THE INFLUENCE OF FIRM KNOWLEDGE CHARACTERISTICS ON TECHNOLOGICAL INNOVATION: A MULTILEVEL NETWORK STRUCTURE PERSPECTIVE

Jianwei Jiao
Jie Hu
Dhurakij Pundit University, Bangkok, Thailand

As a necessary informal system, media attention plays a supervisory role in the implementation of formal systems such as environmental regulations, which is an important force to enhance enterprises' green technology innovation. This paper takes listed companies in heavily polluting industries in China's A-share market as the research object, selects data from 2008 to 2017, and establishes a hierarchical regression model to explore the influence of media attention and environmental regulation on enterprises' green technology innovation. The results show: (1) there is a significant positive correlation between media attention and green technology innovation; (2) command-based and market-based environmental regulations positively regulate the relationship between media attention and green technology innovation for enterprises. This paper argues that media attention plays a role in external supervision and governance, stimulating enterprises' green technology innovation behavior. Therefore, we should actively utilize media attention in corporate environmental governance and gradually strengthen both command-based and market-based environmental regulations.

Keywords: media attention; Green technology innovation; environmental regulation

Jianwei Jiao
Researcher, College of Innovation Business and Accountancy, Dhurakij Pundit University, Bangkok, Thailand
Research interests: mass media, ICT, innovative management
E-mail: jwj2021@163.com

Jie Hu
Researcher, College of Innovation Business and Accountancy, Dhurakij Pundit University, Bangkok, Thailand
Research interests: ecological management, green innovations
E-mail: jwj2021@163.com
THE INFLUENCE OF FIRM KNOWLEDGE

Introduction

As China's environmental problems continue to worsen and gain attention from both domestic and international media, companies are facing increasing pressure to protect the environment. Media attention serves as an informal system that supervises the implementation of formal systems, such as environmental regulations, and helps overcome the deficiencies of legal systems in emerging economies (Dyck et al., 2008).

The involvement of media and other environmental pressure groups in monitoring corporate environmental behavior encourages enterprises to actively address environmental issues (Schaltegger et al., 2003). To gain favorable public opinion and create a positive corporate image, many companies are turning to green technology innovation as a means to publicize and achieve sustainable development (Li & Ling, 2020).

For example, in 2010, news outlets exposed environmental pollution problems in the Xinjiang Tianye Group. As a result, the company faced punishment from the local government and public condemnation.

However, these news reports also triggered a wave of green innovation within the Tianye Group. In recent years, the company has developed, implemented, and promoted green technologies such as water-saving drip irrigation and clean PVC production. Thus, it can be concluded that media attention played a significant role in promoting green technology innovation within the Tianye Group.

Compared to formal systems, the informal system of media attention has a stronger influence due to its continuous transmission (Jun et al., 2017). When formal systems such as laws and regulations fail, the role of media as an informal system should not be underestimated. Existing research primarily focuses on the role of media in corporate governance and fulfilling social responsibilities, with limited studies on the impact of media attention on corporate environmental performance and the specific pathways of influence. Currently, companies can take two main approaches to control environmental pollution: implementing green technology innovation to address the root causes, and reducing emissions at the end stage of pollution control (Yun et al., 2017).

Therefore, under the scrutiny and encouragement from public opinion and media, and the possibility of using "hidden economic means" to evade governance responsibilities, will Chinese enterprises still choose green technology innovation as the fundamental solution? Furthermore, how does government environmental regulation, as a formal system, affect the relationship between media attention and enterprise green technology innovation?

This paper aims to investigate the influence of media attention on companies' adoption of green technology innovation. It includes the examination of environmental regulation in relation to media attention and green technology innovation. Exploring the role of environmental regulation in this context is crucial for addressing current environmental pressures and promoting improvements in quality and efficiency.

Theoretical analysis and research hypothesis

Media attention and innovation in green technology in the enterprise

The media is the medium or carrier of information dissemination.

According to the theory of information asymmetry, in market economic activities, there may be serious information asymmetry between the public and enterprises, which will affect
investors' investment decisions and change enterprises' environmental behavior. The open media is conducive to promoting the free flow of information, weakening the information advantage of informed traders, reducing information asymmetry, and better achieving the supervision function (Chen, 2005).

From the perspective of stakeholder theory, media attention is an important part of an enterprise's external stakeholders, which essentially plays a role in external supervision and governance of the enterprise, and can participate in the strategic decision-making process of corporate environmental governance and technological innovation (Zhen et al., 2023).

Innovation in green technology is one of the important means for companies to achieve sustainable development. It is a series of activities involving technology or product innovation in the fields of energy conservation, environmental protection, and resource recovery (El-Kassar & Singh, 2019).

As an important bridge between the public and companies, the media can guide public cognition and evaluation by obtaining environmental corporate information, thus promoting enterprises to carry out green innovation (Chen et al., 2018).

In addition, from the perspective of institutional legitimacy, media attention, as an informal institution, will exert cognitive legitimacy pressure on corporate environmental behavior, thus driving enterprises to adjust their strategies to achieve the consistency with the value expectation of the corporate external environment and finally form the consistency of legitimacy adjustment.

Specifically, once an enterprise environmental pollution accident is reported, it will generate pressure from public opinion on the enterprise, strengthen the orientation of environmental responsibility and improve the strategic decision-making behavior of enterprise environmental innovation, and force the enterprise to take corresponding improvement measures, so as to promote the implementation of green technology innovation (Kathuria, 2007).

Therefore, the media, as an important part of corporate external environment governance, is the driving force to promote green technology innovation (Zhang et al., 2021). Positive media reports can enhance corporate reputation, win intangible assets, and bring competitive advantages to enterprises (Tao & Dong, 2013).

Negative media reports force enterprises to increase investment in green environmental protection and improve their environmental behavior, to achieve the purpose of implementing green technology innovation (Zhang et al., 2016). Under the current conditions of increasingly stringent environmental regulations, in order to consolidate the legitimacy of enterprises, companies will tend to improve environmental performance by increasing environmental investment and implementing green technology innovation. On the basis of this, this paper proposes the following hypothesis:

H1: Media attention is positively correlated with enterprise green technology innovation.

The regulatory effect of environmental regulations

According to the theory of institutional economics, institutions have the function of influencing and constraining organizational behavior (Scott, 1995). Environmental regulation is an institutional constraint put forward by the government on the environmental behavior of enterprises. As green technology innovation is characterized by high investment, high risk, and significant externality (Stucki, 2019), enterprises usually lack the motivation to
implement it actively, which requires the government to solve through institutional constraints.

The "Porter hypothesis" holds that appropriate environmental regulations can promote enterprises’ green technology innovation behavior and enhance their core competitiveness (Porter & Linde, 1995). According to the OECD classification method, environmental regulation is divided into command type environmental regulation tools, market type environmental regulation tools, and public participation type environmental regulation tools. Among them, command-type environmental regulation is dominated by administrative control, emphasizing the mandatory and disciplinary nature of regulation. Market-based environmental regulation is mainly driven by the economy or market and emphasizes the incentive and flexibility of regulation. Public participation-type environmental regulation mainly involves enterprises and the public, and emphasizes voluntary regulation.

In areas with a high intensity of command-type environmental regulations, the environment-related legal surveillance system is more perfect, and the level of economic development and informatization is higher, which is conducive to exerting the supervision and governance effect of the media on companies.

Media exposure of environmental pollution related news of enterprises is easy to arouse public resonance; meanwhile, media exposure of environmental problems will cause the intervention of regulatory authorities (Li & Shen, 2010) and then play a role in restraining corporate misconduct.

Therefore, maintaining a good corporate image and improving the environment will drive enterprises to actively carry out green technology innovation activities. In the context of higher command-type environmental regulation, once an environmental pollution event occurs in an enterprise, the media will actively supervise the behavior of the enterprise based on greater interest orientation, increase the pressure of environmental protection of the enterprise, and thus affect the green technology innovation of the enterprise. Based on this, this paper proposes the following hypothesis:

H2: Command-based environmental regulation has a positive moderating effect on the relationship between media attention and corporate green technology innovation.

Under mandatory environmental regulations, once a company meets environmental standards, the motivation for technological improvement and innovation will weaken or even disappear. However, under market-based environmental regulations, the better the performance of enterprises in energy conservation and emission reduction, the more fiscal subsidies, tax exemptions, and other policies they can enjoy, and the more enthusiasm they have in implementing green technology innovation behaviors (Wang & Wheeler, 2005).

Although China's market-based environmental regulation system is still immature (Wang Yun et al., 2017), it is more diversified, flexible and covers a wider range. The media have more opportunities to participate in the supervision of corporate environmental governance and present the internal environmental governance of companies to the public, and companies are forced to bear higher regulatory pressure. They are more inclined to adopt green and innovative ways to carry out environmental governance.

Therefore, enterprises are more inclined to adopt green innovation to carry out environmental governance. Under the supervision of external media, market-based environmental regulation is more likely to stimulate R&D, innovation, and technology diffusion of enterprises (Ambec et al., 2013), external media supervision, and market-based
environmental regulation are complementary. Based on this, this paper proposes the following hypothesis:

H3: Market-based environmental regulation has a positive moderating effect on the relationship between media attention and corporate green technology innovation.

For a long time, under the incentive of the political promotion tournament model, local officials pay more attention to and pursue economic development rather than environmental protection, and the "collusion" behavior of local governments and enterprises weakens the effect of environmental governance (Li & Ling, 2020; Nie, 2013).

Due to local protectionism, personal interests, human relations, and other considerations, the government intervenes more in the media, which makes it difficult for the media to effectively supervise enterprises. When the public participates in environmental governance voluntarily and to safeguard its own interests, it can effectively detect the "collusion" behavior between the government and local enterprises and implement more detailed supervision. In areas with a higher degree of environmental regulation based on public participation, government actions are supervised by the masses, and the media industry is less subject to administrative control.

Therefore, it is easier to expose the environmental pollution behaviors of enterprises together with the masses and to promote enterprises to actively fulfill their environmental responsibility. On the basis of this, this paper proposes the following hypothesis:

H4: Public participation in environmental regulation has a positive moderating effect on the relationship between media attention and corporate green technology innovation.

Research design

Sample and data

In this paper, listed companies in China's A-share heavily polluting industries from 2008 to 2017 are selected as the initial research samples, and the heavily polluting industries are selected according to the Guidelines on Environmental Information Disclosure of Listed Companies (Draft for Comment) in 2010 and the Guidelines on Industry Classification of Listed Companies revised in 2012. First, the basic information and financial data of listed companies in heavily polluting industries are filtered out of the CSMAR database. Then, the news report data of listed companies are screened from the CSMAR database, and the number of annual environment-related news reports of enterprises is retrieved with the keywords of "environment", "environmental protection", "pollution", "pollutant discharge", "energy saving and emission reduction".

Second, on the website of the State Intellectual Property Office, the stock code and company name of heavily polluted listed companies were manually retrieved, and the green patent data of listed companies in each year were sorted according to the IPC classification number of green patents. Again, according to the registration place of the listed company, the number of regional administrative punishment cases, the total amount of regional investment in environmental pollution control, the number of regional People's Congress proposals, the gross regional product, the total population of the region and other interprovincial data are screened in China Environmental Statistical Yearbook and China Statistical Yearbook.
Finally, the four groups of data are merged. After removing ST, *ST listed companies and data samples with missing variables, a total of 1497 annual observed values of 259 listed companies were obtained.

To control the influence of outliers, Winsorize the continuous variables at 1% quantile.

**Definition of variables**

**Explained variables**
Green Technology Innovation (GTI). Based on the measurement methods of Andera et al. (2018), this document measures enterprises' green technology innovation through green innovation patents. The number of green patents granted (GPAU) (number of green invention patents granted + number of green utility model patents granted) was selected to measure enterprises' green technology innovation (Jia & Zhang, 2014).

**Explanatory variables**
The Media pay attention to (the media). The relevant media attention data in this article came from the CSMAR news database. The number of annual environmental-related news reports of listed companies was recovered using the abbreviation of listed companies or the code of listed companies and keywords such as "environment", "environmental protection", "pollution", "pollution pollution", "energy conservation and emission reduction", and then the variables of attention of the media were constructed (Yun et al., 2017).

Media attention refers to the total number of news reports related to environmental governance of listed companies. Only when the subject of a report is listed company i, it is classified as news of listed company i.

For the endogeneity problem that has been criticized in the existing literature, this paper adopts the explanatory variable with a delay of one stage (t-1) to regression the explained variable.

**Adjusting variables**
Command-type environmental regulation (ER1). Taking into account the disciplinary characteristics of imperative regulation, this document adopts the treatment method of Wang Yun et al. (2017) and adopts the natural logarithm of the number of cases of regional administrative punishment to measure. Market-based environmental regulation (ER2). Considering the availability and representativeness of the data, this paper measured the intensity of market-based environmental regulation by the ratio of total regional investment in environmental pollution control to gross regional product.

Public participation in environmental regulation (ER3). This paper uses Xiao (2018) measurement method as a reference, and measures the ratio of the number of people's congresses' suggestions to the total regional population.

**Control variables**
There are many factors that affect the environmental performance of enterprises. The following control variables are selected in this paper: property right nature (SOE), the actual controller of enterprises is 1 for state-owned units, otherwise it is 0. Listing location: 1 in Shanghai, 0 otherwise.
The AGE of the listing refers to the time the company has experienced since the listing. Profitability (ROE), measured by a firm's return on equity.

GROWTH, measured by the growth rate of business revenue. CASH holdings (CASH), measured by the enterprise's monetary assets at the end of the year/total assets at the end of the year. Total assets turnover (TMT), measured by total business revenue/average total assets.

Ownership structure (OWN), measured by the concentration of the largest shareholder.

Empirical results

Descriptive statistics and correlation analysis
This article uses STATA15.2 software to conduct descriptive statistics and correlation analysis on model variables. The mean, standard deviation, and correlation coefficients of each variable can be seen from the results, indicating a significant positive correlation between media attention and green technology innovation in enterprises ($\beta = 0.093$, $p<0.01$). This preliminary indicates that media attention can play a good governance role, which is conducive to green technology innovation in enterprises.

Hierarchical regression analysis and hypothesis testing
In order to test the above theoretical hypothesis, the least squares method is used to perform hierarchical regression analysis of the variables. Control variables, explanatory variables, moderating variables, and interaction terms between moderating variables and explanatory variables are successively introduced into the regression model. The influence of media attention on green technology innovation in companies and the regulatory effect test of environmental regulations are shown in Tab. 1.

To avoid the problem of multicollinearity, the interaction terms are treated centrally in this paper. In Table1, Model 2 verifies the influence of media attention on the innovation of green technologies by enterprises. Models 3-4, 5-6, and 7-8, respectively, verify the moderating effect of command type environmental regulation, market type environmental regulation and public participation type environmental regulation on media attention and enterprises' green technology innovation.

The influence of media attention on enterprises' green technology innovation
The regression results in Table 1 show that the media attention in Model 2 is positively correlated with the innovation of green technology of the company at the significant level of 1%. The higher the media attention the enterprise receives, the stronger the enterprise's green technology innovation ability. Hypothesis H1 is verified. This shows that media attention plays a governance role and is conducive to promoting green technology innovation.

Reports on environmental events by the media will increase the pressure of the public on the environmental behavior of the companies. Taking into account the corporate image and social reputation, the increase in media reports will force companies to improve their ability to innovate green technologies.

The regulatory effect of environmental regulations
It can be seen from Models 3-4 and Fig. 1 that after the introduction of command-type environmental regulations and interaction terms, media attention and interaction terms both
THE INFLUENCE OF FIRM KNOWLEDGE

significantly positively influence enterprises' green technology innovation, indicating that command-type environmental regulations play a positive moderating role, increasing the environmental pressure generated by media attention on enterprises, and the higher the degree of command-type environmental regulations, the greater the promotion effect of media attention on enterprises' green technology innovation, hypothesis H2 is verified.

![Figure 1 - Interaction between media and ER1](compiled by co-authors)

It can be seen from Models 5-6 and Fig. 2 that, after the introduction of market-based environmental regulations and interaction terms, both media attention and interaction terms have a significant positive impact on enterprises' green technology innovation, indicating that market-based environmental regulations play a positive regulatory role, increasing the environmental pressure generated by media attention on enterprises, and the higher the degree of market-based environmental regulations, the greater the promotion effect of media attention on enterprise green technology innovation, hypothesis H3 is verified.

![Figure 2 - Interaction between media and ER2](compiled by co-authors)

It can be seen from Models 7-8 and Fig. 3 that, after the introduction of environmental regulations with public participation and interaction terms, media attention has a significant positive impact on companies' green technology innovation, while the interaction terms have a positive impact on enterprises' green technology innovation, but not significantly, indicating that environmental regulations with public participation cannot play a positive regulating role. Hypothesis H4 is partially verified.

This may be because there are regional differences in the production and operation activities of enterprises, and the public participation in environmental governance and
regulation in different regions is quite different, which cannot play a moderating effect between media attention and green technology innovation of enterprises.

Figure 3 - Interaction between media and ER3
(compiled by co-authors)

Robustness test
In order to ensure the robustness of the research results, this article changes the measurement methods of enterprise age, profitability, and equity structure. The age of the enterprise mainly measures the age of establishment (AGE1), profitability is measured by the return on total assets (ROA), and equity structure is measured by the concentration of the top five major shareholders' shareholding (OWN5). New variables are added to each regression model, and the results are basically consistent with the results in Tab. 1.

This indicates that this article has good robustness.

Conclusion and discussion

Conclusions and contributions of the research
This paper takes listed companies in heavily polluting industries in China's A-share market as the research object, selects data from 2008 to 2017, builds a hierarchical regression model, and draws the following conclusions: Media attention as an external supervision force can stimulate enterprises to carry out green technology innovation. The command-type and market-type environmental regulations play a positive moderating role between media attention and enterprises' green technology innovation, while the public participation-type environmental regulations do not play a moderating role.

The purpose of this paper is to expand the existing research perspective. Most existing studies have explored the impact of formal institutions such as environmental regulation on corporate environmental governance behavior, such as environmental information disclosure and green technology innovation, based on institutional theories.

However, the governance role of informal institutional factors in the construction of ecological civilization is rarely involved, so it cannot fully explain the environmental governance problems of Chinese companies.

China is in a period of economic transition, the overall level of perfection and implementation of formal system environment is low, and there are large regional differences, which leads to the legal system in some places not playing its due role effectively. Based on the perspective of an extralegal informal system, exploring the
influence mechanism of media attention on the external corporate governance mechanism on corporate green technology innovation can enrich the research on corporate environmental governance.

**Table 1 - Main regression results**

(Compiled by co-authors)

<table>
<thead>
<tr>
<th>variable</th>
<th>model 1</th>
<th>model 2</th>
<th>model 3</th>
<th>model 4</th>
<th>model 5</th>
<th>model 6</th>
<th>model 7</th>
<th>model 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOE</td>
<td>GPAU</td>
<td>GPAU</td>
<td>GPAU</td>
<td>GPAU</td>
<td>GPAU</td>
<td>GPAU</td>
<td>GPAU</td>
<td>GPAU</td>
</tr>
<tr>
<td>LOCATION</td>
<td>0.825***</td>
<td>0.738***</td>
<td>0.850***</td>
<td>0.839***</td>
<td>0.703***</td>
<td>0.674***</td>
<td>0.725***</td>
<td>0.726***</td>
</tr>
<tr>
<td>AGE</td>
<td>(3.29)</td>
<td>(2.99)</td>
<td>(3.34)</td>
<td>(3.31)</td>
<td>(2.90)</td>
<td>(2.80)</td>
<td>(2.94)</td>
<td>(2.94)</td>
</tr>
<tr>
<td>ROE</td>
<td>0.084</td>
<td>0.074</td>
<td>0.100</td>
<td>0.102</td>
<td>0.055</td>
<td>0.058</td>
<td>0.073</td>
<td>0.073</td>
</tr>
<tr>
<td>AGE</td>
<td>(0.43)</td>
<td>(0.38)</td>
<td>(0.52)</td>
<td>(0.53)</td>
<td>(0.29)</td>
<td>(0.20)</td>
<td>(0.38)</td>
<td>(0.38)</td>
</tr>
<tr>
<td>GROWTH</td>
<td>-0.010</td>
<td>-0.009</td>
<td>-0.004</td>
<td>-0.004</td>
<td>-0.009</td>
<td>-0.008</td>
<td>-0.008</td>
<td>-0.008</td>
</tr>
<tr>
<td>OWE</td>
<td>0.007</td>
<td>0.006</td>
<td>0.004</td>
<td>0.004</td>
<td>0.005</td>
<td>0.004</td>
<td>0.006</td>
<td>0.006</td>
</tr>
<tr>
<td>AGE</td>
<td>(1.38)</td>
<td>(1.10)</td>
<td>(0.81)</td>
<td>(0.78)</td>
<td>(0.91)</td>
<td>(0.74)</td>
<td>(1.09)</td>
<td>(1.10)</td>
</tr>
<tr>
<td>CASH</td>
<td>0.001</td>
<td>0.001</td>
<td>-0.000</td>
<td>-0.000</td>
<td>-0.001</td>
<td>-0.001</td>
<td>-0.001</td>
<td>-0.001</td>
</tr>
<tr>
<td>AGE</td>
<td>(0.20)</td>
<td>(0.16)</td>
<td>(0.11)</td>
<td>(0.08)</td>
<td>(0.17)</td>
<td>(0.15)</td>
<td>(0.14)</td>
<td>(0.14)</td>
</tr>
<tr>
<td>TMT</td>
<td>-0.027***</td>
<td>-0.025***</td>
<td>-0.024***</td>
<td>-0.023***</td>
<td>-0.025***</td>
<td>-0.026***</td>
<td>-0.025***</td>
<td>-0.025***</td>
</tr>
<tr>
<td>AGE</td>
<td>(3.55)</td>
<td>(3.35)</td>
<td>(3.24)</td>
<td>(3.07)</td>
<td>(3.34)</td>
<td>(3.46)</td>
<td>(3.37)</td>
<td>(3.35)</td>
</tr>
<tr>
<td>OWN</td>
<td>0.038***</td>
<td>0.037***</td>
<td>0.035***</td>
<td>0.035***</td>
<td>0.036***</td>
<td>0.037***</td>
<td>0.037***</td>
<td>0.037***</td>
</tr>
<tr>
<td>MEDIA</td>
<td>(5.63)</td>
<td>(5.46)</td>
<td>(5.34)</td>
<td>(5.24)</td>
<td>(5.13)</td>
<td>(5.21)</td>
<td>(5.45)</td>
<td>(5.46)</td>
</tr>
<tr>
<td>MEDIA*ER1</td>
<td>0.236***</td>
<td>0.240***</td>
<td>0.281***</td>
<td>0.236***</td>
<td>0.216***</td>
<td>0.235***</td>
<td>0.245***</td>
<td>0.245***</td>
</tr>
<tr>
<td>ER1</td>
<td>(3.19)</td>
<td>(3.29)</td>
<td>(3.50)</td>
<td>(3.20)</td>
<td>(3.01)</td>
<td>(3.18)</td>
<td>(3.17)</td>
<td></td>
</tr>
<tr>
<td>MEDIA*ER1</td>
<td>0.284***</td>
<td>0.278***</td>
<td>0.284***</td>
<td>0.278***</td>
<td>0.284***</td>
<td>0.278***</td>
<td>0.284***</td>
<td>0.278***</td>
</tr>
<tr>
<td>ER2</td>
<td>0.103**</td>
<td>(2.30)</td>
<td>0.297*</td>
<td>0.341**</td>
<td>(1.86)</td>
<td>(2.08)</td>
<td>0.277**</td>
<td>(2.05)</td>
</tr>
<tr>
<td>MEDIA*ER2</td>
<td>0.011</td>
<td>(0.58)</td>
<td>0.492</td>
<td>(0.58)</td>
<td>0.492</td>
<td>(0.58)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ER3</td>
<td>-0.021</td>
<td>-0.022</td>
<td>-0.021</td>
<td>-0.022</td>
<td>-0.84</td>
<td>-0.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEDIA*ER3</td>
<td>0.011</td>
<td>(0.01)</td>
<td>0.011</td>
<td>(0.01)</td>
<td>0.011</td>
<td>(0.01)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONSTANT</td>
<td>-0.356</td>
<td>-0.584</td>
<td>-2.859**</td>
<td>-2.801**</td>
<td>-1.025</td>
<td>-1.144</td>
<td>-0.504</td>
<td>-0.492</td>
</tr>
<tr>
<td>AGE</td>
<td>(-0.41)</td>
<td>(-0.66)</td>
<td>(-2.52)</td>
<td>(-2.48)</td>
<td>(-1.14)</td>
<td>(-1.27)</td>
<td>(-0.59)</td>
<td>(-0.58)</td>
</tr>
<tr>
<td>YEAR/IND</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>N</td>
<td>1,497</td>
<td>1,497</td>
<td>1,497</td>
<td>1,497</td>
<td>1,497</td>
<td>1,497</td>
<td>1,497</td>
<td>1,497</td>
</tr>
<tr>
<td>F</td>
<td>5.807</td>
<td>5.746</td>
<td>5.672</td>
<td>5.648</td>
<td>5.640</td>
<td>5.521</td>
<td>5.599</td>
<td>5.482</td>
</tr>
<tr>
<td>R²</td>
<td>0.138</td>
<td>0.146</td>
<td>0.152</td>
<td>0.154</td>
<td>0.148</td>
<td>0.152</td>
<td>0.146</td>
<td>0.146</td>
</tr>
</tbody>
</table>

Note: The t values of the corresponding coefficients are in parentheses. *, **, and *** indicate that they are significant at the level of 10%, 5%, and 1%, respectively.

**Research enlightenment**

After China's economy has entered the new normal, enterprises must transform their sustainable development from factor driven to innovation driven. They should face the supervision and governance of external media headlong, strengthen internal green technology innovation, and respond to the call from The Times to develop a low-carbon economy.

For companies, face the media headon. The attention of the media will spread the concept of environmental governance and the environmental protection behavior of...
companies to the masses, which can enhance the reputation value of companies, increase the spillover of market value of enterprises, and be more easily recognized by consumers and investors in the consumer market, which is conducive to increasing the competitiveness and economic value of companies.

For relevant government departments, first, they should actively guide companies to change from passive governance under environmental regulatory pressure to active governance to obtain good public opinion guidance for environmental governance. It is necessary to give full play to the extralegal supervisory role of the media, drive the mainstream public opinion, and establish a pluralistic and cogoverning environmental governance system. Second, to further enhance the development level of the media industry, strengthen the legal guarantee and financial support for the media industry, improve the enthusiasm, impartiality and credibility of media news reports, and promote enterprises to improve environmental performance through media pressure on environmental governance. The third is to strengthen the construction of market-based environmental regulation while improving command-based environmental regulation.

Research limitations and prospects

There are some shortcomings in this paper. Future research can be focused on the following aspects.

First, expand the coverage of sample industries and improve the universality of research conclusions. Different industries have significantly different pressures on media attention, green technology innovation, and environmental regulation, which may lead to different internal transmission mechanisms and boundary mechanisms of environmental pollution control in enterprises.

Second, the availability of some data in this paper is inevitably limited. When collecting data related to media attention, this study selects the news report data of listed companies from the CSMAR database as the source of data related to media attention and filters reports unrelated to environmental governance through relevant keywords. On the one hand, relevant reports may be omitted; on the other hand, relevant reports of network media are not considered.

A very comprehensive measure of the media attention received by companies in different regions of China is not possible. This limitation also provides room for future studies to use more scientific methods and more comprehensive data to measure media attention.

References:


THE INFLUENCE OF FIRM KNOWLEDGE


*Paper submitted* 09 November 2023  
*Paper accepted for publishing* 12 January 2024  
*Paper revised* 20 January 2024  
*Paper published online* 30 January 2024