing on the financial disclosure of monetary measurement [6].

3. The current situation of environmental accounting information disclosure of listed companies in the pharmaceutical industry

3.1. Overview of the pharmaceutical industry

Since 2019, due to the aging phenomenon and the impact of COVID-19 infection, China's pharmaceutical industry has a good development trend, many entrepreneurs have also participated in the construction of the pharmaceutical industry, and the number of pharmaceutical enterprises has shown a growing trend. According to CSMAR, in the three years from 2019 to 2021, the number of pharmaceutical enterprises in China increased from 7392 to 8629, with a year-on-year growth of 17%. Especially since the outbreak of COVID-19, the number of pharmaceutical enterprises increased from 7392 in 2019 to 8170 in 2020, and the number of traditional Chinese medicine enterprises increased by 778 in just one year. With a growth rate of 11%. It can be seen that China's pharmaceutical industry is developing well.

With the continuous growth of the number of enterprises in this industry in China, the related financial data also shows an increasing trend. According to CSMAR, China's pharmaceutical industry achieved a total profit of 318.424 billion yuan in 2019; In 2020, total profits reached 369.34 billion yuan, up 16 percent year on year; And the total profit for 2022 was 643.068 billion yuan, up 74% year on year. It can be seen that the profit of China's pharmaceutical industry has entered a state of steady growth.

3.2. Disclosure status of listed companies in the pharmaceutical industry

3.2.1. Sample selection

According to the industry classification of China Securities Regulatory Commission, this paper selects the pharmaceutical manufacturing enterprises listed on the main board of Shenzhen and Shanghai as samples to conduct statistical analysis on their environmental accounting information disclosure. In the selection of samples, the following aspects are followed: first, according to the industry classification of China Securities Regulatory Commission, the main business of biopharmaceutical, chemical pharmaceutical and pharmaceutical products manufacturing related enterprises are selected; Second, since the annual report of 2022 and other relevant reports have not been issued when this paper is written, the relevant environmental accounting information materials disclosed by enterprises from 2019 to 2021 are selected; Thirdly, the enterprises whose listing date is after January 1, 2019, as well as the enterprises that are ST and the enterprises with abnormal activities are excluded. According to the CSMAR database, a total of 139 enterprises that meet the above conditions are used as sample enterprises

3.3. Current situation of environmental accounting information disclosure of listed companies in the pharmaceutical industry

3.3.1. Disclosure quantity

Environmental accounting information disclosure is an important carrier for enterprises to undertake social responsibility. According to the policy orientation, enterprises need to pay attention to environmental protection while creating economic value. All kinds of polluting enterprises need to consciously disclose their own real environmental information in various ways according to the requirements [7]. In the three years from 2019 to 2021, the disclosure rate of environmental accounting information of 139 sample companies reached 100%. It can be seen that due to the deterioration of environmental problems, some departments of the state have strengthened the attention to environmental protection, and the disclosure of environmental accounting information by enterprises has become a normative requirement.

3.3.2. Disclosure methods

According to the analysis of the disclosure situation of the sample companies, it is understood that the environmental accounting information disclosure of enterprises is mainly through the annual report, the preparation of independent social responsibility report and environmental report [8]. It can be seen from the data that almost such enterprises will disclose relevant information through the annual report. Among the 139 listed pharmaceutical enterprises in 2019, only Kangyuan Pharmaceutical (code: 600557) did not disclose in the annual report, but the enterprise has prepared an independent social responsibility report for disclosure. The disclosure rate of environmental accounting information in the annual reports of 139 listed pharmaceutical enterprises in 2020 and 2021 is 100%.

According to the CSMAR database, only 39 of the 139 sample enterprises disclosed environmental information in their social responsibility reports in 2019, with a disclosure rate of 28%, 42 in 2020 and 49 in 2021, with a disclosure rate of 30% and 35%, respectively. However, from 2019 to 2021, the number of relevant information disclosed by 139 samples through social responsibility reports showed an increasing trend year by year, from 39 in 2019 to 49 in 2021, with an increase of 7%. The overall growth rate is not fast, and the disclosure enterprises are relatively fixed, and there is no great change.

3.3.3. Contents of disclosure

Firstly, Disclosure of environmental management. As shown in Table 1, the enterprise disclosure ratio of each item increases year by year, which shows that more and more enterprises in the industry pay attention to the disclosure of environmental management information. However, except for the environmental protection concept, environmental protection management system and environmental incident emergency response mechanism, the overall disclosure rate of other disclosure items is not high, less than half of the sample number.

Table 1: Disclosure of environmental management in sample enterprises

Contents	2019	2020	2021
Environmental philosophy	50.36%	56.12%	61.15%
Environmental goals	16.55%	15.11%	24.46%
Environmental management system	44.60%	55.40%	56.12%
Environmental education and training	17.27%	17.99%	21.58%
Special actions for environmental protection	14.39%	14.39%	23.74%
Emergency response mechanism for environmental incidents	69.78%	64.03%	69.78%
Environmental honors or awards	20.14%	12.23%	25.18%
Three simultaneous "system	21.58%	22.30%	23.02%

Source: collated according to the CSMAR database

Secondly, Disclosure of environmental liabilities. The disclosure of environmental liabilities mainly

refers to the disclosure of the discharge of several pollutants. Among the 139 sample enterprises, the disclosure quantity of each item of environmental liability disclosure showed an overall growth trend from 2019 to 2021. More than half of the enterprises chose to disclose the wastewater discharge in a qualitative way. The overall disclosure situation was good, and the vast majority of enterprises could voluntarily disclose the wastewater discharge; The other several disclosure methods were mainly quantitative, focusing on the disclosure of emissions. However, the amount of CO₂ emissions and industrial solid waste production is very small, and the increase of the amount of disclosure is small.

Thirdly, Disclosure of environmental investment. Environmental investment mainly relies on quantitative information disclosure, which generally appears in the balance sheet, including sewage treatment costs, environmental protection facilities operation and maintenance costs, environmental protection training investment and other aspects of the cost input. Through the investigation of 139 listed companies in the pharmaceutical industry in terms of environmental investment, it is found that only 10 of 139 enterprises disclosed environmental investment expenses in 2019, 13 disclosed in 2020, and 20 disclosed in 2021. In terms of the number of environmental investment disclosure, although the number of disclosure increases every year, the number of disclosure enterprises is very small.

4. The problems and reasons of environmental accounting information disclosure of listed companies in the pharmaceutical industry

4.1. Problems existing in environmental accounting information disclosure of listed companies in the pharmaceutical industry

4.1.1. The carrier of disclosure is random and the form is single

Among the 139 sample enterprises, some only disclose environmental information through annual reports, some also disclose environmental information through independent social responsibility reports while choosing annual reports. At the same time, a few sample companies voluntarily prepare environmental reports for disclosure, but they prefer to disclose environmental information through annual reports [9]. The carrier of disclosure is also independently controlled by the enterprise itself.

Among the 139 sample enterprises in the study, only 2, 1 and 11 enterprises prepared annual report, social responsibility report and environmental report at the same time from 2019 to 2021, respectively, and no company disclosed in three ways at the same time for three consecutive years. The highest disclosure rate of social responsibility reports prepared separately was only 35%.

4.1.2. The disclosure content is not sufficient and unified

The analysis of the environmental accounting information of 139 enterprises in the sample shows that the content of environmental accounting information mainly focuses on qualitative information, such as the enterprise's environmental protection concept, measures and policies, while the quantitative information is only easy to obtain from the report, such as the government subsidies and the actual existing environmental protection investment. The information about accounting elements such as environmental assets and liabilities is rarely mentioned, let alone the information about the company's environmental performance prediction. The information disclosed is rarely negative, so the content disclosed is incomplete and not of high quality, and the incompleteness and unreliability of such information makes the disclosed information meaningless.

4.1.3. Lack of initiative and low quality of disclosure

The ISO9001 certification can prove that the environmental information disclosure system of the enterprise has certain quality assurance, and the content of the disclosure is more reliable and valuable. ISO14001 certification shows that the enterprise has reached the international environmental management standards, and can ensure that various pollutants in its process, products and activities are controlled according to relevant requirements[10]. Among the 139 sample enterprises, the number of enterprises that passed ISO14001 certification accounted for no more than 30% in each of the three years; The annual proportion of enterprises passing ISO9001 certification in the three years is not more than 18%, and the disclosure of enterprises is relatively fixed. In addition, the independent social responsibility report preparation with reference to GRI "Sustainable Development Reporting Guide" is even fewer enterprises, 139 sample enterprises in 2019 only 10, 2020 12, 2021 19. It can be seen that the quality of environmental accounting information disclosure in the pharmaceutical industry is not considerable, and the utilization value is low.

Among the 139 enterprises, only 2 in 2019, 2 in 2010 and 11 in 2021 prepared independent environmental reports to disclose environmental information. Most of the enterprises only disclosed environmental information through annual reports in accordance with relevant regulations. The content of disclosure is scattered, and it is difficult for investors to collect relevant information.

4.2. Cause analysis of environmental accounting information disclosure problems of listed companies in the pharmaceutical industry

4.2.1. Insufficient demand for environmental accounting information disclosure

Motivation theory holds that social demand is the most fundamental motivation for enterprises to disclose environmental accounting information, especially the demand for green investment or ethical investment, which is a powerful driving force for enterprises to disclose environmental accounting information[11]. Although China pays more and more attention to environmental issues, many rules and regulations on environmental protection have been introduced, which puts more pressure on polluting enterprises to protect the environment. But at this stage, China as a whole is still in the stage of food and clothing, the whole society for environmental accounting disclosure of the social demand is insufficient, the society pays more attention to meet the basic physiological needs of people. In this social atmosphere, both enterprise managers and investors pay more attention to the financial status and ability of enterprises in the process of operating and investing in enterprises, while there is little demand for the performance of environmental protection responsibility of enterprises, which also makes enterprise managers do not pay attention to the disclosure of environmental information, and the disclosure of information is only to meet the requirements of regulations. The disclosure of information is not enough initiative, low quality.

4.2.2. Insufficient disclosure awareness of enterprises

Among the 139 sample enterprises, there are only a few enterprises that have compiled independent environmental reports, which shows that most of the enterprises in China have not established a correct understanding of environmental accounting information disclosure. Most enterprises take profit maximization as the ultimate goal of production and operation. Enterprises will consider every decision from the perspective of profit, and try their best to increase the income of enterprises and reduce the operating cost of enterprises. As far as enterprise managers are concerned, only when the benefits of disclosing environmental accounting information are greater than the costs, enterprises will voluntarily disclose their situation in environmental information[12].

4.2.3. Lack of theoretical research on environmental accounting and related professionals

Although there are also many scholars studying this field in China, they are slow. Environmental accounting is a very comprehensive discipline and difficult to study. China still has no independent research ability, and most of the research draws lessons from foreign predecessors' research, which leads to the immature theoretical system of environmental accounting.

In addition, there are very few professionals in this field in China. At present, in the training of accounting professionals, the vast majority of colleges and universities have not set up relevant majors, and even the relevant courses of environmental accounting are very few. Many accounting students and staff have almost no exposure to the relevant knowledge of environmental accounting.

4.2.4. The relevant laws and regulatory systems are not perfect

Relevant departments in China have issued some documents related to environmental accounting information disclosure to put environmental pressure on polluting enterprises to improve ecological problems. These documents have played a great role in restricting the behavior of environmental pollution of enterprises, but the documents only focus on the measures taken by enterprises to improve environmental pollution, and do not involve the problem of environmental information disclosure. But there is no enterprise disclosure process and content and other aspects of a unified standard[13]. The Ministry of Environmental Protection has also issued some relevant provisions, but although these legal provisions involve environmental information disclosure, they do not force enterprises to disclose environmental information, which makes enterprises have great arbitrariness in the disclosure process and the disclosure system is not standardized.

5. The pharmaceutical industry listed companies environmental accounting information disclosure improvement countermeasures

5.1. Strengthen the publicity of environmental protection and stimulate the demand for environmental information disclosure

By strengthening environmental protection publicity to stimulate social demand and pressure, promoting stakeholders to change their development concepts, dispelling the notion that strengthening environmental protection will negatively impact economic development, and establishing a proper understanding of environmental protection for enterprises, investors, and ordinary residents. The relevant government departments should make full use of modern media, strengthen environmental legislation and publicity and education, strengthen low-carbon development, ethical investment, clean production, green consumption and other social practices, in order to improve the social understanding of environmental problems, form the social atmosphere of the whole society concerned about environmental protection, actively pursue environmental protection, can further improve the social demand for environmental accounting information of enterprises. At the same time, it will bring strong social pressure to listed companies and promote them to publish effective environmental accounting information, so as to improve the quality of environmental accounting information disclosure[14].

5.2. Improve the initiative of enterprise information disclosure

The pharmaceutical industry enterprises can spontaneously set up a special environmental information disclosure organization, through which the environmental information disclosure regulations suitable for the pharmaceutical industry can be formulated through consultation, and the enterprises can supervise the disclosure of each other. At the same time, certain reward and punishment systems can be set up through the organization to reward the enterprises with high disclosure quality and timely disclosure, and to punish the enterprises with negative disclosure.

Government departments can set up an annual evaluation activity, develop detailed scoring standards, and select enterprises with positive performance in environmental information disclosure within a year, comprehensive disclosure and high disclosure quality for public reward. For these enterprises, tax incentives can be given to make up for the cost of environmental investment, and encourage more enterprises to pay more attention to the quality of disclosure.

5.3. We should strengthen the training of professionals in the field of environmental accounting

Enterprises should strengthen the training of environmental accounting knowledge for accounting personnel, organize relevant knowledge training regularly, and strengthen the communication and learning with the Ministry of Environmental Protection, requiring financial personnel to not only master solid financial knowledge but also improve the grasp of environmental knowledge[15]. At the same time, assign special personnel to be responsible for environmental accounting work, set up independent environmental accounting posts to ensure the independence of environmental accounting; Secondly, enterprises should strictly restrict the recruitment of accounting personnel, and take the mastery of environmental accounting knowledge as an important aspect of investigation.

At the national level, the government should strengthen the training of environmental accounting professionals, set up a special talent training program, and use various educational forms and means to teach knowledge to the educational objects as a social practice[16]. At the same time, encourage colleges and universities to set up environmental accounting major and set up related supporting courses, so as to send theoretical knowledge into colleges and universities.

5.4. Improve the environmental accounting information disclosure related laws and regulations, strengthen supervision

The relevant government departments should strengthen and improve the relevant laws and regulations, formulate a comprehensive and specific information disclosure rules, mandatory enterprises according to the rules for unified disclosure; Secondly, when formulating the detailed rules, the characteristics of each industry and region should be fully considered, and the detailed rules in line with the characteristics of the industry should be formulated; In addition, the time, content and form of environmental information disclosure should be standardized, and a unified environmental accounting information disclosure platform should be established. Environmental accounting information

disclosure in various industries should be in the same position to prevent information dispersion and facilitate unified supervision[17].

Enterprises should establish special environmental protection departments and financial departments to cooperate to complete the environmental accounting disclosure work; Secondly, the government and relevant departments, such as environmental protection departments, China Securities Regulatory Commission and other departments need to set up a special environmental information supervision organization, formulate a set of perfect environmental accounting information disclosure system, regularly and irregularly on the enterprise environmental information disclosure, including the authenticity and integrity of the disclosure content of the inspection, do a good job in the reward and punishment work [18]; At the same time, enterprises can also strengthen the employment of independent social and environmental auditors, strengthen the existing independent organizations, to provide objective, fair and independent opinions for environmental audit[19].

6. Conclusions

Based on the analysis of the current situation of environmental accounting information disclosure of 139 listed companies in the pharmaceutical industry, we know that there are some problems in the process of environmental accounting information disclosure of pharmaceutical supply companies, such as random choice of disclosure carrier, single form, insufficient and ununified disclosure content, lack of initiative in disclosure, and low quality of disclosure. These problems lead to the reliability and integrity of disclosure information can not be guaranteed. It is suggested that government departments, enterprises themselves and stakeholders strengthen cooperation, through strengthening environmental protection publicity, stimulate the demand for environmental information disclosure, improve the initiative of enterprise information disclosure, strengthen the training of environmental accounting professionals, and improve the laws and regulations of environmental information disclosure, strengthening supervision and other measures to effectively enhance the quality of environmental accounting information disclosure in the pharmaceutical industry, and accelerating the realization of green development.

Acknowledgements

This paper is the research result of the 2023 Graduate Scientific Research Start-up Fund project of the School of Economics and Management of Guangxi Normal University. Project No.: JGYJSKY202312.

References

- [1] Shen, J., & Li, J. (2022). *The impact of environmental accounting information disclosure quality on corporate value under the 'Dual Carbon' targets: An empirical analysis based on power companies*. *Wuhan Finance*, 268(04), 55-63.
- [2] Qiao, Y., & Wu, X. (2020). *The enlightenment from foreign corporate environmental accounting information disclosure to China: A perspective based on institutional escalation*. *Environmental Protection*, 48(14), 67-73.
- [3] Xu, R. (2021). *Research on environmental accounting information disclosure issues of listed companies: Taking the pharmaceutical industry as an example*. *Modern Business Trade Industry*, 42(25), 87-89.
- [4] You, X. (2018). *Design of corporate environmental accounting information disclosure model under the low-carbon economy perspective*. *Finance & Accounting Communication*, (780)16, 11-14.
- [5] Liu, C., Jie, Y., Wang, X., et al. (2018). *Investigation and economic consequences analysis of environmental accounting information disclosure of listed companies: A case study of heavily polluted industries*. *Finance & Accounting Communication*, (789)25, 15-19.
- [6] Wang, M., & Zhang, G. (2022). *Study on environmental accounting information disclosure of listed pharmaceutical companies: A case study of Lukang Pharmaceutical*. *Green Finance and Accounting*, (426)12, 13-16.
- [7] Yu, P. (2006). *Disclosing environmental information to fulfill corporate social responsibility*. *Green China*, (21), 58-61.

- [8] Liu, M., Jin, J., Yu, H., et al. (2021). Carbon information disclosure study of listed companies in the electric power industry under carbon trading pilot. *Finance & Accounting Communication*, (863)03, 92-97.
- [9] Liu, W., & An, Q. (2021). Survey and suggestions on environmental accounting information disclosure of nonferrous metals enterprises. *Finance and Accounting*, (639)15, 77-78.
- [10] Wang, F., He, J., & Sun, W. (2021). Command-and-control environmental regulations, ISO14001 certification, and corporate green innovation: Based on the quasi-natural experiment of 'Ambient Air Quality Standards (2012)'. *China Soft Science*, (369)09, 105-118.
- [11] Liu, J. (2016). Research on the status quo and countermeasures of environmental accounting information disclosure of listed companies: A case study of listed companies in Sichuan Province. *Finance & Accounting Communication*, (16), 8-12.
- [12] Cao, Z., & Wang, L. (2004). Institutional arrangements for environmental accounting information disclosure. *Journal of Central South Forestry University*, (06), 52-56.
- [13] Bao, H. (2019). Research on environmental accounting information disclosure issues in Shanxi coal industry. *Green Finance and Accounting*, (7), 50-56.
- [14] Geng, J. (2012). Analysis on the current situation of environmental accounting information disclosure of listed companies. *Knowledge Economy*, (6), 132-133.
- [15] Ku, X. (2023). Research on green accounting information disclosure issues in China under the background of low-carbon economy: A review of 'Research on Environmental Accounting Issues'. *Ecological Economy*, 39(03), 230-231.
- [16] Yang, Q. (2021). Discussion on the environmental accounting information disclosure process design of listed pharmaceutical companies. *Finance & Accounting Communication*, (869)09, 123-127.
- [17] Jiang, H. (2016). Discussion on environmental accounting information disclosure of listed companies in Fujian Province. *Journal of Changchun University of Science and Technology (Social Science Edition)*, (2), 94-97, 103.
- [18] Li, S. (2016). Issues and countermeasures of social responsibility information disclosure of GEM listed companies: A case study of Shandong Province. *Consumer Guide*, (4), 121.
- [19] Lai, H. (2016). Comparison and reference of environmental accounting information disclosure between China and Japan based on environmental reports: A case study of Toshiba Group and Haier Group. *Accountant's Monthly*, (755)07, 78-81.