



Based on Index Model Analysis Technology to Explore the Impact of Environmental Accounting Information Disclosure on Financial Performance

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Abstract. With the stable development of China's market economic environment, in recent years, the information users of listed companies are paying more and more attention to the information disclosure of enterprises. In the analysis of the effect of environmental accounting information disclosure of listed companies, the index model technology should be used to grasp the actual impact of environmental accounting information disclosure on financial performance. In the actual research, it is necessary to make full use of information technology and computer technology, and focus on relevant data models. In this way, we can grasp the influence mechanism of environmental accounting information disclosure on enterprise financial performance. In addition, it is necessary to take the disclosure of environmental accounting information as the basis to deeply explore the relationship between information disclosure and different performance indicators in the development of enterprises. We also need to build a regression model to carry out validation. It is very important to understand the specific impact of environmental accounting information disclosure on the asset-liability ratio, main business growth rate, company size and comprehensive financial performance of listed companies.

Keywords: Listed Company · Accounting Information Disclosure · Financial Performance · Influencing Factors

1 Introduction

In the process of China's traditional economic development, it is mainly based on extensive and high consumption economic structure, which will not only produce great pollution to the ecological environment, but also produce certain restrictions to the long-term sustainable development of society. In particular, iron and steel, paper industry and other industries with a relatively high degree of pollution, coupled with the scale of these enterprises themselves is relatively large, which is an indispensable industry type in social and economic development. In order to promote the sustainable development of these enterprises, it is necessary to require enterprises to disclose environmental information as much as possible according to China's scientific concept of development and

related strategies of ecological civilization construction, so that the public and enterprise information users can assess the performance of enterprise operation and development scientifically. And environmental accounting information disclosure is also conducive to investors and creditors to invest and credit.

2 Environmental Accounting and Enterprise Financial Performance Concept

Environmental accounting is also green accounting. In specific work, it is necessary to accurately calculate the environmental pollution and prevention costs according to relevant laws and regulations. The unit of measurement of environmental accounting is currency. In addition, in the operation of environmental accounting, but also need to maintain the development of the environment and produce a variety of benefits for scientific and reasonable measurement. The main elements of environmental accounting are environmental assets, environmental liabilities and environmental income, which can reflect the performance of Huaning in enterprise operation and the actual impact of ecological environmental protection measures taken by enterprises in business operation. Environmental accounting is an emerging discipline, which involves a lot of professional content. It needs to integrate accounting and environmental economics, make use of scientific and reasonable cost management and the improvement of social efficiency, and promote the common development between environmental protection work of enterprises and economic activities [5].

Corporate financial performance is the management effect of cost control, asset utilization, capital allocation and return on shareholders' equity in the process of enterprise production and operation. In the specific analysis, it mainly discusses whether the relevant decisions and strategies of the enterprise can contribute to the final financial performance of the enterprise after the deployment of the company and the implementation of various programs.

3 Environmental Accounting Information Disclosure Content

In the development of listed companies, carrying out effective and reasonable environmental accounting information disclosure is conducive to scientific evaluation of the company's social responsibility. At the same time, external investors and creditors can also grasp the relevant information of the enterprise and provide detailed information for external information users. At present, China's main requirements for environmental accounting information disclosure of listed companies include the following aspects:

First, environmental assets. Environment-related transactions or events that have taken place that are ultimately owned or controlled by the enterprise. In addition, in the process of environmental assets disclosure, it is necessary to disclose resources such as environmental interests and economic benefits that may be created for enterprises in the future.

Second, environmental liabilities. Refers to the liabilities generated in the transactions or events related to environmental protection that have taken place in the enterprise. It is necessary to ensure that the environmental liabilities are in accordance with

the recognition standards of liabilities in accounting. In addition, it is necessary to predict the liabilities related to the operating cost of the enterprise which may reduce the economic and environmental benefits of the enterprise. When recognizing an environmental liability, it is necessary to ensure that the liability is a current obligation that the enterprise should assume, and that the transaction or event leading to the liability has occurred or is likely to occur. In addition, the liquidation of environmental liabilities should be expected to lead to adverse effects on the environmental benefits of enterprises and economic interests.

Third, environmental rights and interests. Refers to the owner's residual equity in environmental net assets after deducting liabilities during the development of the enterprise. It mainly includes the environmental capital reserve invested by the owner, the interests and losses that can be directly included in the environmental rights and interests, the environmental surplus reserve fund and the environmental profits that have not been distributed, etc.

Fourth, environmental revenue and environmental costs. In the process of environmental accounting information disclosure, environmental income and environmental expenses are important information content that can not be ignored. Environmental income mainly refers to the relevant income obtained from the green production and environmental governance activities taken by enterprises during the process of carrying out environmental protection. Although the implementation of green production or environmental governance will lead to an increase in the budget during the production development of the enterprise, economic benefits unrelated to the capital invested by the owner may flow into the enterprise after the implementation of green production and environmental governance measures. Specific include the environmental protection subsidy that the country gives, bonus, environmental protection tax reduction, pollution equipment recycling and utilization, three waste income and other departments or the environmental protection penalty that the enterprise pays or environmental protection compensation. The cost of environmental protection refers to the cost incurred by adopting various green production and environmental governance measures in the process of continuous operation. In the measurement of environmental costs, we should start from the pollution prevention and control costs, as well as environmental fines and other aspects to ensure the comprehensiveness and accuracy of environmental protection costs. It should be noted that in the process of enterprise development, there may be some environmental protection costs can not be accurately measured. When these environmental costs are measured, shadow pricing can be used to complete the measurement work. That is, the total benefits or costs generated in the assumed environment of an area of the same size and with similar ecological functions as the actual environment. Based on this, the environmental cost of a certain subject is calculated accurately.

Fifth, environmental profits. The main purpose of environmental profit is to calculate the environmental management results obtained by enterprises in green production and environmental pollution prevention and control. It can be measured by currency, which mainly shows the specific profits of enterprises in environmental economy. Profit is equal to revenue minus expenses. In the calculation of environmental profit, we need to use environmental revenue minus environmental expenses. Generally, when accounting and confirming environmental profits, the substitution method or direct deduction method can

be used to measure them. In order to ensure the reliability of profit accounting results, the actual material capital income should be deducted from the consumed material cost and the consumed cost of natural resources. In addition, to accurately measure the environmental profit of resource products, in the specific measurement work, it is mainly according to the sales revenue of the product minus the increased transfer value and the profit of resource products to calculate, to ensure the reliability of the measurement results of environmental profit of resource products. It should be noted that when calculating the increased transfer value, it is the average social transfer value [3].

4 The Impact of Environmental Accounting Information Disclosure on the Operation and Development of Enterprises

When analyzing the impact of environmental accounting information disclosure on enterprise financial performance, we should start from the following aspects: First, we should start from the perspective of government pressure. At present, the problem of ecological environmental pollution is quite serious in our country. Besides participating in the market economy, the government is also the main department to supervise the market economy. In the process of market economy development, the main functions of government are regulation, advocacy, coordination and management. The government needs to help and support the enterprises to play the role of advocacy and coordination. It can regulate and manage various behaviors of enterprises in the process of development. In the process of natural environmental protection, we must start from the perspective of pressure and advocacy, focus on the heavy polluting industries, use the relevant laws and regulations of our country to carry out law enforcement, and make the information of the heavy polluting industries public. At the same time, it is necessary to promote the application and optimization of environmental governance and green production measures in heavy polluting industries, so as to generate external pressure on enterprises. In this case, the government needs to strengthen the environmental accounting information disclosure of enterprises to carry out strict constraints and correct guidance. In addition, compensation or preferential policies should be given to some polluting enterprises that meet the relevant regulations in China, so as to effectively guide and supervise heavy polluting enterprises, which will help improve the level of ecological environmental protection of enterprises and enhance the awareness of pollution prevention and control of enterprises. Second, it is analyzed from the perspective of resource balance. Because the resources used in the process of economic development are limited, in order to pursue profit maximization, enterprises will take various measures to reduce their operating costs, and assume environmental responsibilities and fulfill social responsibilities, which will lead to the increase of operating costs of enterprises and damage the economic interests required by shareholders. To some extent, this will have a negative impact on the financial performance evaluation of enterprises. Therefore, in the development process of most enterprises, shareholders are more inclined to assume no responsibility or less responsibility. Therefore, enterprises must make trade-offs among different stakeholders.

5 The Impact Mechanism of Environmental Accounting Information Disclosure on Financial Performance

At present, in the development process of listed enterprises in China, the level of environmental accounting information disclosure is an important content for enterprises to fulfill their social responsibility and ecological environmental protection responsibility. However, the disclosure of environmental accounting information will affect the stakeholders of enterprises to a certain extent. This will lead to some enterprises environmental accounting information disclosure content is not perfect. Especially at present, China has not issued a comprehensive policy system environment, accounting information disclosure system is not mature, leading to some enterprises in the information disclosure work in the form of the problem, mainly in order to meet the national policy requirements, rather than voluntarily to disclose. Therefore, at present, under the influence mechanism of environmental accounting information disclosure, the main problems existing in the development process of enterprises include the following: First, the relevant mechanism is not standard and unified. In the development process of listed companies in China, relevant government departments have not formulated a unified form of environmental information disclosure. Only according to the relevant theories of environmental accounting information disclosure to manage and guide the listed companies, the company in carrying out information disclosure work, relatively strong arbitrariness. Most environmental accounting information disclosure is qualitative, not quantitative disclosure in the way of financial accounting. In addition, there is no unified form of information disclosure on heavy polluting industries in China, which leads to the problems of complex contents and poor comparability in the disclosure of environmental accounting information of many listed companies. Second, there is no perfect and scientific accounting standards and guidance. In China, there is no comprehensive and perfect system standard for environmental accounting measurement, and many accountants have strong subjectivity when carrying out accounting information disclosure and measurement work, which affects the authenticity and correctness of the environmental accounting information disclosed. Third, accounting professional ability level is not high. Accounting practitioners in the development of enterprise finance and accounting work, the participation of environmental accounting is relatively low. In particular, some accounting personnel have not participated in professional training, can not correctly understand the importance of environmental accounting information disclosure, and do not fully grasp the standards and requirements of information disclosure, which will lead to information disclosure is not standard, non-standard situation. Some enterprises even believe that the disclosure of environmental accounting information will hinder the development of enterprises and cannot effectively carry out the disclosure work [6].

6 Empirical Research

In order to more accurately grasp the actual impact of environmental accounting information disclosure on financial performance in the process of enterprise development, a listed iron and steel enterprise is taken as the main research object. Before the empirical study, the following assumptions are put forward: (1) the higher the level of environmental

accounting information disclosure, the higher the level of profit; (2) The asset-liability ratio increases with the increase of environmental accounting information disclosure level; (3) Under the background of the increasing level of environmental accounting information disclosure, the growth rate of the company's main business income will also increase; (4) The higher the level of accounting information disclosure, the larger the scale of listed companies; (5) The more comprehensive and full the information disclosed, the better the financial performance of the listed company is [1].

6.1 Sample Selection

In the process of this research, the listed companies in the steel field are mainly taken as the research object, and 49 samples are selected to obtain relevant data. The data in this study mainly come from Shanghai Stock Exchange, Shenzhen Stock Exchange and Juchao Information Network. The actual sources of environmental accounting information disclosure are prospectuses of listed companies, annual reports of the board of directors, notes to statements, reports of the board of supervisors and related websites, newspapers and magazines. The financial performance indicators of listed companies are mainly obtained from the Sina financial network. In this study, statistical software spss 19.0 was used to complete the data analysis. In the actual research, the assignment should be set according to the specific disclosure content, as shown in Table 1. The calculation formula of Environmental Accounting Information Disclosure Index (EDI) is as follows:

$$EDI_i = \frac{\sum_{j=1}^9 EDI_j}{23}$$

6.2 Index Analysis

In the actual study, 245 observed values need to be counted. With the continuous development of enterprises, their environmental accounting disclosure level is constantly improving. The initial environmental disclosure index is 0.317 on average. The average index of environmental accounting information disclosure of listed companies in the latest year is 0.2. It can be judged that with the continuous development of listed companies, the level of environmental accounting information disclosure is getting higher and higher. However, a comprehensive discussion on the actual situation of information disclosure shows that the level of environmental accounting information disclosure of Listed Companies in China is not high. Many enterprises do not attach importance to information disclosure, and only complete it as a formal task. In addition, China has not formulated a perfect standard of information disclosure, which affects the level of environmental accounting information disclosure in China. Analysis of the information disclosure index shows that the highest index is 0.5 and the lowest index is 0. The highest rate of return on net assets is 47.21% and the lowest rate of return is -28.25% in the process of operation. The highest asset-liability ratio was 87% and the lowest was 0. The highest growth rate of main business revenue was 657%, and the lowest was -41.16%;

Table 1. Assignment table of environmental accounting information disclosure index of listed companies

Serial number	Content	Assignment score
1	The company's environmental protection measures, annual environmental protection targets and effects	1
2	Total annual resource consumption of the company	3
3	Company environmental protection investment and environmental protection technology development	3
4	The type, concentration, quantity and method of the pollutants discharged by the company	3
5	Operating level of environmental protection facilities of the company	3
6	Company production of waste treatment, recycling level of waste	3
7	The environmental improvement agreement signed by the company and the environmental protection department	2
8	The company received awards from government departments	2
9	Environmental information voluntarily disclosed by the company	3

The highest ending assets are 26.17 and the lowest is 18.04. In the in-depth study, it is necessary to clarify the specific impact of environmental accounting information disclosure on enterprise financial performance and the degree of impact on different indicators. In the research, the five hypotheses proposed can be taken as the verification and analysis objects. In the actual research, the environmental information disclosure index should be set as the independent variable. Return on equity, asset-liability ratio, growth rate of main business income and logarithm of total assets at the end of the period are assumed as dependent variables. The following models can be built:

$$\text{Return on net assets} = \alpha_1 + \beta_1 EDI + \varepsilon_1$$

$$\text{Asset - liability ratio} = \alpha_2 + \beta_2 EDI + \varepsilon_2$$

$$\text{Growth rate of main operating income} = \alpha_3 + \beta_3 EDI + \varepsilon_3$$

$$\text{Total logarithm of ending assets} = \alpha_4 + \beta_4 EDI + \varepsilon_4$$

In model analysis, $\alpha_1, \alpha_2, \alpha_3, \alpha_4$ denotes the constant quantity which has nothing to do with various factors; $\beta_1, \beta_2, \beta_3, \beta_4$ represents the regression coefficients of the four models, which can be applied as explanatory variables. A change in the explained variable caused by a change in one unit; ε is the random disturbance term.

6.3 Model Analysis Results

Calculating and analyzing the index model can accurately calculate the relationship between the environmental information disclosure index and financial performance indicators. Through calculation, it can be determined that the environmental information disclosure index is most closely related to the total assets at the end of the period, and the correlation degree is 0.408. Relatively disclosed, the correlation degree is 0.258 and 0.148, respectively, with the asset-liability ratio and return on equity. Because the correlation coefficients between the different variables are small. Therefore, it is not necessary to analyze the influence of multicollinearity in practical research.

After that, statistical software is needed to complete data regression analysis and variance analysis, and finally the hypothesis can be demonstrated. The specific verification results are as follows: (1) In the development and operation of the boss company, the correlation coefficient between ROE and environmental accounting information disclosure index is 0.148, and the significance value is above 0.1. This result shows that the return on equity of the company has a positive correlation with the environmental accounting disclosure index. However, this conclusion does not verify the conclusion that the higher the level of environmental disclosure, the higher the level of profitability. (2) The correlation coefficient between asset-liability ratio and environmental accounting information is 0.258, and the significance is 0. It indicates that there is a positive correlation between asset-liability ratio and environmental accounting information disclosure index. The higher the level of environmental accounting information disclosure of listed companies, the higher the asset-liability ratio of listed companies. Hypothesis 2 is verified. (3) The growth rate of information disclosure index and main business income is 0.105, and the significance is 0. This indicates that the relationship between the company's main business income and the accounting information disclosure index is positive, and the improvement of the company's environmental accounting information disclosure level can improve the company's overall profit level. (4) The correlation coefficient between the enterprise's total assets and environmental accounting information is 0.408, and the significance is 0. It shows that the higher the level of environmental accounting information disclosure, the larger the size of the enterprise, and there is a positive correlation between the two. (5) In the principal component analysis, the growth rate of main business income is mainly taken as the main parameter to measure the financial performance of an enterprise. Because the higher the level of environmental accounting information disclosure, the higher the growth rate of the enterprise's main business income. Therefore, it can be shown that the more full and comprehensive environmental information disclosed by listed companies, the better their comprehensive financial performance will be. Hypothesis 5 can be verified Wu [2].

7 Conclusion

To sum up, in the development of China's listed enterprises, we need to carry out environmental accounting information disclosure according to the actual situation of enterprises, and improve the awareness and ability of enterprises to fulfill their environmental responsibility and social responsibility. At the same time, in order to promote the long-term development of listed companies, it is necessary to formulate a scientific and reasonable

information disclosure mechanism according to the environmental accounting information disclosure of enterprises. It is necessary to carry out the environmental accounting information disclosure work from the specific impact, ensure the comprehensiveness and authenticity of the content, improve the environmental accounting information disclosure efficiency of listed companies, and enhance the management and development level of enterprises.

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