

Research on Enterprise Carbon Performance and Shareholder Relations Network

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Received: 15 October 2024; **Accepted:** 5 November 2024; **Published:** 20 November 2024

Abstract:

With the increasingly serious problem of climate change and the goal of “carbon peak, carbon neutral” in China, more and more research focuses on the carbon performance of enterprises. As a new word in the corporate social network, the shareholder relationship network has been paid more and more attention by relevant scholars. This paper summarizes the existing research of enterprise carbon performance and shareholder relationship network, and traces the relevant research from three aspects of the definition standard, influencing factors and significant effects of enterprise carbon performance, and summarizes the related research of shareholder relationship network from two aspects of the connotation of shareholder relationship network and its impact on enterprises. It is found that the existing research has relatively insufficient research results, relatively single research content and relatively fixed research methods. Whether the shareholder relationship network can affect the carbon performance of enterprises and whether other factors play an intermediary role are studied and discussed.

Keywords:

Enterprise Carbon Performance, Shareholder Relations Network, Two-Carbon Target, Deficiency And Outlook

1. Introduction

With the continuous development of social economy, climate change has gradually become a global problem facing mankind, and the emissions of greenhouse gases such as carbon dioxide in various countries have soared, posing a threat to living systems. Therefore, it is particularly important and urgent to reduce greenhouse gases such as carbon dioxide to cope with climate change.

In the face of sustained carbon emissions, China actively undertake international obligations and responsibility to mitigate climate change, and on September 22, 2020 in the 75th session of the United Nations general assembly, China will increase national independent contribution, take more effective policies and measures, strive to achieve peak CO₂ emissions by 2030, and efforts to achieve carbon neutral by 2060.

Xi general secretary in the twenty big report also made clear that to actively yet prudently promote “carbon peak, carbon neutral”, based on our energy resources endowment, adhere to the first after broken, planned step by step implementation of carbon peak action, further promote energy revolution, strengthen clean use of coal, speed up the planning and construction of new energy system, actively participate in global governance on climate change [1].

Realizing the goal of “carbon peak, carbon neutral” is not only Chinas global commitment, but also a mobilization order for domestic actions, which is closely related to the creation of a community of shared future. Chinas green and low-carbon transformation led by carbon “carbon peak, carbon neutral” will undoubtedly have a far-reaching impact on social and economic aspects. Everyone is responsible for achieving “carbon peak, carbon neutrality”, but as the key responsibility for carbon emissions, enterprises are much more responsible due to their importance. Therefore, in order to comply with the requirements and situation of the development of “double carbon”, it is urgent to measure the carbon emissions of enterprises. On the one hand, the state can measure the carbon emissions of enterprises to carry out macro-control of the “double-carbon” strategy, adjust and optimize the industrial structure and energy structure, and improve the dual control degree of energy consumption. On the other hand, enterprises can measure their own carbon emissions, improve their own energy efficiency, reduce production costs, carry out clean production, and promote energy conservation and emission reduction.

The measurement of enterprise carbon emissions and the realization of “carbon peak, carbon neutrality” cannot be separated from the joint efforts of all enterprises. The shareholder relationship network of enterprises connects these enterprises, and significantly affects the financial behavior of enterprises [2]. Shareholder relations network is more realistic in China, and China is also a great test ground for testing the “shareholder network”. The reason is that one important reason for the development of Chinese enterprises in the past is that China has a strong informal system, and the informal system of shareholder network relations will continue to have a significant impact on Chinas market economy [3].

At present, many scholars at home and abroad have studied the carbon performance and shareholder relationship network of enterprises, and the frequency of their research is becoming higher and higher, but it is urgent to sort out and summarize. Therefore, this paper combs and summarizes the research on enterprise carbon performance and shareholder relationship network, which provides a theoretical basis for further research on the interaction between shareholder relationship network and enterprise carbon performance.

2. Corporate Carbon Performance

2.1. The definition standard of enterprise carbon performance

Due to the increasingly serious ecological environment problems, in the study of enterprise performance, enterprise environmental performance is more and more valued by the majority of scholars. As an important part of enterprise environmental performance, enterprise carbon performance has been fruitful in recent years, but the definition standard of enterprise carbon performance is still being explored. Volker H.Hoffmann and Timo Busch [4] first proposed the concept of enterprise carbon performance and defined four comprehensive and systematic enterprise carbon

performance indicators, including carbon intensity and carbon exposure. Peter M. Clarkson (2011) [5] uses longitudinal data from the four most polluting industries in the United States from 1990 to 2003, using the amount of total sales minus sales returns and discounts divided by total carbon dioxide emissions. Similarly, Yan Huahong [6] divided the operating income of each unit by the carbon emission as the enterprise carbon performance evaluation index. The larger the value is, the better the carbon performance is. [7] It defines the carbon performance by the carbon emission standard of the unit product and takes the carbon emission of the product unit value as the reference standard to evaluate the real carbon emission, so as to evaluate the carbon emission of “scope three”. Liu Yue, Xu Lu and other [8] consider the variance of carbon assets to optimize carbon performance evaluation, and improve carbon performance indicators by adding carbon assets modification. Zhang Liyue, Xuguang Hao and other [9] introduced the considered capital and Input-output models of production factors such as labor force are used to assess total factor carbon emission performance

2.2. The influencing factors of enterprise carbon performance

There are many factors that can affect the carbon performance of enterprises. At present, domestic and foreign scholars research on the influencing factors of the carbon performance of enterprises mainly focuses on both internal and external aspects.

2.2.1. Impact of internal factors

Some scholars study the influence of internal factors on their carbon performance. Faizul Haque [10] Analysis the relationship between the characteristics of the board of directors and carbon performance, and find that the independence and diversity of the board of directors have a positive impact on the carbon performance of enterprises. Hou Na, Zhu Qianying [11] selected 173 paper enterprises in China as the sample to study the carbon performance of enterprises from the perspectives of management awareness and management ability, which proved that green management behavior promotes the carbon performance of enterprises. Alam Md Samsul, Safiullah Md [12] conducted a sample survey of 5402 annual reports of 943 US listed companies, and found that the cash holdings of enterprises had a significant positive impact on improving the carbon performance of enterprises.

2.2.2. External factors influence

Some scholars also study the influence of external factors on their carbon performance. Lin Boqiang and Zhou Yicheng [13] used the traditional two-sided STIRPAT model, supplemented by the non-radial distance function (NDDF) to measure the energy and carbon emission performance, and found that the development of the Internet has significantly improved the carbon performance of enterprises. Binh Bui, Mahbub Zaman et al. [14] explored the impact of integrating climate change into the governance mechanism on enterprise carbon performance, and found a consistent correlation between climate governance and enterprise carbon performance. Zhang Wei, Liu Xueng and other [15] studied the influence and mechanism of digital economy on the carbon performance of enterprises, and believed that digital economy can improve the carbon emission performance of enterprises, and there is a spatial effect between digital economy and the carbon performance of enterprises. In the same city, the digital economy has a more significant impact on the

carbon performance of enterprises.

2.3. The significant role of enterprise carbon performance

2.3.1. The role of corporate finance

Scholars have found that corporate carbon performance can act on all aspects of corporate daily business activities, especially on the financial aspects of enterprises. Based on the data of the listed companies of power and heat production and supply industry from 2012 to 2019, Liu Yongfeng explored the impact of the carbon performance on the financial performance of enterprises from the perspective of green innovation, and found that the carbon performance of enterprises positively affects the financial performance of enterprises and has a threshold effect. Wang Jia and Feng Yihui [17] empirically analyzed the internal influence mechanism of the carbon performance of listed manufacturing enterprises on its debt financing cost. The results show that the carbon performance of listed manufacturing enterprises is significantly negatively correlated with its debt financing cost, and good carbon performance helps to reduce the debt financing cost of enterprises. [18] A two-step GMM team process was used to examine the impact of carbon performance of South African listed companies on corporate financial performance and corporate value from 2014 to 2018. The results showed that corporate carbon performance had a positive and significant association with return on assets, corporate value and Tobin Q. [19] The same sample is also used using system generalized moment method and fixed effect panel threshold regression model to conclude that corporate carbon performance is negatively correlated to corporate financial debt.

2.3.2. Role in enterprise operation and enterprise value

Scholars also believe that carbon performance can act on business operations and business value. [20] The research found that enterprise carbon performance can positively act on leadership, gender diversity and innovation ability in the process of business operation, and this positive impact is more common in companies with high gender diversity and innovation ability. Benkraiem Ramzi Using data from the worlds most sustainable companies between 2013 and 2019, the results show that carbon performance has a positive impact on corporate market value, and investors are more likely to invest in companies with low carbon emissions. Ragini Rina Datt [21] Using t-test and multiple regression model analyzed 487 American companies that volunteered to participate in the CDP survey from 2011 to 2012. The results unanimously showed that enterprises with better carbon performance disclosed more overall carbon information, and carbon performance support signal theory can be transferred to enterprise operation, enterprise value and other aspects.

3. Shareholder Relations Network

3.1. The connotation of the shareholder relationship network

Shareholder network is a kind of corporate social network, which was proposed by British anthropologist Radcliffe Brown. In his work *On Social Structure*, he describes the social network as a relationship that connects members of society across national boundaries. From the 1930s to the 60s, more and more scholars gradually in psychology, sociology, anthropology, mathematics, statistics and probability theory in the fields of social network, and with the development of technology, gradually put

forward all kinds of network concept (such as centrality, center, close to the center, structure hole, etc.), makes the social network become an important social structure research style.

Shareholder relationship network mainly refers to the network that connects different shareholders of the company based on the possible relationships between the shareholders of the company. Ma Lianfu and Dubo [22] defined the shareholder relationship network as follows: The shareholder relationship network refers to the network set formed “by the nodes of the merged shareholders network and the property rights association relationship formed by the shareholders through the joint shareholding of the same listed company”. Huang Can and Li Shanmin [23] using 2007-2015 China a-share listed company data, built by the top 10 shareholders of listed company network, and use the social network software UCINET to calculate the relevant social network indicators measure shareholder network of “relationship” characteristics, the study shows that the shareholder relationship network of listed companies is weak rather than strong relationship.

3.2. The impact of the shareholder relationship network on the enterprise

The shareholder network relationship acts on many aspects of the enterprise, and has an impact on the production, operation, innovation, finance and other aspects of the enterprise. Many scholars at home and abroad have conducted a detailed study on this influence. Peng Zhengyin and other [24] used two types of agency costs to study the intermediary effect, and found that the shareholder network can bring the information advantage of enterprises and reduce the information asymmetry among enterprises; can bring the resource advantage of enterprises, which is reflected in the financial cost and social capital; can bring the supervision advantage of enterprises, restrain the way and inhibiting the self-interest behavior of the management, and finally improve the innovation performance of the enterprise. Dong Dayong, Wang Jianqiong [25] using social network analysis, multiple regression analysis and binary Logistic regression analysis method, from 2006 to 2010, China Shanghai and Shenzhen a-share listed companies as the research object of empirical analysis, the results show that under the financing constraints and agency costs of checks and balances, the more in the center of the shareholder network company, the lower the cost of debt financing. Wan Liangyong and xiao-ling zheng [26] based on structure hole theory, empirical study of the structure of the influence of corporate mergers and acquisitions behavior and found in the structure of the director network hole position helps the company more quickly access to acquisition information and mergers and acquisitions opportunities, the company has rich structure hole and merger and acquisition activity is significantcorrelativity. Zhang Rong et al [27] use various econometric models, maximum likelihood estimation and other methods to analyze the data of Chinas stock market, indicating that the shareholder relationship network has a significant positive impact on the linkage relationship of enterprise stock prices. From Ying [28] to Chinas Shanghai and Shenzhen a-shares from 2012 to 2014, a new generation of information technology industry of 187 listed companies as A research sample, using the social network analysis method, describe the shareholder relationship between listed companies, and through the center of the hole, structure and core-edge structure three indicators occupy favorable network position has obvious promotion of enterprise performance. Luo Dongliang and Shi Xianang [29] used Shanghai and Shenzhen A-share listed companies from 2007 to 2019 as samples to analyze the impact of shareholder network location on corporate R & D

expenditure and the regulatory effect of regional cultural differences. The study found that shareholder network positions inhibit R & D spending. Luo Dongliang and Dou Baoqi [30] also have a mechanism connection between the shareholder relationship network and the enterprise earnings management. Excess capacity promotes the earnings management of enterprises, while the shareholder social network brings information, resources, reputation, governance and other advantages to enterprises, and inhibits the positive relationship between overcapacity and earnings management

4. Conclusions

In this paper through the shareholder relationship network and enterprise carbon performance summarizes existing research results, respectively from the enterprise carbon performance definition standard, influencing factors, significant effect three aspects of the related research, from the connotation of shareholder relationship network and the influence on the enterprise two aspects of shareholder relations network related research. At the same time, in the process of sorting out the research results in various aspects, some shortcomings of the current research are also found, and the research on shareholder relationship network and enterprise carbon performance is prospected.

4.1. Shortage of research

The research results are relatively insufficient, and the existing domestic research results are even more scarce. Enterprise carbon performance and shareholder relationship network are emerging research fields in recent years, and domestic and foreign scholars lack a profound understanding of the practical significance of these two studies.

The study content is relatively single. Most of the existing research results on shareholder relationship network and enterprise carbon performance have positive effects, and almost no relevant scholars study the inhibitory effect of shareholder relationship network and enterprise carbon performance on the production and operation activities of enterprises. In addition, few scholars have studied the definition, connotation and the difference between carbon performance and financial performance.

The study method is relatively fixed. At present, domestic and foreign scholars use the research method of empirical analysis to explore the mechanism of carbon performance and the mechanism of shareholder relationship network, and to explore the influence of both on enterprises by constructing models.

4.2. Research prospect

For the evaluation standard of shareholder relationship network, the existing domestic and foreign scholars basically formed a consensus, but for enterprise carbon performance evaluation standard, the selected indicators are mostly according to the relevant industry standards or according to the research method adjust measures to local conditions, has greater subjectivity, so the need to unify a recognized by the scholars of the evaluation criteria.

The definition of the connotation of enterprise carbon performance is not very clear. Most of the existing domestic and foreign scholars research on carbon performance focuses on how it affects the production and business activities of enterprises, but there are few theoretical studies on the definition, connotation and difference between

carbon performance and financial performance, so relevant theoretical research is needed.

As two relatively independent indicators of enterprise carbon performance and shareholder relationship network, no scholars currently study whether the shareholder relationship network can affect the carbon performance of enterprises and whether there are other factors playing an intermediary role, which provides new ideas for future scholars to conduct relevant research.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

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