Study on the Impact of the Quality of Corporate Environmental Responsibility Information Disclosure under the Environmental Audit Model

-- Based on Empirical Data of Listed Chemical Companies in Mainland China

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Abstract

Using the environmental audit model as a perspective, this paper selects mainland chemical listed companies as a sample to explore the factors influencing the quality of environmental responsibility information disclosure of mainland chemical companies from the dimension of internal factors. The conclusion shows that, based on factors internal to chemical companies, public concern about the financial performance of chemical companies under the environmental audit model is correlated with the quality of environmental responsibility information disclosure by chemical companies, but the positive and negative cannot be judged. Based on this finding, the author puts forward corresponding countermeasure suggestions in order to further improve the quality of environmental liability information disclosure.

Keywords

Internal Factors; Environmental Information; Disclosure Quality.

1. Introduction

Disclosure of environmental responsibility information is an important part of environmental auditing. Unlike traditional auditing models that focus on economic efficiency and ignore the extent to which companies rely on the state of their resources, environmental auditing focuses more on the extent to which companies disclose information about their ecological and environmental impacts. High quality disclosure of environmental responsibility information can align a company's public image with the growing social awareness of environmental protection and have a positive impact on the long-term performance and value of the company.

Scholars' views on the main factors influencing the quality of environmental responsibility information disclosure can be broadly categorised as 'external factors' and 'internal factors', with the relevant institutional constraints and requirements and public concern being external factors, and the attributes and internal factors. In contrast, there is little research on the impact of internal factors on improving the quality of corporate environmental responsibility disclosure.

This paper attempts to explore the factors influencing the quality of environmental responsibility information disclosure based on the perspective of environmental auditing model, and analyses the influence of the dimension of "internal factors" on the quality of environmental responsibility information disclosure by selecting mainland listed chemical companies as a sample, with a view to improving the quality of environmental responsibility information disclosure and providing useful experience for improving the quality of audit

information in heavy pollution industries. The study aims to improve the quality of environmental liability information disclosure and to provide useful experiences for improving the quality of audit information in the heavy pollution industry.

2. Theoretical Analysis and Research Hypothesis

Chemical companies in heavily polluting industries have a significant impact on the ecological environment in their production and operation activities and are the focus of public attention. Therefore, when an auditor conducts an environmental audit, the pressure on the environmental "legitimacy" of the chemical companies in the audited area will increase, and the financial performance of the chemical companies will be significantly more concerned. In this context, companies tend to make proactive strategic decisions based on maximising economic profitability, and to distract attention from financial performance by disclosing environmental information that is consistent with their ecological values in order to create a positive public image and gain acceptance.

Therefore, this paper argues that public attention to the financial performance of chemical companies under the environmental audit model is an important perspective to study the quality of environmental responsibility information disclosure by chemical companies. As attention cannot be specifically measured, this paper hypothesises that there is a correlation between the financial performance of chemical enterprises and the quality of environmental responsibility information disclosure under the government environmental audit model.

H: The worse the performance of chemical companies under the environmental audit
model, the higher the quality of environmental liability disclosure.   (1)

3. Research Design

3.1. Sample Selection and Data Sources

This paper examines the impact of corporate financial performance on the quality of environmental responsibility disclosure.The 300 chemical companies listed in mainland China from 2014 to 2018 were selected, and the data of their financial performance indicators were derived by collecting the public annual financial reports of these 300 companies, which were subjectively scored and assessed by the author. The data were also divided into five grades based on the assessment results, of which: 80-100 were graded as A, 60-79 as B, 50-60 as C, 0-50 as D and 0 and below as E. On the basis of excluding missing data, the rating results of the quality of environmental information disclosure were collated, resulting in a total of 1489 results.The specific ratings are shown below, see Table 1.

Table 1. Distribution of the number of copies of environmental responsibility disclosure ratings of mainland listed chemical companies, 2014-2018

Rating X	Ratings	Number of copies
$X \geq 80$	A	2
$60 \leq X < 79$	B	39
$50 \leq X < 60$	C	25
$0 \leq X < 50$	D	1388
$X < 0$	E	35

3.2. Selection of Variables and Determination of Indicators

3.2.1. Explanatory Variables: Quality of Corporate Environmental Responsibility Information Disclosure

In this paper, the quality of environmental information disclosed by listed companies in mainland China is evaluated in five grades, namely A, B, C, D and E, using the rating results of the corporate environmental information disclosure quality responsibility report provided by the Hexun database of social authority ratings as a specific measurement indicator.

3.2.2. Explanatory Variables: Corporate Financial Performance

Financial performance is a composite indicator of whether a firm's strategy and its implementation and execution are contributing to its ultimate operating performance, and it is usually composed of four components: profitability, solvency, operating capacity and growth capacity. In this paper, a total of ten indicators contained within these four components are selected to reflect the financial performance of an enterprise in a comprehensive manner, see Table 2.

Table 2. Corporate financial performance evaluation indicators

Consolidated Indicators	Specific indicators
Profitability	Return on Total Assets, Return on Net Assets, Earnings per Share
Solvency	Short-term solvency
Operating Capacity	Inventory turnover rate, accounts receivable turnover rate, accounts receivable recovery rate
Operating Capacity	Operating revenue growth rate, total assets growth rate, net profit growth rate

3.2.3. Control Variables

The explanatory variable in this paper is the quality of environmental information disclosure, which can be influenced by many factors. Based on existing research results at home and abroad, this paper selects the degree of indebtedness and the type of auditor as control variables.

The degree of indebtedness is one of the specific manifestations of financial leverage of listed companies, which reflects the proportion of total liabilities to total assets of the company. Based on the debt contract formed between debtors and creditors, managers are more inclined to hide the unfavourable side of audit information disclosure from the outside world. The difference in the type of auditing institution also affects the quality of environmental information disclosure by companies. According to the type of auditing institution of listed companies in the integrated chemical industry, a dummy variable is used to conduct the study, which is assigned a value of 1 if the domestic accounting firm issuing the audit opinion is one of the four largest accounting firms in the world, and 0 otherwise.

3.3. Model Construction

This section examines the influence of corporate financial performance on the quality of corporate environmental responsibility information disclosure, verifies the relationship between financial performance and the quality of environmental responsibility information disclosure, and selects financial performance, degree of indebtedness, and type of auditor as explanatory variables to build the following regression model.

$$Qeaji = \partial_1 + \partial_2 \sum CP_{ji} + \partial_3 DA_{ji} + \partial_4 LE_{ji} + \varepsilon \tag{2}$$

Where Q_{eaji} represents the quality of environmental responsibility disclosure of firm j in year i, ∂_1 is a constant term, CP is the financial performance of the firm and denotes the correlation coefficient, DA_{ji} represents the type of auditor of control variable j firm in year i, LE_{ji} represents the degree of indebtedness of control variable j firm in year i and ε is a random variable.

3.4. Empirical Tests and Analysis of Results

Firstly, empirical tests should be conducted on the data of listed chemical companies in mainland China. Before the regression, attention should also be paid to the smoothness test of the panel data to prevent the phenomenon of "spurious regression". The unit root test for panel data is different from the unit root test for time series data, therefore, the LLC test, IPS test and Fisher-PP test are used to test the unit root of the panel data. The test results show that the first-order differences are smooth, which implies that each series is a first-order single integer series, while the panel unit root of each variable is a first-order single integer which in turn indicates that there is likely to be a cointegration relationship between these variables.

Next, we proceed to determine whether there is cointegration between these variables. In this paper, a two-step EG test is used, the exact steps of which are not shown for space reasons, and the results confirm the existence of a cointegration relationship between financial performance and the quality of corporate environmental responsibility disclosure. The GLS method (cross-sectional SUR) was used to estimate the form of the coefficients of the variables according to the model type setting test. The intercept term was included in the middle part of the model as it was not significant, see Table 3.

Table 3. Estimated results of financial performance coefficients for listed mainland chemical companies

Variable Name	Coefficient estimation results (∂)	Variable Name	Coefficient estimation results (∂)
Total net asset margin ROA	0.032 (-2.29)	Total Asset Turnover Ratio AT	0.75 (5.17)
Return on net assets ROE	-0.0023 (2.85)	Operating income RGR	-0.10 (-4.73)
Earnings per share EPS	-0.128 (-0.95)	Total Assets AGR	0.0008 (0.19)
Current Ratio LR	-0.26 (-1.17)	Net Profit PGR	-7.33 (1.13)
Accounts Receivable Turnover Ratio RT	7.58 (5.87)	Audit Unit DA	0.13 (0.44)
Inventory turnover ratio IT	-0.025 (-1.15)	Gearing Ratio LE	0.012 (2.52)

The table above shows that the relationship between the financial performance of listed chemical companies in mainland China on the disclosure of corporate environmental responsibility information cannot be judged in terms of positive and negative terms, but does have a relationship on the quality of their disclosure in terms of sub-items. The relationship between the audit units of listed chemical companies and their disclosure quality did not pass the statistical test; there is a positive relationship between the balance sheet ratio on the quality of disclosure.

4. Main Research Findings and Recommendations

This paper takes the environmental audit model as the entry point, based on empirical data of mainland listed chemical companies, and conducts an empirical study on the impact between environmental audit and the quality of corporate environmental responsibility information disclosure. The study finds that: the public's concern about the financial performance of chemical companies under the environmental audit model is correlated with the quality of environmental responsibility information disclosure of chemical companies, but the positive and negative cannot be judged. Based on the above study, suggestions for countermeasures to further improve the quality of environmental responsibility information disclosure under the audit model are put forward: a collaborative policy guidance system should be strengthened, the government's command and control policy should be enhanced, and more specific targets or standards for environmental responsibility information disclosure should be formulated so that they can be quantitatively assessed to a certain extent, thus giving enterprises a clear reference standard.

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