EXAMINING THE RELATIONSHIP BETWEEN MANAGERIAL PERCEPTIONS AND ENVIRONMENTAL AUDIT: THE ROLE OF BOARD OF DIRECTORS

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EXAMINING THE RELATIONSHIP BETWEEN MANAGERIAL PERCEPTIONS AND ENVIRONMENTAL AUDIT: THE ROLE OF BOARD OF DIRECTORS

ABSTRACT

An environmental audit is a voluntary procedure for voluntarily managing materials and energy and improving environmental performance. As a newly developed auditing method in China, environmental audit is a part of corporate social responsibility and is one of the ways to achieve sustainable development. At present, the development of environmental audits in China is not yet mature, and there is also a lack of relevant research about the managerial perceptions on stakeholders' influence and the companies' willingness of implementing environmental audits. Therefore, this dissertation will propose a framework for managerial perceptions, the role of the board of directors and environmental audits from the perspective of the Stakeholder-Agency theory. This study aims to investigate the effect between managers' perceptions on stakeholders' influence and environmental audits in Chinese manufacturing companies. Therefore, by distributing questionnaires to managers who work in Chinese manufacturing companies, the study explores the importance of managers' perceptions on stakeholders' influence in the managers' decisions that whether to implement environmental audits. At the same time, this study also explores the moderating role of the stakeholders' proportion in the board of directors between pushing the managers' perceptions and the environmental audits' decision by managers in manufacturing

companies. Finally, The investigation found that managerial perceptions on each stakeholder's influence, except the public stakeholder's influence, are positively associated with environmental audits. And the stakeholders in the board of directors have a moderating effect on the relationship between the managerial perceptions of each stakeholder's influence and environmental audits, except for the public stakeholder's influence. This provides managers with a new perception of pushing the environmental audits, which is based on stakeholders' influence and the stakeholders in the board of directors, while utilizing sufficient resources of them to produce more positive results on sustainability.

Keywords:

Environmental Audits, Managerial Perceptions, Stakeholders in the Board of Directors, Stakeholder Agency Theory.

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ABSTRAK

Audit alam sekitar ialah prosedur sukarela untuk mengurus bahan dan tenaga secara sukarela serta meningkatkan prestasi alam sekitar. Sebagai kaedah pengauditan yang baru dibangunkan di China, audit alam sekitar adalah sebahagian daripada tanggungjawab sosial korporat dan merupakan salah satu cara untuk mencapai pembangunan mampan. Pada masa ini, pembangunan audit alam sekitar di China masih belum matang, dan terdapat juga kekurangan penyelidikan yang berkaitan tentang persepsi pengurusan terhadap pengaruh pihak berkepentingan dan kesediaan syarikat melaksanakan audit alam sekitar. Oleh itu, disertasi ini akan mencadangkan rangka kerja untuk persepsi pengurusan, peranan lembaga pengarah dan audit alam sekitar dari perspektif teori Stakeholder-Agensi. Kajian ini bertujuan untuk menyiasat kesan antara persepsi pengurus terhadap pengaruh pihak berkepentingan dan audit alam sekitar dalam syarikat pembuatan China. Oleh itu, dengan mengedarkan soal selidik kepada pengurus yang bekerja di syarikat pembuatan China, kajian itu meneroka kepentingan persepsi pengurus terhadap pengaruh pihak berkepentingan dalam keputusan pengurus bahawa sama ada untuk melaksanakan audit alam sekitar. Pada masa yang sama, kajian ini juga meneroka peranan penyederhanaan bahagian pihak berkepentingan dalam lembaga pengarah antara menolak persepsi pengurus dan keputusan audit alam sekitar oleh pengurus dalam syarikat pembuatan. Akhirnya, Penyiasatan mendapati bahawa persepsi pengurusan terhadap pengaruh setiap pihak berkepentingan, kecuali pengaruh pihak berkepentingan awam, dikaitkan secara positif dengan audit alam sekitar. Dan pihak berkepentingan dalam lembaga pengarah mempunyai kesan sederhana terhadap hubungan antara persepsi pengurusan terhadap pengaruh setiap pemegang kepentingan dan audit alam sekitar, kecuali pengaruh pihak berkepentingan awam. Ini memberikan

pengurus dengan persepsi baharu untuk mendorong audit alam sekitar, yang berdasarkan pengaruh pihak berkepentingan dan pihak berkepentingan dalam lembaga pengarah, sambil menggunakan sumber yang mencukupi daripada mereka untuk menghasilkan keputusan yang lebih positif terhadap kemampanan.

Kata kunci:

Audit Persekitaran, Persepsi Pengurusan, Pihak Berkepentingan dalam Lembaga Pengarah, Teori Agensi Pihak Berkepentingan.

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LIST OF SYMBOLS AND ABBREVIATIONS

BOD : Board of Directors

CSR : Corporate Social Responsibility

CSRD : Corporate Social Responsibility Disclosure

LR : Likelihood Ratio

NGOs : Non-Governmental Organizations

ROs : Research Objectives

RQs : Research Questions

SIZE : Corporation Size

WHO : World Health Organization

ICC : The International Chamber of Commerce

INTOSAI : International Organization of Supreme Audit Institutions

CHAPTER 1: INTRODUCTION

1.1 Introduction

This dissertation is organized into six chapters, the first chapter is about the introduction of this research. This chapter outlines the introduction of this dissertation. The next section describes the research background. Section 1.3 discusses the problem statement, followed by research questions and research objectives of the study in Section 1.4 and Section 1.5. A brief account of the research questionnaire scope adopted in conducting this research present in Section 1.6. Section 1.7 highlights the motivations for and significance of this research, and the final section describes the summary of this chapter.

1.2 Research Background

Environmental problems such as sandstorms, smog, and acid rain are endless, and China's environmental problems are facing unprecedented challenges. Theoretical and practical research on environmental audit is also imminent. For companies, environmental audit usually has two types: internal and external. External environmental audit is usually mandatory in the United States, Canada, Germany and other developed countries where the industrial revolution started earlier, and internal environmental audit is voluntary (Ruban & Rydén, 2019). China's environmental audit started formally in 2003, but the focus of China's environmental audit is mostly on government audit, which is mandatory, and the company's environmental audit is in its infancy, and the level of resources is also low (Zhong & Ma, 2021). Therefore, it is necessary to vigorously promote companies to carry out environmental audit work.

Most scholars in China have conducted theoretical research on environmental audit, and most of them use the "trusted economic responsibility theory" as the motivation for

environmental audit (Zheng, 2021; Wang, 2019). This may be more applicable to traditional internal and external audits of companies, but environmental audit is different. For the company's traditional internal and external audits, environmental audit does not emphasize auditing at all, but solves environmental governance issues through auditing, which is a method of managing the environment in corporate governance (Tomlinson & Atkinson, 1987; Ju & Zou, 2021).

The broadness of the impact of environmental problems and the severity of the hazards are not only affected by third parties entrusted with economic responsibility but also the majority of stakeholders in the company (Freeman, 2010; Mitchell, Agle & Wood, 1997). For example, a third party can play a role in regulating the operation of the company's rights and controlling the risk of performing duties. It can influence the operation of the company in this way. As a financial support, the third party can even restrict the economic support to make the company move toward its requirements (Li & Long, 2021). Stakeholders play a two-way role in the company's business process. The satisfaction and contribution of stakeholders has great significance to ensure the company's long-term and stable survival and development (Li, Xu, Chapple & Jia, 2019).

When meeting the needs of the company's stakeholders, the disclosure of social responsibility information from the perspective of the company's stakeholders is conducive to adapting to the development of the times and realizing the sustainable operation. By delivering more beneficial information to all stakeholders and making stakeholders full of confidence in the company's operations, it is conducive to enhance the realization of the company's financial governance goals and achieve sustainable development (Li et al., 2019).

More importantly, stakeholders are important to environmental audits. Stakeholders are putting pressure on companies to conduct environmental audits. Garcés-Ayerbe et al.

(2022) believed from the perspective of organizational cognition that because enterprises have limited resources and have different perceptions of the external environment, when the needs of various stakeholders cannot be met one by one, stakeholders will put pressure on the company's audit. Secondly, companies often formulate environmental audit plans based on the attitudes of stakeholders to environmental pressure.

Vazquez-Brust et al. (2020) emphasized the company's attitude towards environmental pressure from stakeholders and encouraged the formulation of stakeholder-centered policies and corporate strategies. Freeman (1983) believed that each stakeholder has different rights, goals, expectations and responsibilities. Zhang, Song, and Wang (2019) pointed out that in terms of corporate strategy, stakeholders, an external context variable, play an important role. Especially the pressure from the government, employees, the public and the media has a more significant impact on the implementation of corporate environmental audits. Guan and Bao (2021) also found that under the supervision and pressure of stakeholders, enterprises will consciously conduct environmental audits, and stakeholders put forward environmental requirements for enterprises. Bian, Song and Bai (2019) found that although stakeholder influence is a motivation for corporate environmental auditing, its relationship with environmental auditing is not significant.

Stakeholders can be divided into internal stakeholders and external stakeholders. Internal stakeholders are closely related to the economic benefits of the company and can be divided into managers and non-management personnel. Managers formulate company operation plans to participate in the company's daily business activities. Non-management employees are responsible for implementing the plan. They are responsible for the company's development direction and Success has direct influence (Donaldson & Preston, 1995; Freeman, 2010). And internal stakeholders are more concerned about corporate environmental issues, because environmental issues will

affect their own work safety, so they are more willing to promote corporate environmental audit (Fineman & Reed, 1983).

The second category is external stakeholders, which can be divided into three categories: social stakeholders, regulatory stakeholders, and value chain stakeholders (Etzion, 2007; Lin, Ho & Shen, 2017). In China, social stakeholders can usually expose or initiate appeals through the news media to increase the public's attention and create invisible pressure on company managers, thereby affecting the company's development choices. In other countries, public protest or strikes can be used to create influence (Henriques & Sadorsky, 1999; Apostol & Näsi, 2014).

Regulatory stakeholders are mainly government departments. The government influences the development of the company by formulating regulations and laws. Regulatory stakeholders are another category of external stakeholders, consisting of government agents responsible for developing or implementing environmental policies. Regulatory stakeholders are mainly government departments. The government influences the development of the company by formulating regulations and laws (Henriques & Sadorsky, 1999). This is mandatory because companies that violate laws and regulations will receive lawsuits, fines, and warnings. So that regulatory stakeholders can have a significant impact on a firm's green practices and environmental performance. They usually use their coercive powers to force companies to adopt green practices, and companies that do not comply with these regulations may incur fines, as the goal of regulatory stakeholders is to reduce the negative environmental impacts of corporate development (Baah, Acquah, Afum, Faibil & Abdoulaye, 2021; Zameer, Wang & Saeed, 2021).

Value chain stakeholders, such as suppliers, buyers and consumers, also have a great role in promoting the company's development. For example, if the supplier requires the company to prove that the products it provides are environmentally friendly through

environmental audits, the company will largely consider environmental audits for sales and revenue.

Stakeholders of environmental audit must transform their thinking into a green culture in order to solve the problems of corporate environmental audit. This transformation requires the support of various internal and external stakeholders, all of whom are considered to be important promoters of environmental audit practices. Stakeholders are the decisive factor driving environmental audit. However, people have little understanding of the roles of stakeholders in environmental audit, and lack of understanding of environmental audit. Although environmental audit has spread throughout the world (Hillary, 1995), especially the practice of environmental audit in China is particularly slow to promote, but China's environmental audit started late and was gradually understood in the early 21st century (Zheng, 2022). The practice of environmental audit in China is particularly slow, and environmental audit from the perspective of stakeholders is still an emerging research field for China.

Therefore, stakeholders will demand environmental protection and emphasize the strengthening of environmental management (Ren, 2022). This is an important factor influencing various stakeholders to promote the voluntary environmental audit. The ultimate goal of environmental auditing is to achieve the optimal environmental interests of each environmental stakeholder as a result. This study investigates the influence of different stakeholders on environmental audits based on stakeholder agency theory and the managerial perceptions in Chinese manufacturing companies.

The results of the study will help to achieve the ultimate goal of environmental auditing, which is to maximize the environmental interests of stakeholders. When this goal is achieved, then the natural ecological environment will be optimal for all stakeholders, whether they are internal or external stakeholders, public stakeholders or value chain stakeholders. The shareholders and management of the enterprise do not

have to worry that the enterprise will pay high environmental costs due to environmental pollution, thus maximizing the interests of the enterprise. The government, as a regulatory stakeholder, does not have to worry about various natural disasters and human diseases caused by environmental problems, thus establishing a good environmental image of the government. Public stakeholders are able to work and live better without having to worry about living in a harsh natural environment every day. Each stakeholder bears the minimum environmental cost in an optimal environmental state.

1.3 Problem Statement

Firstly, there is a need for research to explore which specific stakeholders influence the company's environmental audit. In 1963, the Stanford Institute researchers gave stakeholder definitions: for companies, there are such interest groups, and without their support, companies cannot survive (Pajunen, 2006). This definition of stakeholders is based on whether a group has an important influence on the survival of the company. It makes people realize that not only shareholders can affect the survival of the company, but also there are many stakeholder groups around the company that are related to the survival of the company. And the implementation of the environmental audit depends on the participation of multiple stakeholders. The influence of stakeholders is the driving force of corporate environmental audit.

Environmental audit received a little attention in the auditing literature, so it is a growth area in the academic (Qu, Zhang, Tan, Han & Qu, 2022). Due to the earlier development of environmental protection awareness in developed countries, most of the literature also discusses environmental audit in developed countries, while developing countries Due to the transformation and limitation of economic development, the research on their environmental audit is lacking (Wanyonyi, 2020).

China is the largest developing country, and the review on environmental performance started very late. Until in September 1994, China's Agenda 21 was released, which proposed an overall strategy for improving environmental quality and the United Nations Conference on Environment and Development introduced the government's effective implementation of the commitments. In recent years, the Chinese government has paid more and more attention to the development and construction of environmental audit. But so far, the penetration rate of environmental audit is very low, and the number of companies that implement environmental audit is also not many (Wang, 2021).

Some researchers have conducted research on China's environmental audit. Gao and Wu (2000) believed that environmental audit includes financial audit, legality audit and performance audit. He and Liu (2018) discussed the influence of environmental audit and proposed further optimization of environmental audit through five aspects: transforming the mode of economic growth; transforming the economic accounting system; reforming the audit model; reforming the assessment mechanism for local governments and business leaders; and establishing a sound system of resource and environmental audits. Liu (2018) pointed out that China currently mainly conducts government environmental audit, and still focuses on environmental protection fund audits. These conventional environmental audit literature usually focused on its definition, classification and framework. In terms of implementation, China's government environmental audit as the external environmental audit is still the main type, and few companies conduct internal environmental audit (Zheng, 2021). Scholars further studied the reasons for the difficulty in implementing environmental audit. But most of them are looking for theoretical reasons, they think that imperfect systems and unsound laws are the main reasons (Zheng, 2022). Kang and Zhang (2021) proposed from the perspective of public participation in environmental audit that encouraging public participation to form environmental audit awareness is more conducive to the development of environmental audit in China. The public and the government, as the

most important part of the company, are both the purpose of environmental audit and the means to promote the environment audit (Sun, Jiang & Yin, 2022).

On the other hand, many scholars have clear definitions of stakeholders (Freeman & Reed, 1983; Jeffrey, 1999; Scott & Lane, 2000; McWilliams, Siegel & Wright, 2006; Cordano & Frieze, 2000). When stakeholders analysis tool used in management, it can help the company's management and development become better (Solesbury, 2003). Without the support of stakeholders, organizations cannot survive (Hristov & Appolloni, 2022). For example, investors in the stock market usually hate companies that have social problems such as environmental hazards, and consumers also influence the production of environmentally friendly products by avoiding buying products from irresponsible companies, or even restrict the economic support at their rapid growing stage (Zhou, Luo & Shen, 2022).

However, when stakeholders choose action strategies based on maximizing their own interests, they often conflict with the overall interests (He & Li, 2018). For example, investors require companies to develop products that are not environmentally friendly in order to obtain income, while consumers and the community public want companies to provide green and sustainable products. This situation constitutes contradictions and conflicts. Zhou (2019) from the stakeholder theory require companies to implement the demands of various stakeholders (including internal stakeholders) into corporate strategies and decisions from a holistic perspective. Employees and shareholders, as important internal stakeholders of an enterprise, jointly determine the survival and development of the enterprise, so they should be included in the environmental protection-oriented theoretical framework of stakeholders (Wang & Li, 2017). Therefore, environmental audit should be related to internal stakeholders (Alabdullah, Fakhri, Ahmed & Kanaan, 2021; Wang, 2018).

The cooperative board's support and leadership play an important role in conducting environmental audits (Peng, Chen, Elahi & Wan, 2021). Most of the above literature studied environmental audit and stakeholders separately, and some scholars have studied the impact of board structure on companies (Catherine & Ulrich, 2000; Nils, Andreas & Franz, 2015). Some believed that the board of directors' structure promotes the implementation of environmental audit and social responsibility (Alabdullah, Ahmed & Muneerali, 2019). Hu (2021) and Wang (2018) believed that the relationship between the two is negative but not significant. Song and Li (2010) did not reach a significant relationship between them. The practitioners and academics assume that reforming corporate board structure to more directors and more stakeholder directors, it could change the way of board operates and have more explicit recognition of stakeholder issues (Hillman & Keim, 2001). It is expected that the corporate board reform could meet the stakeholder demands for environmental audits that assure the credibility and reliability of environmental measures and reporting (Zhao, 2015). In Southeast Asia and some western countries, the emphasis on the environment and sustainable development is higher, so scholars have done research in related fields earlier than in China, and the policies and implementation are more mature. In China, there is still a lot of research results to promote the developments in the field of environmental audits. Therefore, there should be more literature to explain the relationship between environmental audit performed by different stakeholders on companies under the effect of the board of directors, including internal environmental audit and external environmental audit.

Therefore, this study aims to propose a research framework concerning the relationship between the stakeholder influences and environmental audits, and the moderating role of the corporate board on it. It is important as prior literature has proved that environmental audit can promote the upgrading of industrial structures. This is because environmental regulation policies will restrict the entry of polluting companies to a certain extent, encourage clean and environmentally friendly companies

and low-energy companies to enter, thereby realizing industrial structure adjustment and affecting the improvement of the quality of economic development (Ann, Xi & Xiong, 2021). Secondly, environmental audit can promote the innovation consciousness of companies. In order to meet the needs of various stakeholders as much as possible, when companies strive to change the input combination of production factors, they can stimulate company technological innovation (Kang, Zahid, Saleem & Sági, 2021). Different types of environmental audits have given the company more opportunities to improve its daily operations and make them more efficient and profitable, this helped the company grow and improve better (Shao, 2018).

1.4 Research Objectives

RO1: To examine the relationship between managerial perceptions on stakeholders' influence and environmental audits.

RO2: To examine the moderating effect of the stakeholders' proportion in board of directors between managerial perceptions on stakeholders' influence and environmental audits.

1.5 Research Questions

RQ1: What is the relationship between managerial perceptions on stakeholders' influence and environmental audits?

RQ2: Does the stakeholders' proportion in board of directors moderate the relationship between managerial perceptions on stakeholders' influence and environmental audits?

1.6 Scope of study

The scope of the study was limited to managers in Chinese manufacturing enterprises, who come from the "Top 500 Chinese Enterprises in 2020 List published by the China Enterprise Confederation". Regionally excluded managers from enterprises in western China, Because of the geographical environment, culture, religion, and other factors in western China, the state has a high degree of participation in the management of enterprises, and enterprise managers are affected by the policy environment, and their independence ability is not high. Therefore, excluding the western region to narrow the scope of respondents, the questionnaire also increases the authenticity of managers' perceptions. After measures of practicability, the requirements for managers are not limited to senior managers, it is planned to contact 200 participants in the eastern, central, and northeastern regions of China, to get in touch with managers through Weibo, telephone, and email, questionnaires are distributed and collected through a well-known questionnaire distribution platform in China, and the time period is planned to be 3 months.

1.6.1 Manufacturing company in China

The low-carbon international competitiveness of China's manufacturing industry is relatively high, but as a large developing country, its trade openness is relatively high. According to the research conclusions of Zeng, Zhang and Li (2020), in the short term, strict environmental regulations will not be conducive to maintaining or enhancing the low-carbon international competitiveness of the manufacturing industry. With the improvement of manufacturing output level, environmental governance efficiency shows a trend of first decreasing, then increasing and then decreasing, and manufacturing output value and environmental governance efficiency shows an inverted N-shaped curve relationship (Xie, Tao & Du, 2016).

However, the research of Xiao Xin (2022) believes that the implementation of stricter environmental regulations must have a significant "incentive" effect on promoting the innovation and transformation of China's manufacturing industry. The role of environmental regulation in promoting the innovation and transformation of China's manufacturing industry is closely related to the pollution nature of the manufacturing industry itself and the stage of innovation and transformation.

The survey shows that most manufacturing enterprises pay more attention to the impact on the ecological environment in the manufacturing process, and there are still very few who do not pay much attention to it. Only by further enhancing the environmental protection awareness of enterprises can they better enhance the competitiveness of enterprises (Mukhtaruddin, Ubaidillah, Dewi, Hakiki & Nopriyanto, 2019). However, the effect of environmental regulation on the successful transformation and upgrading of China's manufacturing industry is not yet obvious (Xue, 2021). In addition to being closely related to environmental regulation, the transformation of the manufacturing industry is also affected by the company's own development strategy, and there is a positive correlation between corporate environmental awareness and environmental governance efficiency (Li, Zhu, Chen & Jiang, 2019). This is also the main reason why the sample range is selected from manufacturing companies.

1.7 Research Significance

This study expands the study of "stakeholder theory" in environmental auditing based on the context of Chinese enterprises, and the need for environmental management makes it possible to build an environmental auditing model with joint stakeholder participation. Environmental management refers to a comprehensive activity of planning, organizing, coordinating, controlling, and supervising to achieve the desired environmental goals. As the problem of environmental pollution becomes

more and more serious, environmental management is gradually becoming part of the daily management of enterprises as a management tool to control environmental pollution and reduce environmental risks (Biswas, 2021). Environmental management arises from environmental pressure, and the sources of environmental pressure may come from the government, consumers, investors, the public, competitors (Zhou & Ma, 2021). That is to say, the environmental pressure of the enterprise mainly comes from each stakeholder of the enterprise, and environmental audit is an effective method of environmental management, so it is necessary to introduce the stakeholder theory into the environmental audit (Shamsadini & Askari, 2022). Therefore, this study will examine the relationship between managers' perceptions of stakeholder influence and environmental auditing based on "stakeholder theory" and the moderating role of stakeholder ratios.

Although some existing articles also integrate stakeholders with environmental auditing, few studies have developed a systematic framework for environmental auditing (Rong & Wang, 2022). The main type of environmental audit in China is government environmental audit, and few companies conduct internal environmental audits (Shen & Wan, 2022).

However, in recent years, more and more companies in China have begun to recognize the importance of environmental issues. In November 2013, China established a mandatory economic responsibility audit system to implement environmental responsibility audits of top management (Zeng, Ji & Li, 2020). The popularity of internal corporate environmental audits is increasing, environmental audits are beginning to become a basic tool for corporate management to implement environmental controls, and management is paying more and more attention to internal corporate environmental audits. Therefore, this study will focus on the relationship between different stakeholder groups and corporate environmental auditing from two perspectives: internal environmental auditing and external environmental auditing.

Specifically, this study will collect data through a questionnaire to analyze the relationship between internal stakeholders, regulatory stakeholders, public stakeholders, in relation to value chain stakeholders and corporate environmental audits.

In practice, for Chinese regulatory stakeholders, external environmental audit is still in its infancy, and environmental audit does not restrict corporate environmental destruction a lot (Rong & Wang, 2022). Judging from the current environmental protection measures in China, the existing environmental protection measures have not played a positive role in promoting economic growth and quality improvement of companies, and even some governance measures still have many drawbacks (Hu, 2022). Therefore, this research can help regulatory stakeholders to better study how to implement environmental audit. It also helps to enhance companies' awareness and advancement of environmental audit work.

As people are concerned about environmental issues, the content of corporate governance is expanding, and environmental governance and environmental protection has become a very important part of corporate governance (Yang, 2021). The subjects involved in corporate governance are expanding from traditional shareholders and management to various stakeholders such as shareholders, management, government, and the general public. Environmental auditing is also a proven method of environmental governance and environmental protection.

Therefore, this study focuses on the relationship between different stakeholders and environmental auditing from an empirical point of view, which can help enterprises to better promote the construction of corporate environmental auditing systems, help enterprises to increase their own value and fulfill their social responsibility, and ultimately help enterprises to establish a good image with the public, form a special brand competitiveness, improve the original organizational structure of enterprises, and enhance the efficiency of enterprises' production and operation. It can help enterprises

to establish a good image with the public, form a special brand competitiveness, improve the original organizational structure of enterprises, enhance the efficiency of production and operation, and achieve a win-win situation for both profit and the environment.

In addition, promoting the development of China's environmental audit is also promoting the establishment of an international environmental audit mechanism. At present, developing countries cannot achieve green economic development and environmental improvement at the same time. If China, as the largest developing country, can find a good environmental audit framework system, then it will promote the cooperation of various countries to cope with the environmental crisis.

The significance of studying managerial perception lies in that managerial perception between the stakeholders influence and environmental audits affect managers' decision, such as making models and strategic actions, which in turn have an impact on corporate performance (Hu, 2021). From the perspective of research methods, the current researches mostly adopt case analysis, this situation leads the lack of different researches' comparability, and it also have negative affects on the promotion of environmental audit. For most businesses, corporate strategy is important, but the behavior of managing implementation is even more important. If taking environmental audits as the object of enterprise managerial perception, studying managerial perceptions on stakeholders' Influence and knowing which environmental audits they will take, these will be helpful to analyze managers' preference when they comply with environmental rules and promote environmental management implementation behaviors. So that this also will promote the improvement of environmental management quality for small and medium-sized enterprises.

The significance of studying stakeholders' proportion in the board of directors, when exploring the relationship between board characteristics and CSR, Jiang and Tan (2021) found that stakeholders in the board of directors was not significantly related to CSR performance, but when the proportion is more than half, it is significantly positively related to corporate social responsibility. Therefore, integrating stakeholders proportion into the focus of corporate development and arranging effective stakeholders board of directors to participate in corporate social responsibility management is an important mechanism to promote corporate social responsibility performance (Yang, Yang & Gao, 2019), thereby, there is influence on the behavior of enterprises to implement environmental audits.

1.8 Chapter Summary

The first chapter puts forward the research objectives and research questions by explaining the current research background and sorting out the relevant research status. Outlines the background of the study, research questions, research objectives, and emphasizes the scope of this study and the significance of this study. Next, the second chapter will sort out the literature of the existing research results in the related fields involved in the research questions.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter provides a critical overview of the relevant literature. After this introduction, the first section presents an overview of environmental audit. Specifically, the environmental audit will be elaborated from the following aspects: definitions of environmental audit, regulation on environmental audit, objective of environmental audit, measurement standards and methods of environmental audit, development of environmental audit in china, and research in environmental audit. Then Section 2.3 illustrates an overview of stakeholders influences and specifically from internal stakeholders, public stakeholders, regulatory stakeholders and value chain stakeholders. An overview of board of directors is presented in Section 2.4. Section 2.5 explains the managerial perception. Section 2.6 presents a summary of this chapter.

2.2 Environmental Audit

As early as the 1970s, the United States and Western Europe conducted environmental audit. In the early 1990s, the International Organization of Supreme Audit Institutions (INTOSAI) issued the "Cairo Declaration" at the 15th General Assembly, indicating that the fundamental goal of environmental audit is to promote the environmental protection of all countries. It has promoted the rapid development of environmental audit in government departments and private organizations in Western countries. For example, since 1992 in the United States, the United Kingdom, Canada, Australia and other countries, government environmental audit has all developed rapidly. Countries have also put forward new concepts such as "sustainable development" and "low-carbon economy", and formulated a series of environmental audit. System and environmental standards (Pavel, Cory & Jakki, 2020).

2.2.1 Definitions of Environmental Audit

There are many definitions of environmental audit. Tomlinson and Atkinson (1987) explored seven definitions of environmental audit. These seven definitions include EIS draft (environmental impact report) review or audit, decision point audit, execution audit, performance audit, project impact audit, predictive technology audit, and electronic industry association (EIA) program audit, which represent environmental impact Audit of different links and content of evaluation. Similarly, Thompson and Wilson (1994) also proposed seven types of environmental audit concepts based on the different impacts of environmental audit on the environment in different periods.

Brooks (2004) suggested environmental audit is divided into compliance audit, processing, storage and disposal equipment audit, pollution prevention audit, environmental debt audit, product audit, environmental management system audit and so on. Thompson and Wilson (1994) believed that environmental audit is not limited to the above content. All environmental audit should include the following four basic elements: (i) companies should compliance with relevant regulatory requirements, (ii) companies should compliance with industry standards, (iii) companies should evaluate the management's daily matters for environment, (iv) companies should propose an action plan to correct the identified deficiencies. It can be seen that scholars do not agree on the content and types of environmental audit.

However, most scholars tend to regard environmental audit as a useful environmental management tool. In 1991, ICC (The International Chamber of Commerce) defined environmental audit as: "Environmental audit is a management tool whose purpose is to ensure the safety of the environment (Bathala & Rao, 1995). Therefore, it is systematic, periodic, documented and objective. Assess whether the relevant organization and management are functioning well." In 1995, the International Organization of Supreme Audit Institutions outlined the definition of environmental audit: "environmental audit is

indistinguishable from general auditing, and includes financial, performance, compliance audit, and 3E" (Donaldson & Preston, 1995). SOS (School of Oriental and African Studies) believes that environmental audit is also a management tool, but unlike ICC, the purpose of this management tool is to measure the impact of related behaviors and activities on the environment based on relevant standards. Tomlinson and Atkinson (1987) addressed that environmental audit is a part of the entire environmental management system. Through an environmental audit, it is possible for management determines whether the organization's environmental control system provides adequate assurance of compliance with regulatory rules and national policies. Simply put, an environmental audit is a self-assessment process. With the help of an environmental audit, an organization can determine whether it complies with legal and internal environmental goals.

Ding and Hu (2022) believes that environmental auditing is an environmental management tool that companies use to promote better manage skills in environmental performance. It is a pivotal management technique and a self-discipline tool to address public and corporate concerns about environmental issues. This is also the definition accepted by this study on environmental audit.

2.2.2 Regulation on Environmental Audit

Xue (2021) proposed that any environmental audit includes four parts: (i) To verify the consistency of industry standards with the company. (ii) Evaluate the management of routine environmental matters. (iii) Prepare an action plan to correct the identified deficiencies. (iv) Verify compliance with regulatory requirements. Cai, Zheng, Chen and Wang (2019) claimed that environmental audit should include the following four basic elements: compliance, standardization, evaluate-ability and repair-ability. In other words, the company must comply with the requirements of laws and regulations,

comply with industry standards, be able to conduct daily environmental problem assessments, and take actions to solve the assessed problems. You (2021) also agreed that environmental audit has authenticity, legitimacy and effectiveness, but he emphasized that environmental audit is a branch of auditing and has a supervisory function. He thought that the basic element of environmental audit is to play the role of auxiliary supervision, to supervise the environmental problems arising from production activities, and to eliminate and improve them, so that the activities meet the requirements of sustainable development.

Song and Lei (2021) believed that environmental audit not only has a supervisory role, but also an evaluation role. environmental audit is an activity in which government auditing agencies, accounting firms, and internal auditing agencies supervise and evaluate the environmental impact of a company's economic activities, so that these activities meet the requirements of sustainable development. Li (2022) hold different opinions on the subjects of environmental audit supervision and evaluation. He advocates looking for relevant companies and individuals that govern the environment from an environmental perspective, and evaluate them according to different requirements. Lightbody (2000) from a broad perspective, environmental audit is defined as the evaluation and review of resource users, organizers, and managers.

2.2.3 Objective of Environmental Audit

The purpose of carrying out environmental audits at different stages is different. Thompson and Wilson (1994) stated that environmental audit is a part of the entire environmental management system, and its purpose is to fully ensure that the environmental audit management uses the environmental control system to comply with regulatory requirements and internal policies. Albitar, Borgi, Khan & Zahra (2022) asserted that environmental audit consists of two parts: compliance with emission

standards and compliance with reporting requirements. In the initial stage of the development of the environmental audit, its purpose was to satisfy the company's environmental reporting and disclosure. Stanescu, Ionescu & Coman (2020) advanced that the main purpose of the environmental audit is to evaluate the company's compliance with relevant laws and regulations, as well as the company's operations and performance, and to determine organizational risks.

2.2.4 Measurement Standards and Methods for Environmental Audit

The existing research literature does not have a unified measurement standard and method. Some research scholars regard environmental audit as a dummy variable, and the value of environmental audit conducted is 1 (Cai, Zheng, Chen & Wang, 2019). Some scholars use the number of audits as the standard. Cardwell, Williams and Pyle (2017) assess the taxonomic uncertainty and species genetic diversity hidden in geographically restricted studies, she assembled a large scale reference library of European marine fish DNA bar-codes, so as to conduct environmental audit. Shvarts, Pakhalov, Knizhnikov and Ametistova (2018) conducted a research on the environmental audit of the Russian oil and gas industry based on consecutive annual ratings from 2014 to 2016, and explored the application of independent analysis of satellite monitoring information in non-financial report professional auditing and public verification.

Pavel, Cory and Jakki (2020) explored the role of satellite imagery and other techniques in terms of improving the accuracy and timeliness of environmental audits. Meanwhile, it elaborates accuracy and timeliness with the core steps in the audit process (data collection, recording and sharing, analysis and Explain) link, and discuss the role of technology in these steps and audit work-flow. Adrian, Martina, Terrence and Tom (2018) analyzed the reasons why apply big data technology in many fields is very

extensive and the application in audit is not universal, and called for further study the application of big data in auditing. Scholars Mark, Bruce and Adrian (2018), who from Vanderbilt University, believe that increasing information technology and data mining technology, auditors can use known information to discover some hidden and potential information, which is of great help to intricate environmental audit effect.

Chinese scholars also have some research results on environmental audit methods. Shao (2018) discussed the impact of environmental audits from two aspects: the impact on environmental audit theory research and the impact on environmental audit practice. The assessment mechanism of local governments and business leaders, and the establishment of a sound resource and environmental audit system are five aspects to further optimize environmental audit. Wang, Cao, Fu, Li, Wang and Tang (2016) pointed out that the most basic method of conducting the environmental audit is still to check accounts and verify the accounts, review the basic conditions of natural resource use and ecological environment protection, make evaluations, and put forward suggestions for improvement. At the same time, it should also be supplemented with relevant technical methods in order to conduct performance evaluation of environmental input and output, and review the legal compliance of the natural resource use and environmental protection of the audit object.

2.2.5 Development of Environmental Audit in China

In China, influenced by the traditional development view of China's early development of focusing on GDP and ignoring environmental protection, China's theoretical research on environmental audit started relatively late, and related concepts and theories gradually became clear at the end of the 20th century.

You (2021) proposed that environmental audit refers to audit institutions and their personnel in accordance with national laws and regulations to evaluate and verify the performance of environmental responsibilities of audited entities, so as to promote their earnest fulfillment of environmental responsibilities and protect and improve the environment. And finally promote the national economy to embark on an independent economic supervision activity for sustainable development. Wang (2021), the former director of the Agriculture, Resources and Environmental Protection Audit Department of the China National Audit Office, declared that environmental audit is an environmental audit conducted by government auditing agencies in order to implement the requirements of the scientific development concept and promote the implementation of sustainable development strategies. The authentication, supervision, and evaluation of the protection of the management and economic activities, the authenticity of resource development, and the effectiveness of the situation.

According to Wang and Zhang (2021), China and other countries don't have specific definitions on environmental audit. They redefined the definition of environmental audit as: environmental audit is to ensure the effective performance of entrusted environmental responsibilities. Audit institutions and social audit organizations check whether the audited entity has performed the fairness, legitimacy and effectiveness of its entrusted environmental responsibilities in accordance with environmental audit standards. Shang, Yi and Luo (2016) believed that the full name of environmental audit is more scientific and rigorous. And further studied the internal law of concept evolution "environmental audit-resource environmental audit-natural resource asset outgoing audit-natural resource balance sheet audit".

Liu Liyun (2017) deputy director of the Audit Research Institute of the China National Audit Office, claimed that environmental audit is an important way to promote ecological civilization. Liu (2017) also pointed out that although the objects of government environmental audit include environmental protection funds, environmental

policies, and related activities of government departments, my country's current government environmental audit is still based on environmental protection fund audits. In addition, the environmental audit includes financial audit, legality audit and performance audit (Pan, 2017; Rong & Wang, 2022).

The research on environmental audit subjects mainly focuses on internal auditors. Tucker and Kasper (1998) stated that in the past, environmental audit teams usually consisted of engineers and scientists who were able to comply with government regulations, but as companies turned their attention to designing and monitoring environmental management systems, internal auditors had a higher level of auditing systems. Professional knowledge plays an increasing role in environmental audit. Squires and Elnahla (2020) proclaimed that corporate environmental performance information is a key resource for managing corporate responses to environmental responsibility issues. It is necessary to determine whether the company has considered potential responsibilities for corporate environmental impacts. Therefore, internal auditors should be promoted in the environmental audit process. Ozbirecikli (2007) and Ebaid (2020) found that people who has the certificate of CPA (Certified Public Accountant) have stronger independence, and it is more conducive for CPA to engage in environmental audit work with experts in related environmental fields to conduct supervision and verification from a third-party standpoint. Therefore, Certified public accountants should play a greater role in environmental audit work.

2.2.6 Research in Environmental Audit

Driven by the policy, the company also began to make environmental protection its top priority and carried out environmental audit (Ningsih, Junaid & Mursalim, 2020). At the same time, related research has also emerged in large numbers. Scholars have conducted in-depth research on the basic theories and subjects of environmental audit,

company environmental audit policy selection and cost-effectiveness, rules and legislation, procedures and methods from different perspectives. The following summarizes the main concerns of scholars from various countries on environmental audit.

A survey of 75 Canadian private companies in 1991 showed that 57 had developed environmental audit plans (Thompson & Wilson, 1994). A survey conducted by Price water house Coopers in 1992 on 236 manufacturing, public utilities, and natural industry companies showed that many companies have implemented internal environmental audit, of which 33% of companies audited the accounting treatment of environmental matters. 40% of companies audit compliance with environmental regulations and related reporting requirements, and 58% of companies audit compliance with internal environmental policies and procedures (Mitchell et al., 1997).

From the perspective of the power and development trend of environmental audit. Thompson and Wilson (1994) pointed out that in the past, the main drivers for environmental audits were fear of litigation and demands from regulators. With the increase in people's awareness of environmental issues and the increase in environmental governance costs, the drivers of environmental auditing have changed. Credit institutions, boards of directors, industry organizations, governments, investors, and accounting professional groups have all become drivers of environmental audit. They believe that trends in environmental auditing are as follows: More and more emphasis is being placed on the standardization of environmental audits. Auditor education and qualifications are becoming more important. More and more people from the fields of environmental science, engineering, management, or accounting are working on environmental audits.

In contrast, due to a late start in China, the research on environmental audit is slightly lagging behind, but because in recent years, with China's new positioning and new

needs for environmental audit, Chinese scholars have also begun to attach importance to the government as the main body's research on corporate environmental audit. Li and Long (2021) analyzed the development of corporate internal environmental audit in terms of definition, necessity, role, and existing problems. It is believed that environmental audit in China is mainly government environmental audit, and few companies conduct the internal environmental audit. Yang, Qin, Xia, Gan and Yu (2021) analyzed the company's internal environmental audit from the perspective of cost-effectiveness, and believed that the company's internal environmental audit is the prerequisite for China's environmental audits and also the prerequisite for the external environmental audit of the company. It is the inevitable choice for companies to obtain long-term benefits. However, the current research is still mainly focused on the conceptual framework and improvement of environmental audit and suggestions. Research on whether to carry out environmental audits under the actual social background and the specific factors that affect the implementation of environmental audits is still relatively limited.

However, in China, the operators of environmental audits mostly refer to the government. The government is the supervisor of the company. It is unrealistic for the government to implement any environmental audit. Because the current environmental audits of the Chinese government are mainly based on environmental laws and regulations, there is a lack of specific guidelines and operational guidelines, which seriously inhibits the effect of government environmental audits on enterprises (Yu, Zhang & Bi, 2022). Out of the consideration of cost and benefit, the company's stakeholders can be involved in the environmental audit process to improve efficiency (Shao, 2018). All stakeholders also influence the company through their own demands. While providing resources to the company, they exert influence on the company. Actively implementing environmental audit can satisfy the demands of stakeholders and reduce the dissatisfaction or pressure from stakeholders, and then obtain the resources of various stakeholders (Sun, Zhu & Wang, 2021). In addition, environmental auditing

is a signal for companies to convey social responsibility and establish a responsible corporate image to all stakeholders, thereby reducing possible negative impacts (Guo, 2020).

In general, foreign research on resource and environmental audit has been carried out for many years, and there are more systematic studies in many aspects, and the research results are also becoming mature. Unlike China's environmental audits, which takes the government as the main body, they attach great importance to the status of private audit and internal audit in environmental audits, and use the background of big data to make the research direction of environmental audit more specific (Yang, 2021). However, there are few studies on internal environmental audit of companies in developed countries. The main reason is that since these countries implemented environmental audit earlier, internal environmental audit has gradually developed into permanent institutions for corporate internal audits. Especially in various private organizations, internal environmental audit has developed rapidly.

2.3 Stakeholders Influences

Stakeholder theory originated in the 1960s, and various scholars have different opinions on the definition of stakeholders (Islam French & Ali., 2022). Freeman (2010) written the book "Strategic Management: An Analysis Method of Stakeholder Management", a clear definition of stakeholder theory is given, that is, the stakeholder theory is to coordinate and meet the interests of different stakeholders. Stakeholders can be defined as "any group or individual that may affect the achievement of the organization's goals" (Freeman, 2010). Usually include: government, social capital, financial institutions, contractors, operators, insurance companies. Each stakeholder is an economic man who pursues the maximization of interests.

The definition of the scope of stakeholders has undergone historical evolution. Initially, the shareholder supremacy theory regarded shareholders as opposed to corporate stakeholders, but with the separation of corporate ownership and management rights, shareholders, especially small and medium shareholders, gradually withdrew from corporate operations and became corporate stakeholders. "Stakeholder theory places shareholders as one of the multiple stakeholder groups that managers must consider in the decision-making process" (Earnhart & Mark, 2016; Wanyonyi, 2020). It is believed that "the stakeholders of a company include but are not limited to shareholders" (Jone,1995). In the United States, there are more managers who think investors/business owners are stakeholders than there are people who think customers are stakeholders (Albitar et al., 2022).

Many scholars have clearly defined the stakeholders of the company. For example, Cardwell, Williams and Pyle (2017) pointed out that stakeholders include employees, customers, suppliers, shareholders, managers, and creditors. Abagail and Donald (2001) believed that managers continue to encounter requirements from multiple stakeholder groups, including customers, employees, suppliers, governments, and certain shareholders, especially group shareholders. Archie (2004) summarized that the main stakeholders of an company include: customers, employees, owners, government, competitors and the natural environment. Huo (2000) further proposed that shareholders, customers, employees, and suppliers are all stakeholders who have the right to control, that is, they have power and legitimacy. Xu (2009) thought that management needs to build relationships with different stakeholders (shareholders, employees, customers.), operate in a more transparent manner, and provide opportunities for dialogue and engagement. Guo (2020) clearly pointed out that the company's stakeholders are mainly investors, customers, employees, suppliers and the communities where the company is located. Oleksiv, Lema, Kharchuk, Lisovych, Dluhopolskyi and Dluhopolska (2020) claimed that the list of typical stakeholder organizations includes customers, shareholders, creditors, suppliers, employees, governments, local communities,

competitors, and the media. Sakaki and Iida (2021) agreed that stakeholders usually include: government, social capital, farmers, financial institutions, contractors, operators and insurance companies. Each stakeholder is an economic man who seeks to maximize benefits.

The above definitions of stakeholders are different, but the classification of stakeholders is mainly carried out in two ways: the multi-dimensional subdivision method and the Mitchell score method (Mitchell, Agle & Wood, 1997). The classification of stakeholders by Fineman and Clarke (1996) mainly adopts a multi-dimensional subdivision method, which is to classify stakeholders according to their different attributes. Fineman and Carol (1966) pointed out two different methods of classifying stakeholders. The first is to classify stakeholders into direct and indirect stakeholders based on the formality of the contract signed between them and the organization. The second is to classify stakeholders based on their importance into core stakeholders, strategic stakeholders and environmental stakeholders.

Mitchell's scoring rule subdivides stakeholders into seven types from the perspectives of legitimacy, influence and urgency. Stakeholders with the three attributes of legitimacy, influence, and urgency are authoritative stakeholders. Two of the three attributes are potential stakeholders. Those with only one attribute are potential stakeholders.

In the evolution of DFID policy's handbook (Solesbury, 2003), stakeholders from three kinds: key stakeholders, primary stakeholders, and secondary stakeholders. In practice, however, the distinction may not be clear, there is overlap between these major types, and some primary or secondary stakeholders may also be key stakeholders.

Stakeholders have different interest demands and behavior choices. When stakeholders choose action strategies to maximize their own interests, they often

conflict with the overall interests (Huo, 2019). It is precisely because there are differences and conflicts in interest demands, so if the implementation of the activities is to be successful, then it is very important for any company to identify stakeholders, whether they are large or small, individuals or organizations (Solesbury, 2003).

Solesbury (2003) mentioned: The reason for stakeholder analysis is that it can help managers demonstrate the interests of different groups and find ways to implement the company's activities by using the support of different groups. The risks brought by the stakeholders are managed. In short, stakeholder analysis is used in management to help identify: the interests of all stakeholders that may affect or be affected by the program. Potential conflicts and risks that could endanger the company's activities. Opportunities and relationships to implement plans to help the company succeed. Improve company behavior and reduce or eliminate the negative impact on disadvantaged and disadvantaged groups. Stanford University Institute researcher Pajunen believes that organizations cannot survive without the support of stakeholders (Pajunen, 2006). The basic step in any stakeholder analysis is to first determine the main stakeholders and their interest in the activity, and then evaluate the influence and importance of each stakeholder in the activity (Solesbury, 2003).

Regarding the classification of Chinese company stakeholders, there have been a series of discussions: Liu and Zhang (2017) classified company stakeholders according to the classification of Mitchell et al. (1997). However, their classification of company stakeholders includes resource stakeholders such as information sources and production factors. Information sources and production factors do not have a relatively independent awareness, so it is difficult to measure the interest demands of these stakeholders on the organization (Yang, 2017). On the basis of Liu and Zhang (2017), the concept of stakeholders has been contracted to a certain extent. However, the division retains the source of information and highlights media stakeholders such as other political groups, descendants, and investigative agencies. There are certain differences from the results of

empirical research on stakeholders (Meng, Wang & Lu, 2019) . Based on the Mitchell scoring method, this article organizes and analyzes related research, combines the internal and external characteristics of the audit, and summarizes four types of stakeholders from authoritative stakeholders and tone stakeholders: internal stakeholders, regulatory stakeholders, public stakeholders and value chain stakeholders.

2.3.1 Internal Stakeholders

The stakeholder theory believes that there are differences in the interest requirements of various stakeholders, which will have an important impact on the business development, and different stakeholders have different degrees of influence on the operation (He, 2018). Generally, there are two types of stakeholders that affect an company: internal stakeholders and external stakeholders. Internal stakeholders include managers and non-managers (Yin & Chen, 2022). They have a direct economic interest in the company, usually within the company (Freeman, 1984). environmental audit is related to internal stakeholders because internal stakeholders are the initiators of environmental audit conducted by companies (Alabdullah et al., 2021; Hanna, Newman & Johnson, 2000; Catherine et al., 2000). Whether internal stakeholders actively conduct environmental audit depends on their professional knowledge and skills related to corporate activities and their relationship with the natural environment. And they must have the support of management. In particular, the attitudes and perspectives of management personnel in the natural environment (Marwa, Salhi & Jarboui, 2020).

Therefore, the support and leadership of senior management personnel play a vital role in carrying out environmental audit (Daddi, Heras, Marrucci, Rizzi & Testa, 2021). Out of their own interests, internal stakeholders focus on the quality and inclusiveness of environmental audit, and whether environmental audit can effectively improve their own production and living conditions. Differences in perceptions of internal

stakeholders will directly affect their response to the implementation of environmental audit. At present, most of the internal stakeholders in China's companies are not very concerned about and willing to participate in environmental audit, their response is weak, and they are in a passive state (Jiang, 2022).

Unlike internal stakeholders, which can effectively control the company's key resources, external stakeholders have great limitations in controlling company resources (Daddi et al., 2021). It includes three categories: public stakeholders, value chain stakeholders, and regulatory stakeholders.

2.3.2 Public Stakeholders

Public stakeholders include community and professional organizations associations (Etzion, 2007). Public stakeholders are one of the core stakeholders in environmental audit. The main purpose of social stakeholders participating in environmental audit is to obtain a reasonable return on investment, increase the company's reputation, and expand market share. The return on investment is the primary consideration.

Managers are increasingly pressured by social stakeholders because they have the ability to influence the public's view more widely about the company's situation in society. These stakeholders usually have to increase the participation of the public, through mass media or public protests or strikes, to influence the company's environmental strategy (Henriques & Sadorsky, 1999). There is a clear difference from internal stakeholders who actively participate in the company's daily operations, companies usually keep a distance from social stakeholders (Huse & Grethe, 2006) and restrict access to the company's internal routine and process information.

2.3.3 Regulatory Stakeholders

Regulatory stakeholders consist of government agencies responsible for formulating or implementing environmental policies (Darnall & Edwards, 2006). The government is the policymaker and supervisor of environmental audit, including providing systems, providing overall ideas and development ideas, formulating appropriate promotion and application of laws and regulations, formulating various supporting policies on environmental audit, and guiding the development of environmental audit from a macro (Guo, 2022). They usually affect companies through the enforcement of environmental regulations. For example, organizations must comply with environmental regulations or they will receive legal actions, fines, and warnings from regulatory agencies (Zhou & Wang, 2021).

The main goal of environment audit's policy is to improve the environment, stakeholders of the regulatory agency will put pressure on the company to comply with environmental protection requirements and benefit society more widely (Rong & Wang, 2022). If you do not obey the adversity of the regulatory agency in litigation, it is not conducive for the company to maintain its public image and relationship with customers (Ren, 2022).

Therefore, companies can use environmental audit as a means of preventing threats. Conversely, companies that are subject to environmental regulation can maintain or improve their relationship with external stakeholders (Tilley, 1999) and accumulate political capital. For example, by actively conducting environmental audit, it may be easier for companies to establish partnerships with the government and explore more non-regulatory ways to improve environmental improvement. This can promote mutual learning with each other and strengthen the connection between companies and regulators (Ding, Che & Shan, 2015). When negotiating with the government on the

upcoming regulations, a good reputation with the regulator also helps the company have more political capital.

On the other hand, some regulatory policies have a weaker influence and are not mandatory, but more for incentives. For example, regulators have developed policy measures to encourage companies to use environmental audit. Regulators offer these incentives because they believe that environmental audits can prevent larger environmental disasters (Wang, Wen & Sun, 2022). This may encourage companies that have not considered environmental audits.

2.3.4 Value Chain Stakeholders

Finally, stakeholders in the value chain include suppliers, corporate buyers, and household consumers (Freeman, 1984). Suppliers can put pressure on companies by stopping providing the necessary materials to express satisfaction or dissatisfaction with the company's environmental performance, thereby forcing them to switch to producing more environmentally friendly alternatives (Airike, Rotter & Mark-Herbert, 2016; Henriques & Sadorsky, 1999). Similarly, corporate buyers and household consumers can establish environmentally friendly raw products or services as their own purchase preferences, and blacklist products and services that are less environmentally friendly (Wang, 2017; Maniatis, 2016). However, stakeholders in the value chain, such as social stakeholders, usually cannot obtain information about the company's environmental audit unless the company actively discloses the relevant information.

It can be seen from the above that the stakeholders involved in the implementation of environmental audit is relatively complex, and the organizational forms and relationships are also very complex. The internal stakeholders, the regulatory, the public, and the value chain stakeholders are closely related to the implementation effects of

environmental audit, although ideally. These different subjects can achieve a win-win situation for multiple parties under the framework of environmental audit, in reality, various stakeholders inevitably produce various differences and conflicts of interest, which in turn will lead to risks. Due to a large number of stakeholders, the research cannot be comprehensive. Therefore, this research will mainly discuss the core stakeholders' impact: internal stakeholders, regulatory stakeholders, public stakeholders, and value chain stakeholders to implement environmental audit on the company.

2.4 Board of Directors

The board of directors is an important institution for companies or groups that make decisions and sets the direction for development, and its purpose established to comply with certain legal requirements. During the operation of the company, the board of directors mainly uses correct market judgments and effective decision-making to carry out business activities in an orderly and smooth manner, thereby helping the company to increase profits and ultimately helping itself earn more benefits. According to different basis, the board of directors is divided into the following three types: separation, diversification, and inequality (Berraies & Rejeb, 2021). From the perspective of a social group, the board of directors is defined as the distribution of independent social individuals among groups (Guo, 2022). Generally, the more the types of groups, the smaller the proportion of individuals belonging to one or more groups in the other type of characteristics, then it means that the diversity of the group is more obvious.

The functions of the board of directors in decision-making are mainly approval and supervision. As an independent team, the board of directors has the highest decision-making power and assumes the responsibility of controlling and supervising managers to ensure that the interests of shareholders are not violated (Ningsih, Junaid &

Mursalim, 2020). Specifically, the functions performed by the board of directors are mainly to control the strategic direction, supervise the implementation of the strategy, supervise the management behavior of each manager, and formulate the remuneration mechanism for senior managers. Zhang and Ma (2021) believed that the board of directors has four main functions: formulating company plans, determining company policies, monitoring and management functions, and assuming responsibilities.

Through combing the existing literature, it is found that scholars from various countries have done less direct research on the relationship between board structure and environmental audit, but there are more research literature on the relationship between the board structure and the performance of social responsibility, and the theoretical research system is relatively mature, mainly including five aspects: board size and proportion of independent directors whether the chairman is also the general manager, the proportion of female directors, and the educational background of the board members (Wang, 2020).

In terms of the size of the board of directors, Yang (2017) has found that the size of the board of directors should be kept within a reasonable range. Too little makes it difficult to pool ideas and too much makes it difficult to unify directions. Fu (2017) pointed out that the increase in board size causes slow decision making and inability to focus the company's interests, resulting in a significant reduction in the company's operational efficiency. Zhang (2021) argued that the larger the size of the board of directors, the worse the firm's coordination and communication capabilities. Limiting the size of the board of directors can effectively improve the efficiency of internal communication. Internal efficiency is best when the size of the board of directors is around 7-8 people. When the number of people exceeds 8, the board is easily controlled by the CEO due to the fragmentation of decision-making power, which reduces the improvement of corporate performance.

Meanwhile, as the lack of effective internal checks and balances strategies, in order to maximize the benefits in the short term, corporate management violates others interests of stakeholders (Zhang, 2021).

But Liang and Jiang (2016) believed that the size of the board of directors is not too restrictive. In addition, when making decisions, the Board of Directors generally uses voting. The number of voters is often an odd number in order to ensure that the voting is reasonable and regulated. Research has found that the larger the board size, the better the performance of CSR (Li, 2018). A large board contains representatives of many stakeholder interests. These interest representatives will fight for their own interest groups and the board can take care of that. The interests of all parties are met for all stakeholder groups. In an empirical study, it was found that the social responsibility performance of a company continues to improve as the board expands, and it is recommended that a dedicated social responsibility committee be established in the board (Jaturat, Dampitakse & Kuntonbutr, 2021).

Research on independent directors mainly focuses on their independence in corporate governance (Islam et al., 2022). The results show that independent directors pay more attention to corporate social responsibility performance than non-independent directors, and non-independent directors pay more attention to the company's profitability. This suggests that companies should increase the independence of independent directors to enhance corporate social responsibility performance (Islam et al., 2022).

However, the research on the relationship between the proportion of independent directors and CSR performance in China has been inconclusive. Some researchers all concluded that the more independent directors in the board of directors, the more willing companies are to assume social responsibilities (Fu, 2016). Huo (2019) from the perspective of information disclosure, it is concluded that increasing the proportion of independent directors is beneficial to the information disclosure of listed companies.

But some scholars have come to the opposite conclusion. Qiu (2021) and other scholars' empirical research results show that increasing the proportion of independent directors significantly inhibits corporate social responsibility performance and analyzes the reason for the imperfect board system in my country, and the board cannot perform its functions effectively. Tang and Li (2019) have come to the conclusion that the two are negatively correlated but not significant. In addition, some scholars have not studied the significant relationship between the two (Liu, 2021).

Regarding whether the employees of the company can serve as chairman and manager at the same time, there are the following discussions. The separation of the leadership structure is the guarantee for the normal and efficient operation of the internal control system of the company. If the company adopts the combination of chairman and general manager selection system, the independence of the board of directors in corporate governance will be greatly diminished. It will not be effective on supervising the management of the company instead of causing confusion in the company's management (Jensen & Ruback, 1983).

Hambrick and Wowak (2021) believed that when two positions are held concurrently, the CEO's rights will be overpowered, which will produce self-interested behavior in the company decision-making. It will also harm the interests of other stakeholders and not conducive to the company's sustainable development. Similarly, Liu, Ma and Li (2022) proposed that the combination of leadership structure is not conducive to the disclosure of company information. It is concluded that the concurrent job of two positions is not conducive to the fulfillment of corporate social responsibility (Liu, Ma & Li, 2022).

Nadeem, Zaman and Saleem (2017) discussed the disadvantages of concurrently holding two positions from the perspective of assuming responsibility for environmental protection. They believe that if the chairman and general manager have two part-time

positions, the board of directors' supervisory function will not be functional. They will be more inclined to pursue corporate profits, reduce costs and avoid responsibility for environmental protection in corporate decision making. However, some scholars have not reached a conclusion about the correlation between them (Zhou & Ma, 2021).

Studies by other scholars have not confirmed that the two positions or two the relationship between job separation and corporate social responsibility performance is analyzed, and the possible reason is that the leadership structure system in corporate governance is imperfect, which makes the board of directors supervise the management in vain, and the board of directors does not effectively perform its functions (Taghavi, Massihabadee, Shorvarzi & Mehrazeen, 2018).

In terms of the female directors' proportion, the research of Ibrahim and Angelidis (1995) showed that male and female directors have different views on the company's development. Male directors are more concerned with the profitability of the company and the economic performance of the company. While female directors are more concerned with the social responsibility of the company, that is, corporate social responsibility performance. Yang and Gao (2019) proposed that the board ratio balance of men and women is one of the most important influencing factors for better corporate social responsibility, and the researcher suggested that in order to achieve higher CSR performance, companies should have balanced proportions, as same men and women on their boards as possible.

A large number of scholars have conducted research from different perspectives and found that female directors have a positive promotion effect on corporate social responsibility performance. Amorelli and García (2020) studied female directors' contribution to corporate social responsibility from the view of charity donations Positive impact on performance. Zhang and Wang (2021) from another branch of corporate social responsibility confirms the role of female directors in promoting

employee well-being. Qiu (2021) from the perspective of enhancing corporate brand influence, a comprehensive survey was conducted on the world's top 500 companies selected as the “World's Most Ethical Companies”. The survey results show that among the finalists of the "World's Most Ethical Companies", there is a common denominator: a high percentage of female directors. In the research on environmental protection responsibility, the research of Yang et al. (2019) found that female directors showed great importance to environmental protection responsibility.

However, the research of Uyar, Kuzey, Kilic and Karaman (2021) pointed out that the increase of female directors is negatively correlated with corporate social responsibility performance and it is not significant.

There are also some studies on the impact of the education level of board members on the company. Kinateder, Choudhury, Zaman, Scagnelli and Sohel (2021) pointed out from the perspective of corporate internal governance that highly educated directors have a strong knowledge background and a broader vision, and can make rationalizations of company decisions that have been confirmed by research. Without constructive opinions, this helps to form an efficient corporate governance structure.

Li (2018) from the perspective of corporate external governance, it is proved that highly educated directors can not only make the company's internal governance efficient, but also quite effective in balancing the interests of the company and its stakeholders. This is mainly reflected in the high Educational directors promoted a more efficient internal governance environment, gave the company a brand new look, attracted close cooperation with external stakeholders, and enhanced corporate social responsibility performance.

Chinese scholars have not conducted special research on the academic qualifications of the board of directors, but Sun et al. (2021) pointed out that directors with an MBA

degree or a Chinese CPA qualification can positively influence corporate social responsibility performance.

On the other hand, some Chinese scholars have studied the relationship between the board of directors and the fulfillment of corporate social responsibilities from the perspective of stakeholders, so as to promote sustainable development. Zhang and Wang (2021) believed that when the board of directors participates in the company's decision-making, it should not only consider economic benefits, but also consider social performance. It can maximize shareholder wealth while also taking into account social responsibility performance, so that long-term stable development can be achieved.

Other scholars all suggested that the company's board of directors should be as diverse as possible, covering creditors, employees and other internal and external stakeholders. And proposed efficient coordination and cooperation between the board of directors and the board of supervisors to jointly promote the sustainable development of the company (Fu, 2017; Jaturat et al., 2021). Leblanc (2020) focuses on the selection and appointment system of board members. He suggests that all stakeholders should jointly decide on the appointment of board members, so as to avoid maximizing shareholders' interests and harming the company's social performance.

In addition, Zhang (2021) from the perspective of the company's internal governance, pointed out the shortcomings of China's board structure, and suggested that among the composition of the board of directors, the proportions of shareholders, independent directors, and employee representatives should be in line with the proportions of each of the three. The principle of one is to eliminate the disorder of internal control mechanism caused by excessive power of any party, and to consider the interests of a wider range of stakeholders as much as possible.

However, scholars have not yet reached a unified conclusion on the research on the relationship between the board of directors and Chinese corporate social responsibility and sustainable development. The empirically of Amorelli and García (2020) concluded that increasing the size of the board of directors is positively promoting corporate social responsibility performance. But Guo (2022) and Zhang (2021) came up the conclusion that increasing the size of the board of directors negatively affects corporate social responsibility performance, and the effect is not significant. The empirical results did not confirm the relationship between them (Jiang, 2022).

In summary, the research pointed out that the size of the board of directors should be controlled within a certain range, which has not been confirmed in the Chinese research. The research pointed out that independent directors have a positive impact on the company's fulfillment of social responsibilities, and the conclusion that the dual roles of chairman and manager will inhibit the performance of corporate social responsibility are also controversial in Chinese research.

These concluded that female directors can positively influence corporate social responsibility performance has not been confirmed in Chinese studies. Finally, the research pointed out that highly educated directors can play a positive role in stimulating the performance of corporate social responsibility, which has not been involved in Chinese studies.

Therefore, under the condition that environmental audit is one of the actions of corporate social responsibility, this article expands the research on the influence of the board of directors on the implementation of environmental audit in companies. This can supplement and test the existing research results, and help to increase the companies' influence in implementing environmental audit, fulfilling social responsibilities, and promoting sustainable development from the new perspective of the board of directors.

2.5 Managerial perception

In this study, managerial perception refers to the company's perception or view of stakeholders, either positively or negatively (Joos, 2019). Managers are people who can directly participate in, help others in the organization, have a substantial impact on the company's operating conditions, and have the ability to achieve business results (Yin & Chen, 2022). Joos (2019) pointed out that cognitive conflicts brought by heterogeneous executive teams in a stable environment can stimulate correct decisions, and managerial perception is an influencing factor in improving corporate capabilities and managerial capabilities.

Chinese scholars have explored the relationship between managerial perception and corporate performance, and believe that managerial perception has a significant positive impact on corporate performance (Yu et al., 2022). Using a questionnaire survey, Phadnis, Sheffi, Caplice and Singh (2017) found that managers' cognition has a significant positive effect on the cost control performance of engineering project managers.

Chang, Hong and Wen (2014) found that the managers' perception of the external environment of the organization plays a key role in the strategic decision-making of enterprises. Lin and Zhang (2017) pointed out that managerial perception can affect decision-making behavior. Pan (2017) found that there is a relationship between high-level managerial perception, personal knowledge organization willingness, and personal knowledge organization performance. The cognitive bias of enterprise managers may contribute to the overall behavioral bias of the organization. Whether the managerial perception is correct will directly affect the work coordination and competitiveness of the team (He & Liu, 2018).

An external perspective believes that legitimate pressure from external stakeholders is the key factor driving enterprises to take environmental measures, and the awareness of top managers has an impact on the relationship between environmental protection orientation of different stakeholders and corporate environmental protection innovation (Cai, Zheng & Wang, 2021).

In addition, the Chinese government attaches great importance to improving the environmental protection awareness of corporate executives. The environmental awareness of corporate executives can be said to be the basis and key factor for companies to improve their environmental protection level and promote green innovation (Guo, 2020).

Therefore, managers are required to pay attention to changes in the external environment, strengthen their perception of the dynamic environment, and improve their cognition and perception levels through continuous learning. Managers can improve their cognitive level by expanding the breadth and depth of their own knowledge structure, enhancing the ability to perceive environmental changes and interpret effective information, cultivating the overall situation and market acumen, and improving the ability of adapting to the environment and responding quickly (Yu et al., 2022).

2.6 Chapter Summary

This chapter presented the relevant literature of the study. There are many definitions of environmental audits and stakeholders influences. For the definition of stakeholder influences, four categories are adopted: internal stakeholders, public stakeholders, regulatory stakeholders, and value chain stakeholders. Managerial perception on stakeholders influences is also classified into the same four categories on this basis. And the impact of stakeholders' proportion in the board of director on the relationship

between environmental audit and managerial perception on stakeholders influences needs to be explored. Therefore, the following chapter provides hypotheses development of the study. Based on agency theory, explore the development of stakeholder-agency theory, and based on stakeholder-agency theory, explore the relationship between variables in this study from this theory. It will also deduce and explains the hypothetical logic of the model in this research.

CHAPTER 3: THEORY, CONCEPTUAL FRAMEWORK AND HYPOYHESIS

3.1 Introduction

The objective of this chapter is to explain the theoretical model of the study as well as the study hypotheses, based on issues identified in the existing literature. Section 3.2 proposes the stakeholder-agency theory on the basis of the literature review discussed in the previous chapter, and discuss the theoretical underpinning of the study in Section 3.2. Then, hypotheses development that underlie the theoretical framework is presented. In Section 3.3 shows the conceptual framework with moderator variable. Next Section 3.6 is hypothesis and Section 3.7 concludes the chapter with a summary.

3.2 Stakeholder-Agency Theory

Penrose is known as "the pioneer of company stakeholder theory". In the book "The Theory of company Growth" published in 1959, he put forward the view that "a company is a collection of human assets and interpersonal relationships", thus constructing the theoretical basis of stakeholders (Squires & Elnahla, 2020). The American scholar Buertey believed that formulating an ideal corporate goal must comprehensively consider the conflicting claims of the company's many stakeholders. They may include managers, workers, shareholders, suppliers, and distributors (Buertey, 2021).

In the 1970s, the stakeholder theory began to be gradually accepted by Western academia and business circles. Since the 1990s, stakeholders have been defined as individuals and groups that have a certain relationship with the company, own certain related interests of the company and bear the business risks of the company. For stakeholders, the greater risk that stakeholders take, the closer relationship with the

company. For companies, the company can not survive without the support of stakeholders (Fineman & Clarke, 1996).

Berle (1947) was the first to propose agency theory, which is an important theoretical foundation in the fields of economics and finance and has provided theoretical support for academic research and analysis of management functions and responsibilities. Jensen and Meckling (1976) conducted research on agency theory. They established a model to illustrate the relationship between lower management equity and non-monetary expenditures of managers, and they found that lower management equity led managers to generate more costs. The reason is that agency problems will generate agency costs, and they have not fully internalized costs. Among them, external shareholders cannot observe the behavior of managers with less cost, which is a key factor. Research by Jensen and Meckling also shows that the importance of ownership structure not only depends on how many shares are owned by the company inside shareholders but also on the concentration of outside shareholders' holdings. Thus, agency theory plays a central role in corporate governance.

However, agency theory is premised on the separation of ownership and management (Cole, He, McCullough & Sommer, 2011). In a firm, ownership and control of the firm have become two separate parts due to the highly decentralized ownership structure. The owner hires and requires the manager to control and manage the firm. As a result, an agency relationship is formed between the owner and the manager (Henriques & Sadorsky, 1999). After that, scholars extended the agency theory and studied how to take incentive measures for managers to establish long-term cooperative agency relationships with managers, and prevent managers from making unfavorable behaviors on the company's development (Qiu, 2021). Therefore, the agency theory can play a guiding role in corporate governance.

Although the stakeholder and agency theory are both an important part of the company's management. Due to the different target interests of stakeholders, governance risks will inevitably arise (Jiang, 2022). There may be deficiencies or loopholes in governance, which may lead to failure to achieve the goals of internal audit and lead to internal audit defects. In this way, principal-agent is one of the main reasons for the defects of internal audit control (Li, 2021). As early as 1986, Eisenhardt has already begun to study a new field that combines stakeholder theory with agency theory. It tried to use agency theory to explain the cooperative relationship between companies and stakeholders (Eisenhardt, 1989; Kosnik, 1987). Hill and Jones (1992) based on this area proposed a paradigm and a generalized theory of agency and stakeholder-agency theory. Stakeholder-agency theory pays more attention to the conflict of interest between stakeholders and company managers in different conditions. It usually provides a more explicit link between stakeholders and governance, where the company is a contractual link that includes implicit and explicit contractual relationships between all stakeholders, who have different influences, powers, interests (Berraies & Rejeb, 2021).

The basic theory of this study is the stakeholder-agency theory, which can be regarded as a modification of the agency theory to adapt to the stakeholder theory, including the resource dependence theory of organizations (Cumming & Leung, 2021). Moreover, it can address the influence, interests and needs of multiple stakeholders, as a governance role and the ability to maintain positive relationships with these stakeholders (Uyar et al., 2021). The theory emphasizes the importance of governance roles, structures and processes, and board values, and multiple stakeholders may have compatible interests (Berraies & Rejeb, 2021). Therefore, this theory also points out the direction for re-adjusting the interests of management and stakeholders or adjusting company mechanisms.

3.3 Conceptual Framework with Moderator Variable

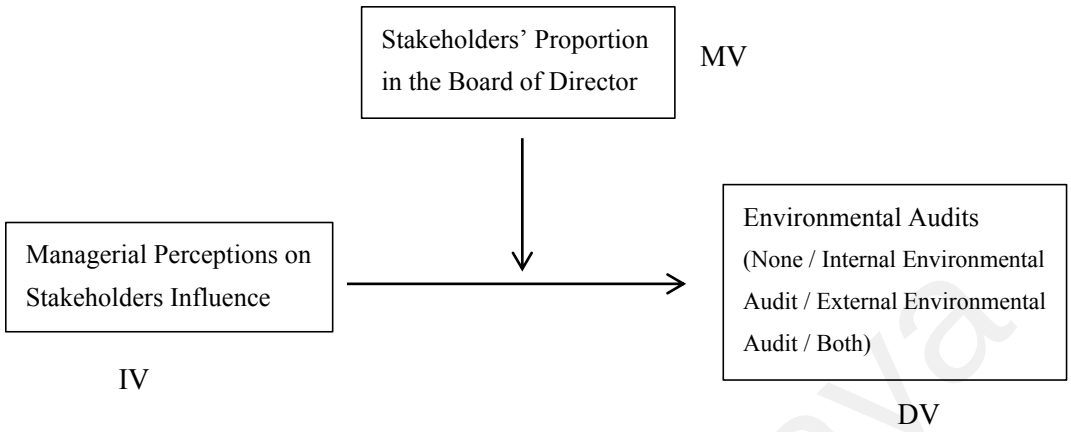


Figure 3.1: Conceptual Framework

Based on stakeholder-agency theory, managerial perceptions on stakeholders influence is proposed as an independent variable, and there are four sub independent variables, managerial perceptions on internal, regulatory, public, and value chain stakeholders influence respectively. Moderate variable is stakeholders' proportion in the board of directors. The dependent variable is environmental audits, which will be measured mainly from two aspects: internal environmental and external environmental audit.

3.4 Hypothesis

In this research, the managerial perceptions on stakeholders influence will be discussed from four types: internal stakeholders, regulatory stakeholders, public stakeholders and value chain stakeholders. Therefore, there are 8 hypotheses in this research.

3.4.1 All Stakeholders and Environmental Audits

Different stakeholders have different interest demands and behavior choices. When stakeholders choose action strategies from maximizing their own interests, they often conflict with the overall interests (He, 2018). Generally speaking, there are two types of stakeholders that influence a company: internal stakeholders and external stakeholders. Internal stakeholders include managers and non-managers (Yin & Chen, 2022). They are the group with the most direct economic interest in the company (Freeman, 1984). Environmental audits are related to internal stakeholders, because internal environmental audit, a type of environmental audit, is initiated by the company's manager (Alabdullah et al., 2021).

Moreover, the main body of environmental auditing focuses on the company's internal auditors, and should promote the company's internal managers and auditors to play a role in the environmental audits process (Jiang & Tan, 2021). Whether internal stakeholders can actively carry out environmental audits depends not only on their professional knowledge and skills related to company activities, but also on the support of management, especially the manager's attitudes and views in the natural environment (Marwa, Salhi & Jarboui, 2020). And the stakeholders in the board of directors also influence the decision-making of managers, so the support and leadership of managers play a vital role in conducting environmental audits (Biswas, 2021). Therefore, the above discussion puts forward the following assumptions:

H1a: The Managerial Perceptions on internal stakeholders' influence is positively associated with environmental audits.

Unlike internal stakeholders who can effectively control the company's key resources, the resources controlled by external stakeholders in the company have great limitations

(Mitchell et al., 1997). External stakeholders include three categories: regulatory stakeholders, public stakeholders and value chain stakeholders (Daddi et al., 2021).

Regulatory stakeholders include government agencies responsible for formulating or implementing environmental policies. They usually influence companies by enforcing environmental regulations. For example, organizations must comply with environmental regulations, otherwise they will receive legal proceedings, fines and warnings from regulatory agencies (Guan & Bao, 2021). Because their main goal is to improve the environment, regulatory stakeholders will put pressure on companies to comply with environmental requirements and benefit society more broadly. If a company does not comply with the plight of the regulator in class, it is not conducive for the company to maintain its public image and relationship with customers (Peng et al., 2021).

Therefore, companies can use environmental audits as a means of preventing threats. Conversely, companies subject to environmental regulation can maintain or improve relationships with external stakeholders and accumulate political capital. For example, by actively conducting environmental audits, it may be easier for companies to establish partnerships with the government and explore more non-regulatory ways to improve the environment (Fu, 2016). This can promote mutual learning and strengthen the relationship between the company and regulators (Guo, 2020). Therefore, the above discussion puts forward the following assumptions:

H1b: The Managerial Perceptions on regulatory stakeholders' influence is positively associated with environmental audits.

Public stakeholders include communities and professional organization associations (Leblanc, 2020). There is a clear difference from the internal stakeholders who actively participate in the company's daily operations. The company usually keeps a distance

from public stakeholders and restricts access to the company's daily and process information (Alabdullah et al., 2021). But managers are still increasingly under pressure from public stakeholders, because public stakeholders can influence the public's perception of the company's social conditions more widely. These stakeholders usually increase public participation through mass media or public protests and strikes to influence the company's environmental strategy (Uyar et al., 2021). Therefore, the above discussion puts forward the following assumptions:

H1c: The Managerial Perceptions on public stakeholders' influence is positively associated with environmental audits.

Value chain stakeholders include suppliers, corporate buyers, and household consumers (Freeman & Reed, 1983). Although stakeholders in the value chain usually cannot obtain information about the company's environmental audits, unless the company actively discloses relevant information. But suppliers can put pressure on the company by stopping providing necessary materials to express satisfaction or dissatisfaction with the company's environmental performance, thereby forcing them to switch to more environmentally friendly alternatives (Airike et al., 2016).

Similarly, corporate buyers and household consumers can regard environmentally friendly raw material products or services as their purchasing preferences, and blacklist products and services that are not environmentally friendly (Ruban & Rydén, 2019). Therefore, the above discussion puts forward the following assumptions:

H1d: The Managerial Perceptions on value chain stakeholders' influence is positively associated with environmental audits.

3.4.2 Board of Directors, Stakeholders and Environmental Audits

Stakeholder agency theory emphasizes the importance of governance roles, structures and processes, and board values, and multiple stakeholders may have compatible interests (Ju & Zou, 2021). The board of directors has played an effective resource-dependent role by providing necessary resources to the company or helping the company to obtain these resources through contact with the external environment (Fakir, Jusoh & Rahin, 2019). As one of the characteristics of the company's board of directors, the size of the board of directors can ensure the efficiency and effectiveness of the supervisory and stakeholder-oriented role of the board of directors (Li et al., 2019). The larger the number of the board of directors, the more resources are often brought to the company, thereby helping the company's sustainable operation (Fakir et al., 2019).

Since a larger board size will have more experience, knowledge and opinions from different stakeholders, it can integrate various views from different stakeholders and manage more energy, materials and resources to fulfill its social and environmental performance (Li et al., 2019). Thus, the interests of various stakeholders are solved, and the implementation of environmental audits is promoted and the credibility and reliance of environmental reports are increased.

As the corporate governance environment continues to change, the responsibilities of the board of directors are gradually shifting toward maximizing corporate value, meaning that the board's actions must take into account not only the interests of shareholders, but also pay due attention to the interests of other stakeholders, meaning that the board must not only safeguard the interests of its principals, but also coordinate the relationship between the company and society and pay attention to fulfilling its social responsibilities (García-Meca & Pucheta-Martínez, 2018).

Therefore, this study considers the proportion of stakeholders in the board of directors as a potential moderating variable. For example, Mallin, Michelon and Raggi (2013) found that governance mechanisms in the board of directors that are primarily stakeholder-oriented, which lead to higher environmental performance and ultimately to transparent environmental disclosure. Another study showed that appointing banks as board members would be more conducive to reporting on environmental issues, because banks are stakeholders concerned about the environment (Liang & Zeng, 2016).

On the other hand, boards with a disproportionate share of institutional investors are most interested in maximizing profits and are unlikely to develop environmentally relevant policies for the firm (García & Pucheta, 2018). Recent research also suggests that the presence of an environmental committee on the board of directors is indicative of a company's commitment in environmental issues, and the committee may significantly influence the company to develop a more proactive environmental strategy (Dixon, Ellstrand & Johnson, 2017). Post, Rahman and Rubow (2011) analyzed the board structure of 394 socially responsible companies in comparison to the board structure of socially responsible companies. The results showed that socially responsible companies have a higher proportion of women and outsiders on their boards. Endrikat, Villiers, Guenther and Guenther (2021) showed that the presence of more CSR committee members on the board promotes are more proactive and increased disclosure of information on environmental issues.

In addition, the number of stakeholder directors is also important. Some companies reform the company's board of directors by adding representatives from key important stakeholder groups (Hillman & Keim, 2001). The interests and values of stakeholder directors, who may have made important asset-specific investments in the company, they will have a normative impact on the company's board of directors (Fakir et al., 2019). Stakeholder directors have the potential to understand the interests of the stakeholder groups from which they come and bring a broader perspective on the

interests of stakeholders as a whole. The presence of stakeholder directors can further connect a company with important stakeholders or improve the resource-dependent role of the board (Ningsih et al., 2020). Stakeholder representation on corporate governance committees can also occur through the board committee process. A company's board of directors may appoint stakeholder directors to key oversight committees, such as audit, compensation, executive, and nominating committees. Stakeholder membership on these committees may be an important way, which stakeholder interests can be directly represented in important policy and strategic decisions, including environmental audits (Nwude et al., 2021).

More importantly, Wang and Zhang (2021) conducted a study on companies listed on the Shanghai Stock Exchange in heavily polluting industries, and they found that the factors are closely related to the quality of environmental information disclosure, including the proportion of state-owned shares and the proportion of stakeholder directors. Companies have higher ownership concentration and more disclosures' willing about environmental information. When the company needs to make economic decisions, the board of directors will consider its own interests more and will choose to disclose environmental information that is more beneficial to the company (Pedram, Nils, Andreas & Franz, 2015). .

However, the board of directors may use its position to conceal or even falsify the generation of environmental information for its own selfish interests, thereby to affect the quality of its disclosure (Chen et al., 2020). Diversified representatives of interest directors can involve more interest groups, so that other interest groups will be more considered when the company formulates its strategy and promote the company's fulfillment of social responsibility (Liu et al., 2022).

In summary, in addition to using their own advantages and methods to conduct environmental audits on the company from the outside, stakeholders can also rely on the

company's board of directors to supervise, and manage the company's actions to ensure that good environmental management practices' auditing and reporting are included.

However, scholars have not yet reached a unified conclusion on the research on the relationship between the board of directors and Chinese corporate social responsibility and sustainable development. The empirical results of Uyar, Kuzey, Kilic and Karaman (2021) concluded that increasing the size of the board of directors is positively promoting corporate social responsibility performance. Su (2017) and Fu (2017) concluded that increasing the size of the board of directors negatively affects corporate social responsibility performance, and the effect is not significant. The empirical results of Wang (2018) did not confirm their relationship. Limited studies have found the moderating role of directors. Leblanc (2020) found the engagement of the stakeholders in the corporate social responsibility function at the board level. The Board structure and composition could improve the effectiveness of board monitoring and overseeing roles, thus making promote stakeholders' influence in company environmental audits (Liang & Zhan, 2016; Stanescu et al., 2020).

Therefore, the above discussion leads to the hypothesis that the relationship between the managerial perceptions' on each stakeholder influence and environmental audits is moderated by stakeholders' proportion in board of directors. More specific:

H2a: The relationship between the managerial perceptions' internal stakeholder influence and environmental audits is moderated by stakeholders' proportion in the board of directors.

H2b:The relationship between the managerial perceptions' regulatory stakeholder influence and environmental audits is moderated by stakeholders' proportion in the board of directors.

H2c: The relationship between the managerial perceptions' public stakeholder influence and environmental audits is moderated by stakeholders' proportion in the board of directors.

H2d: The relationship between the managerial perceptions' value chain stakeholder influence and environmental audits is moderated by stakeholders' proportion in the board of directors.

3.5 Chapter Summary

In this chapter, the theoretical model and the framework of the research were discussed. Theory and models used in similar past studies to investigate the impact between managerial perceptions on stakeholders influence and environmental audits. Adding the stakeholders' proportion in the board of director as the moderator variable, and it were explained as well. Hypothesis development were also discussed with the support from related past studies. This paved the way for the discussion and understanding of the following articles. The next chapter presents the research methodology of the study.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

The purpose of this chapter is to provide an overview of the research methodology of the study. It is organized into five subsections after this introduction. Followed by a discussion of the research methods in Section 4.2. The sampling and data collection are presented in Section 4.3. Section 4.4 discusses the measurement of the variables. Next the data analysis technique is explained in Section 4.5. The last section is chapter summary.

4.2 Research Methods

Research can be conducted using quantitative, qualitative or mixed methods. This research follows the previous article and uses quantitative method to achieve goals and test hypotheses. The best way is that it helps to study the problem under consideration. With reference to existing research (Darnall & Kim, 2012; Ju & Zou, 2021), using quantitative methods to conduct this research, it can provide a deeper understanding for the relationship between stakeholder influence and the company's environmental audits based on managers perception.

4.2.1 The Development of Research Instrument

Questionnaire items are adopted or adapted from previous studies. The details are shown in Table 1. After completing the questionnaire design， it was send to the two experts validation. They helped to revise the wordings in the questionnaire which are

quite not appropriate, deleted some unnecessary questions and deleted those questions which and directly asked their opinions about the relationship as the data will tell that.

There are two questions at the top of the questionnaire, "Are you a manager?" and "Does your company belong to the manufacturing industry?". Under each question, the definitions of "manager" and "manufacturing industry" are explained. An expert believes that these two terms are common terms so that the source of the definition in her opinion is not required. The source was deleted in the questionnaire, but the definition of manager and manufacturing industry are still kept because this is a way to reconfirm that the respondents are managers of manufacturing companies. In addition, respondents will not feel strange and vague about the scope of the manager and manufacturing industry.

The questionnaire is divided into 4 parts. The first part is demographic information, the purpose of which is to control the control variables of the sample. It also analyzes and controls extreme sample data that may appear in the future. The latter three parts are conducted from the three dimensions of environmental audit, stakeholders and the board of directors, with 5, 5 and 2 questions respectively. To explore the relationship between independent variable, dependent variable and moderator variable.

Then, before the formal study, by participating in local business conferences, nearly 50 questionnaire data from managers of small manufacturing enterprises were collected for the pilot test. The time period lasted about 1 month. Through the study of small data samples, it is found that there are correlations between some independent variables and dependent variables, but there are positive correlations and negative correlations, and the role of moderator variables can be cited. Even less, the pressure on small companies from the public and the government is also limited, and there is a certain regional to find

sample targets through participation in publicity meetings, so the results are not for reference, only to prove that the items in the questionnaire are effective in detecting the samples in this study, the variable relationship has a certain validity and explains that large-scale data collection can be carried out in the follow-up.

Table 4.1 Measurement of Variables

Variable Properties	Variable name	Scale of Measurement	Items	Scale	Source
Independent Variables	Managerial perceptions on internal stakeholders influence	Interval	PartC-Q1-1: evaluate the importance of the internal stakeholders influence for your company. PartC-Q2-1: evaluate the importance of the internal stakeholders influence when determining the size of the board of directors. PartC-Q3-1:evaluate the importance of the internal stakeholders influence in promoting stakeholders to participate in the board of directors.	Using 5-Likert scale 1=Very unimportant 2=Unimportant 3=Neutral 4=Important 5=Very important	Darnal and Edwards (2006), Ma and Qu (2014), Yang et al. (2019), Ji (2020)

	Managerial perceptions on regulatory stakeholders influence	Interval	PartC-Q1-2: evaluate the importance of the regulatory stakeholders influence for your company. PartC-Q2-2: evaluate the importance of the regulatory stakeholders influence when determining the size of the board of directors. PartC-Q3-2:evaluate the importance of the regulatory stakeholders influence in promoting stakeholders to participate in the board of directors.	Using 5-Likert scale 1=Very unimportant 2=Unimportant 3=Neutral 4=Important 5=Very important	Henriques and Sadorsky (1999), Daily and Huang (2001), Huo (2019)
	Managerial perceptions on public stakeholders influence	Interval	PartC-Q1-3: evaluate the importance of the public stakeholders influence for your company. PartC-Q2-3: evaluate the importance of the public stakeholders influence when determining the size of the board of directors. PartC-Q3-3:evaluate the importance of the public stakeholders influence in promoting stakeholders to participate in the board of directors.	Using 5-Likert scale 1=Very unimportant 2=Unimportant 3=Neutral 4=Important 5=Very important	Darnal and Edwards (2006), Johnstone, (2007), Tang & Li, (2019), Ji (2020)

	Managerial perceptions on value chain stakeholders influence	Interval	PartC-Q1-4: evaluate the importance of the value chain stakeholders influence for your company. PartC-Q2-4: evaluate the importance of the value chain stakeholders influence when determining the size of the board of directors. PartC-Q3-4:evaluate the importance of the value chain stakeholders influence in promoting stakeholders to participate in the board of directors.	Using 5-Likert scale 1=Very unimportant 2=Unimportant 3=Neutral 4=Important 5=Very important	Darnal and Edwards (2006), Darnal and Kim (2012), Zhu and Sarkis (2014), Zhu et al. (2015), Ji (2020)
Dependent Variable	Environmental audits	Nominal	PartB-Q3: Ask managers' willing on implementing environmental audits. (If ticked yes, one more question:) What kind of environmental audits is your company willing to implement?	Answering the first question "Yes" or "No". "No"=No type of environmental audits. If "Yes", managers need to choose the specific type: Internal environmental audit / External environmental audit / Both.	Darnal and Edwards (2006), Wang et al. (2016), Ji (2020)

Moderating Variable	Stakeholders' Proportion in the Board of Directors	Quantity	PartA-Q6: How many stakeholders of your company participate in the board of directors?	Choose a specific number of people.	Darnal and Edwards (2006), Johnstone, (2007), Huo (2019), Wang (2020)
Control Variable	Region	Nominal	PartA-Q3: Ask the province of the manager's company located in.	Eastern, Central, and Northeast.	Constitution of People's Republic of China (2018)
	Industry	Nominal	PartA-Q4: Ask the type of manufacturing industry the manager's company belongs to.	Light and textile industry / Resource processing industry / High-tech industry.	Statistics Law of the People's Republic of China, Classification of National Economic Industries (2017)
	Gender	Nominal	Part A-Q1: Let the managers choose their gender.	Male or Female.	Liu (2018), Zahid et al. (2020), Konadu et al. (2022)
	Age	Quantity	Part A-Q2: Let the managers choose their age range.	20-29; 30-39; 40-49; 50-59; Above 60.	Oleksiv et al. (2020), Islam et al. (2022)

4.3 Sample and Data Collection

The target population for this study was managers. The companies served by these managers came from the "Top 500 Chinese Enterprises in 2020 List published by the China Enterprise Confederation" and collected 191 companies, which released a social responsibility report. In terms of report types, reports named as social responsibility reports accounted for 76.5%, environmental, social and governance reports accounted for 10.1%; sustainability reports accounted for 11.2%; environmental reports accounted for 1.1%; other related reports Accounted for 1.1%. Due to the limited contact information for the target population, it is difficult to get in touch with the target population.

Therefore, issuing questionnaires through third-party institutional platforms “WenJuanxing". Compared with traditional survey methods and other survey websites or survey systems, WenJuanxing has the obvious advantages of being fast, easy to use, and low-cost, and has been widely used by a large number of enterprises and individuals. So, according to third-party institutional platforms, it is easier to find managers who meet the requirements, and at the same time using the snowball sampling method, respondents who had already taken the questionnaire were asked to identify or recommend other managers they knew to fill out the questionnaire.

However, due to the confidentiality of the manager's contact information, most respondents directly forwarded the link to the questionnaire to those managers to collect data. After the questionnaire survey, ask them to provide other contact information of the survey subjects belonging to the research population, and conduct subsequent surveys based on the clues provided, or ask them to forward the questionnaire to the target population. The data collection period for this study is 3 months, from January

2021 to April 2021.

A snowball sampling method was used in this study. In the first step, 95 qualified managers were invited to fill out this questionnaire. In the second step, the study also asked the 96 target managers to nominate the people around them who met the requirements of this research target, and a total of 75 managers nominated a total of 462 managers who met the requirements. After eliminating duplicate nominees, the number of valid nominations was 422. Third, the study sent a link to the questionnaire to 422 managers, inviting them to complete it. Finally, after the error count, a total of 517 questionnaires were distributed and 305 questionnaires were returned, with a response rate of 58.99%. After getting rid of some questionnaires with incomplete answers or answers that weren't thought out, a total of 210 valid questionnaires were left, for a 68.85% valid return rate.

Questionnaires were distributed through "Questionnaire Star", China's largest online survey platform. Then conduct an objective screening to exclude inappropriate samples. The questionnaire adopts the bilingual mode of Chinese and English. Each question is displayed in Chinese and English at the same time, which is more convenient for people of different languages to understand the question, and also avoids problems that are difficult to correspond to a separate Chinese questionnaire and a separate English questionnaire.

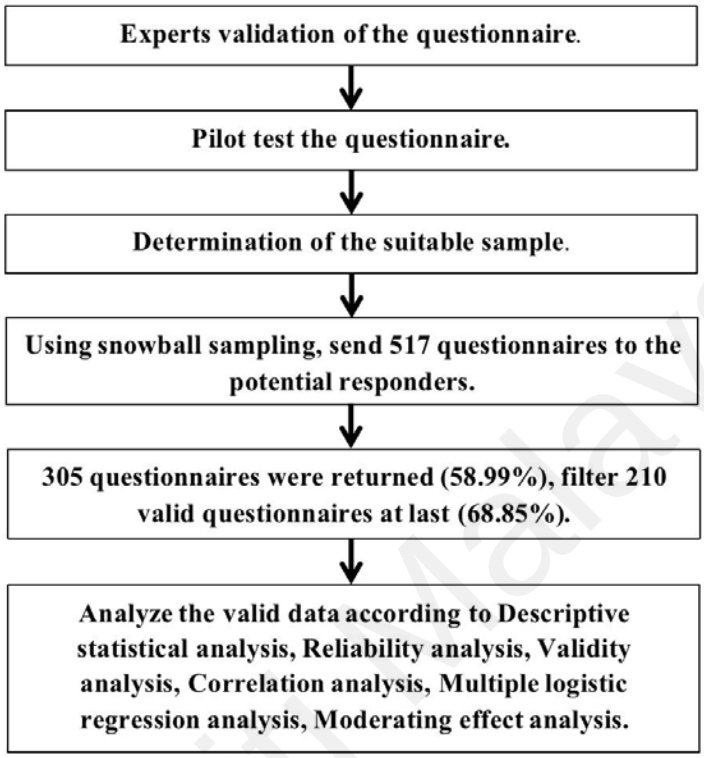
The first step is to eliminate the managers who answer is "No" for "Are you a manager?", and select the respondents who are really managers. In the second step, by asking respondents "Does your company belong to the manufacturing industry?", select the company where the manager is a sample of the manufacturing industry. The purpose of the first and second steps is to ensure that the samples used are all from the target

population. The third step is to remove the questionnaire samples with the characteristics of "Agree with everything", "Always choose first response" and "Aversion to extreme ends of the scale", as well as questionnaires with logical contradictions, for example, the number of interested directors in the board of directors is greater than Questionnaire on the number of board members. Questionnaires that meet any of the above requirements are considered invalid questionnaires and are not included in the sample. In addition, questionnaires with a response time of less than 3 minutes and questionnaires with duplicate network IP addresses are also excluded, because this type of questionnaire may be filled by the same person multiple times, and according to the amount of questions and the response time of the respondent in the pilot test, three minutes is enough to complete the questionnaire. Finally, the questionnaire samples were numbered and sorted through EXCEL, and then SPSS software was used for descriptive statistical analysis, reliability analysis, validity analysis, correlation analysis, multiple logistic regression analysis, and moderating effect analysis.

4.4 Measurement of Variables

This subsection provides detailed explanations of measures of variables. Subsection 4.6.1 presents the dependent variable's measurement, followed by the measurement of independent variables in Subsection 4.6.2, and Subsection 4.6.3 discusses the measurement of the moderating variable. The final subsection briefly shows the measurement of control variables.

Figure 4.1 The Flowchart of Study's Methodology



4.4.1 Dependent Variable Measure

The dependent variable is environmental audits. In order to know the practices willing of companies' environmental audits, asking company managers "Is your company willing to implement environmental audits", managers indicated either "Yes" or "No" to this question (Darnal & Kim, 2012). Respondents who chose "No" were classified as having no willingness on implementing any type of environmental audits (Ma & Qu, 2014). Respondents who chose "Yes" were meaning as having a willingness to implement environmental audits. Then asking respondents who chose "Yes" one more question to know which specific type of environmental audits they have willing, " What kind of environmental audits is your company willing to implement" (Yang et al.,

2019). Managers indicated "Internal environmental audit", "External environmental audit" or "Both" to this question. Respondents who chose "Internal environmental audit" or "External environmental audit" were classified as having willing to only internal environmental audit or only external environmental audit. Respondents who chose "Both" means that they have willing on implementing internal and external environmental audits (Ji, 2020). The final categorical variable of environmental audits consist of four audit types: no audit (n = 12), internal audit only (n = 66), external audit only (n = 68), both internal/external audits (n = 64).

4.4.2 Independent Variable Measure

The independent variable is perceived stakeholders influence by managers. In this research, stakeholders are divided into four groups, internal stakeholders, regulatory stakeholders, public stakeholders, and value chain stakeholders. Therefore, the questionnaire asked managers to evaluate the importance of these four stakeholders influence using the Five-Likert scale, and from three aspects when evaluated each stakeholders influence (Daddi et al. , 2021). Specifically, let managers evaluate the importance of the stakeholders influence on their company, evaluate the importance of the stakeholders influence when determining the size of the board of directors, evaluate the importance of the stakeholders influence in promoting stakeholders to participate in the board of directors, from 1=Very unimportant, 2=Unimportant, 3=Neutral, 4=Important, 5=Very important. It is subject to managers' perceptions of the experience, managerial perceptions of stakeholders influence establish how and to what extent they are relevant to the company environmental strategy, there are rarely completely objective measures of stakeholder influences (Daddi et al., 2021; Ji, 2020).

4.4.3 Moderating Variable Measure

Stakeholders' proportion in the board of directors is the moderating variable in this study. Asking the size of the manager's company board of directors and how many stakeholders of their company participate in the board of directors, chose a specific number of people, to calculate stakeholders' proportion in the board of directors. This is based on the actual situation of the manager's company.

This measure is commonly used in previous studies related to the proportion of women in the board of directors (Buertey, 2021; Nguyen & Thanh, 2021). For example, Said, Omar & Nailah (2013) focused on the impact of indicators of the proportion of women in the board characteristics of Malaysian listed companies on environmental information disclosure through the number of female directors as a proportion of the total number of directors as the dependent variable. Gradually, there are now studies that are no longer limited to the proportion of the number of women in the board of directors, but also focus on the proportion of other groups in the board of directors for research, such as the proportion of independent directors in the board of directors (Zahid, Rahman, Ali, Khan, Alharthi, Imran & Jan, 2020). Therefore, it is reasonable and valid for this study to measure the proportion of stakeholders on the board of directors by using the proportion of stakeholders on the board of directors as a moderating variable (Ningsih et al., 2020).

4.4.4 Control Variable Measure

The policies and measures of enterprises in different industries will be different, especially when there are great differences in mandatory policies in various industries,

the behavioral results are also very different (Hu, 2021). Therefore, to control for industry differences, three dummy variables were created based on the Chinese standard industrialization, the first being the light textile industry, which includes food, beverage, tobacco processing, apparel, textiles, leather, wood processing, furniture, printing. The second is the resource processing industry. This includes petrochemicals, chemical fibers, pharmaceutical manufacturing, rubber, plastics, ferrous metals. Third, high-tech industries. Including pharmaceutical manufacturing, aviation, spacecraft and equipment manufacturing, electronics and communications equipment manufacturing, computer and office equipment manufacturing, medical equipment and instrumentation manufacturing, information chemical manufacturing.

Then, dummy variables were used to account for the operation of the China area in which the managers' company is located. Because China's economic development is still unbalanced, there are relatively obvious regional gaps between the east and the west, the north and the south. The state has the same policy for each province, but due to economic development factors, the degree of implementation of the policy is not the same in each region (Zeng et al., 2020). So it is necessary to know which sample belongs to the region. Eastern, Central Region, and Northeast. Eastern includes Beijing, Tianjin, Hebei, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong and Hainan. Central Region includes Shanxi, Anhui, Jiangxi, Henan, Hubei, and Hunan. Northeast includes Liaoning, Jilin, and Heilongjiang. West as a dummy variable was excluded for empirical modeling. Because there is not a suitable target population and no data sample from the west region, which includes Inner Mongolia, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia, and Xinjiang.

Table 4.2 Distribution of Sample Source

Provinces	The type of manufacturing industry(%)		
	Light and textile industry	Resource processing industry	High-tech industry
AnHui	3(3.61)	0(0.00)	4(9.76)
BeiJing	6(7.23)	26(30.23)	12(29.27)
FuJian	2(2.41)	0(0.00)	4(9.76)
GuangGong	3(3.61)	5(5.81)	8(19.51)
HaiNan	0(0.00)	0(0.00)	0(0.00)
HeBei	1(1.20)	5(5.81)	0(0.00)
HeNan	7(8.43)	0(0.00)	0(0.00)
HeiLongJiang	3(3.61)	9(10.47)	0(0.00)
HuBei	0(0.00)	0(0.00)	2(4.88)
HuNan	0(0.00)	7(8.14)	1(2.44)
JiLin	0(0.00)	0(0.00)	0(0.00)
JiangSu	17(20.48)	1(1.16)	4(9.76)
JiangXi	3(3.61)	0(0.00)	0(0.00)
LiaoNing	1(1.20)	2(2.33)	0(0.00)
ShanDong	1(1.20)	12(13.95)	0(0.00)
ShanXi	0(0.00)	2(2.33)	0(0.00)
ShangHai	2(2.41)	1(1.16)	2(4.88)
TianJin	14(16.87)	16(18.60)	0(0.00)
ZheJiang	20(24.10)	0(0.00)	4(9.76)
Total	83	86	41

In recent years, gender as an important characteristic of executive background has received increasing attention in the field of corporate governance, especially with the rise of women's status, there are more and more studies focusing on female executives or female directors (Kinateder et al., 2021; Nadeem et al., 2017).

Unfortunately, little attention has been paid to the gender of managers and its impact on decision-making behavior. It was only in recent years that some studies began to focus on the impact of gender diversity in management on firms. It was only in recent years that some studies began to focus on the impact of gender diversity in management on firms. For example, Birindelli, Iannuzzi and Savioli (2019) argue that management gender diversity is an important driver of banks' environmental performance, and that banks become involved in environmental-related issues either directly as firms or indirectly through their lending activities. Amorelli and García-Sánchez (2020) show that greater female representation in management has a greater impact on firms' commitment to maximize the greater the impact on the company's commitment to maximize transparency in social and environmental performance.

Previous studies have explained this mechanism and found that female executives are more likely to accept ethical guidelines than male executives (Liu, 2018). These gender differences influence company policies so that companies with female executives in management are less likely to indulge in unethical behavior, fraud, earnings management, and tax evasion (Li et al., 2019).

At the same time, the active participation of female executives in the decision-making process and less self-direction provide a diverse perspective on board decisions, which enhances the quality of team decisions (Huse & Grethe, 2006). On the other hand, female executives are more concerned about the environment than men and are more

likely to participate in environmental activities, thus making positive contributions to society, the environment, and sustainable development, and the participation of female executives can better strengthen the linkages among stakeholders and promote corporate disclosure of sustainability information (Konadu, Ahinful, Boakye & Elbardan, 2022; Zahid et al., 2020).

Age is another important factor in the demographic diversity of management, which reflects the experience of management members. Age diversity may help managers develop the different knowledge and skills needed to be able to make informed decisions (Kinateder et al., 2021). Research has shown that socially responsible organizations have more age-diverse boards than non-socially responsible organizations because companies can take advantage of the variety of connections that come with a wide range of board members to enhance their corporate social responsibility performance (Islam et al., 2022).

Also, management age diversity facilitates management competence and innovation, which may improve the quality of board decisions (Li et al., 2019). Although there is no direct research showing that management age affects environmental auditing, some indirect evidence could suggest a prior link between the two. For example, age diversity is expected to lead to more stakeholder-oriented behavior in organizations (Isa, Lim & Chin, 2017). While older managers are more sensitive to society as a whole and more willing to contribute to its welfare, younger managers are more sensitive to environmental and ethical issues through logic and principles (Hambrick et al., 2022). Islam et al. (2022) found that older managers have higher moral reasoning skills, while younger managers show more concern for the environment, and firms with younger managers than those with older managers exhibited more environmental CSR than firms with older managers, but in practice they also found the opposite phenomenon, that management with an average age closer to 56 was more likely to implement

environmental governance structures or processes. Therefore, age and gender of the respondent also are one of the dummy variables.

4.5 Data Analysis Technique

This research will use EXCEL and SPSS 25.0 software for descriptive statistical analysis, reliability analysis, validity analysis, correlation analysis, multiple regression analysis, and moderating effect analysis. Excel is used for descriptive analysis, which visually displays the situation and proportion of data collection. And number the sample data through excel. The rest of the analyzes were all done by SPSS 25.0.

4.6 Chapter Summary

This chapter using the outlined the research methodology in last chapter to conduct the research. The details of the sampling and data collection are also described. According to the snowball sampling method to collect data. The valid data shows a total number of 210. Further, the measurement of the dependent variable (managerial perceptions on stakeholders influence), the independent variable (environmental audits), the moderating variable (stakeholders' proportion in the board of director), and the control variables (industry, gender, age, region) are also explained. The analysis data models are also included in this chapter. The first model is to test the first hypotheses, and the second model is to test the moderating role of stakeholders' proportion in the board of director between managerial perceptions on stakeholders influence and environmental audits. Finally, a brief discussion on procedures of data analysis is also included. The following chapter presents the results of this study

CHAPTER 5: DATA ANALYSIS AND RESULTS

5.1 Introduction

In this chapter, all the results of the data analysis performed using statistical tool SPSS software are presented in detail. Data analysis is performed through a series of sequential steps. First, Section 5.2 carries out a descriptive statistical analysis of the data as a whole.

Secondly, the stability and consistency of questionnaire results are test by reliability analysis in Section 5.3. The Section 5.4 validity analysis evaluates the accuracy, validity, and correctness of a scale, the deviation between the measured value and the true value of the target. Moreover, in order to test whether multi col-linearity affects regression results between variables, a correlation test is proposed in Section 5.5. Section 5.6 conducted multiple regression analyses of data on the premise of passing correlation test, and Section 5.7 conducted a moderating effect analysis. Finally, the chapter concludes in Section 5.8.

5.2 Descriptive Analysis

It can be seen from Table 5.1 that 210 questionnaires were collected in this study, of which males and females accounted for 52.38% and 47.62%, respectively. The age range is mainly concentrated in 30-39 years old and 40-49 years old, these two parts accounted for 57.14% and 37.14% respectively. This indicates that the control variables of managers' age and gender have little influence on the data in this study. Most of the samples are from the eastern region of China, with more than half of 60%, 28.1% of the samples are from the northeast region, and only 11.9% of the samples are from the

central region. Light and textile industry, Resource processing industry and High-tech industry accounted for 39.52%, 40.95% and 19.52% respectively. More than 90% of managers are willing to implement environmental audits in their companies. Among them, the number of managers willing to implement internal environmental audits, external environmental audits, and both environmental audits is about 30%.

5.3 Reliability Analysis

Reliability refers to the stability and consistency of questionnaire results when the same subject is surveyed by the same method, whether the measurement instrument (questionnaire or scale) is stable in measuring the subject or variable being measured. In this paper, the Cronbach alpha reliability coefficient method is used to calculate the internal reliability. If the value is higher than 0.8, the reliability is high. If the value is between 0.7 and 0.8, the reliability is good. If this value is between 0.6 and 0.7, the reliability is acceptable. If this value is less than 0.6, it indicates poor reliability. Nunnally (1978) suggested a value of 0.60 for exploratory studies, therefore, when the Cronbach's statistics for each scale are above 0.60, it can indicate adequate internal reliability for the four factors. In this paper, SPSS 25.0 software was used to calculate the internal consistency coefficients of each scale. The calculation results are shown in Table 5.2.

Table 5.1 Sample Characteristics (n = 210)

Measure	Items	Frequencies	Percent(%)
Gender	Female	100	47.62
	Male	110	52.38
Age range	20~29	8	3.81
	30~39	120	57.14
	40~49	78	37.14
	50~59	4	1.90
Region	Eastern	126	60.00
	Northeast	59	28.10
	Central	25	11.90
Manufacturing type	Light and textile industry	83	39.52
	Resource processing industry	86	40.95
	High-tech industry	41	19.52
	None	12	5.71
Are you willing to implement an environmental audits	Internal Environmental Audi	66	31.43
	External Environmental Audit	68	32.38
	Both	64	30.48
Total		210	100.0

Table 5.2 Reliability Analysis of Managerial Perceptions on Four Type Stakeholders Influence

Dimension	item	Cronbach's Alpha
Managerial Perceptions on Internal Stakeholders Influence	3	0.736
Managerial Perceptions on Regulatory Stakeholders Influence	3	0.728
Managerial Perceptions on Public Stakeholders Influence	3	0.715
Managerial Perceptions on Value chain Stakeholders Influence	3	0.757
Total	12	0.815

As can be seen from the above table, the number of items in the 4 dimensions is 12, and the total Cronbach's alpha coefficient is 0.815, and the Cronbach's alpha coefficient for all 4 dimensions is above 0.7. This indicates that the reliability of the questionnaire is high, that is, there is a high internal consistency and the measurement results are reliable and stable.

5.4 Validity Analysis

Validity evaluates the accuracy, validity, and correctness of a scale, the deviation between the measured value and the true value of the target. Validity reflects whether a

measurement instrument can effectively measure what it is intended to measure, the degree of agreement between the actual measurement results and the expected results. This study first tests the content validity and designs the questionnaire based on previous literature. Two experts are invited Judge the questionnaire and put forward suggestions for revision, and did a Pilot test. Then, Exploratory Factor Analysis (EFA) was used to test the validity of the structure to explore whether the internal components of the questionnaire measurement results are consistent with the structure that the designer intends to measure.

Table 5.3 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.851
Bartlett's Test of Sphericity	Approx. Chi-Squared	4682.476
	df	253
	Sig.	.000

Factor analysis requires a certain degree of correlation of the data, but too high or too low correlation can make it difficult to perform factor analysis. KMO (Kaiser-Meyer-Olkin) and Bartlett's Test of Sphericity can test this degree of correlation. This questionnaire mainly analyzes the structural validity before the validity analysis, factor analysis is used to verify the strength of structural validity, and the KMO test is performed before the factor analysis. The value of KMO statistic is between 0 and 1. The KMO value greater than 0.9 is very suitable for factor analysis, greater than 0.8 is very suitable for factor analysis, greater than 0.7 is suitable for factor analysis, greater than 0.6 is still suitable for factor analysis, and factor analysis is not suitable for 0.6 and below (Klein, 2013).

Using SPSS 25.0 to perform KMO and Bartlett sphericity test, and the results are shown in the table below. It can be seen that the KMO value of the independent variable dimension sub-scale is 0.851, which is more suitable for factor analysis. The results of the Bartlett's sphericity test show that the probability of significance of the test is P<0.05, which indicates that it is suitable for factor analysis (Klein, 2013).

Table 5.4 Factor Analysis Results

	Factor1	Factor2	Factor3	Factor4
Perceived internal stakeholders influence				
Importance of internal stakeholders influence on your company.	**0.810**	-0.106	0.116	0.191
Importance of internal stakeholders influence on the implementation/development of your company's internal environmental audit.	**0.575**	0.144	0.200	0.167
Importance of internal stakeholders influence on your company's acceptance of external environmental audit.	**0.627**	0.328	0.044	-0.086
Perceived regulatory stakeholders influence				
Importance of regulatory stakeholders influence on your company.	-0.150	**0.760**	0.311	0.172
Importance of regulatory stakeholders influence on the implementation/development of your company's internal environmental audit.	0.139	**0.649**	0.134	0.135
Importance of regulatory stakeholders influence on your company's acceptance of external environmental audit.	-0.045	**0.829**	0.206	0.025

	Factor1	Factor2	Factor3	Factor4
Perceived public stakeholders influence				
Importance of public stakeholders influence on your company.	0.198	-0.165	**0.719**	0.101
Importance of public stakeholders influence on the implementation/development of your company's internal environmental audit.	-0.075	0.248	**0.746**	0.129
Importance of public stakeholders influence on your company's acceptance of external environmental audit.	0.223	0.052	**0.798**	0.008
Perceived value chain stakeholders influence				
Importance of value chain stakeholders influence on your company.	0.324	0.067	-0.134	**0.569**
Importance of value chain stakeholders influence on the implementation/development of your company's internal environmental audit.	0.239	0.381	-0.008	**0.710**
Importance of value chain stakeholders influence on your company's acceptance of external environmental audit.	0.173	0.249	-0.159	**0.554**

Using the orthogonal variance maximum rotation to input Perceived each stakeholders influence into the common factor analysis, 4 factors are generated as a result. The perceptions of internal, regulatory, public, and value chain stakeholder groups on stakeholder influence are Factor 1, 2, 3, and 4, respectively.

The perceived stakeholder impact was then entered into a common factor analysis using orthogonal varimax rotation, which resulted in four factors. The perceived stakeholder impact from internal, regulatory, public, and value chain stakeholder groups were Factor 1, Factor 2, Factor 3, and Factor 4, respectively.

Table 5.4 Factor analysis results represents the loading coefficient of each question on the 4 factors. The coefficient value indicates the degree of correlation between the analysis item and the factor. If the absolute value of the value in a certain factor is greater than 0.4, it indicates that the item belongs this factor. It can be seen from the factor loading results that the same dimension problem has the largest loading coefficient in the same factor, indicating that the maximum loading coefficient of the four factors is consistent with the expected structure of the questionnaire, which means that the validity of the questionnaire is acceptable.

5.5 Correlation Analysis

This study used each subject's total score on each dimension to quantify each manager's basic profile on that dimension. The Spearman correlation coefficient was used to measure the correlation between the dimensions. If significant (an * in the upper right corner of the result indicates a relationship; otherwise, no relationship); once the relationship is established, the closeness of the relationship depends directly on the magnitude of the correlation coefficient. In general, 0.80 to 1.0 indicates a strong

relationship; 0.60 to 0.79 indicates a strong relationship; and 0.40 to 0.59 indicates a moderate relationship. If the correlation coefficient value is 0.20 to 0.39, it means that the relationship is a weak correlation. Under the 0.20 is a very weak correlation. The specific results are shown in the following table:

Table 5.5 Correlation Analysis

	Perceived Internal stakeholders influence	Perceived Regulatory stakeholders influence	Perceived Public stakeholders influence	Perceived Value chain stakeholders influence	Stakeholders in the Board of Directors
Perceived Internal stakeholders influence	1				
Perceived Regulatory stakeholders influence	0.266**	1			
Perceived Public stakeholders influence	0.271**	0.314**	1		
Perceived Value chain stakeholders influence	0.188	0.241*	0.341**	1	
Stakeholders in the Board of Directors	0.274*	0.049	-0.014	0.269*	1

* $p<0.05$ ** $p<0.01$

From the above table, we can use correlation analysis to study the correlation between perceived internal stakeholders influence, perceived regulatory stakeholders influence, perceived public stakeholders influence and perceived value chain stakeholders influence, stakeholders in the board of directors. Spearman's correlation coefficient is used to express the correlation. The strength of the relationship specific analysis shows that:

The value of the correlation coefficient between perceived regulatory stakeholders influence and perceived internal stakeholders influence is $0.266>0$, and $p<0.01$ is significant, which means that there is a weak positive correlation between perceived regulatory stakeholders influence and perceived internal stakeholders influence. The company's internal management system and structure partly depend on the intensity of supervision, so when managers think that internal stakeholders influence is important, they may think that regulatory stakeholders influence is important.

The value of the correlation coefficient between perceived public stakeholders influence and perceived internal stakeholders influence is $0.271>0$, and $p<0.01$ is significant, which means that there is a weak positive correlation between perceived public stakeholders influence and perceived internal stakeholders influence. The correlation coefficient between perceived public stakeholders influence and perceived regulatory stakeholders influence is $0.314>0$, and $p<0.01$ is significant, which means that there is also a weak positive correlation between perceived public stakeholder influence and perceived regulatory stakeholder influence.

The correlation coefficient values of perceived value chain stakeholders influence and perceived regulatory stakeholders influence and perceived public stakeholders influence are $0.241>0$, $p<0.05$ and $0.341>0$, $p<0.01$, respectively, which means that

perceived value chain stakeholders influence have a weak positive correlation with perceived regulatory stakeholders influence or perceived public stakeholders influence.

The correlation coefficient values between stakeholders in the board of director and perceived internal stakeholders influence and perceived value chain stakeholders influence are $0.274>0$, $p<0.05$ and $0.269>0$, $p<0.05$, respectively, which means that stakeholders' proportion in the board of director and perceived internal stakeholders influence and perceived value chain stakeholders influence have a weak positive correlation.

All the Spearman correlations among the independent variables are within the range of acceptability, and there are only some weak correlations so that there will not suffer from multi-collinearity problems.

5.6 Multiple Logistic Regression Analysis

This model incorporates regions and industries into the model as control variables to explore the influence of independent variables on dependent variables. The hypotheses were evaluated using logistic and multiple logistic regression. Because logistics regression analysis is used to study the effect of X on Y, it has no requirement on the data type of X, X can be either qualitative data or quantitative data, but Y must be categorical data. In this study, the independent variable managerial perceptions on stakeholders' influence is categorical data, and the dependent variable environmental audits is also categorical data.

Model 1 is binary logistic regression with the unwillingness to implement

environmental audits as the control group. Since there are only two options for the dependent variable in Model 1: willingness to implement environmental audits and unwillingness to implement environmental audits, binary logistic regression analysis is used.

Model 2 is multiple logistic regressions with the unwillingness to implement environmental audits as the control group. Because there are multiple options for dependent variables in Model 2, the cases of willingness to implement environmental audits are further divided into Internal environmental audit only, External environmental audit only , and Both environmental audits. And there is a comparative significance between each option. For example, the higher the value of "Both environmental audits", the higher the willingness of the sample, so the multivariate ordered Logistic regression analysis is used.

The following is the formula of Model 1, where "P" represents the probability of willingness to implement environmental audits, "1- P" represents the probability of unwillingness to implement environmental audits, "β_0" represents the model intercept, "$\boldsymbol{\beta}$" represents the regression coefficient of the four stakeholders ($\boldsymbol{X}$), "$\boldsymbol{\phi}$" represents the control variable ($\boldsymbol{C}$) regression coefficients.

$$\log\left(\frac{P}{1-P}\right) = \beta_0 + \boldsymbol{\beta} * \boldsymbol{X} + \boldsymbol{\phi} * \boldsymbol{C}$$

The following is the formula of Model 2, in which, "β_0" represents the model intercept, "P_1, P_2, P_3" represent the probability of willingness to implement internal environmental audit, external environmental audit, and both environmental audits, respectively. "P" represent the probability of unwillingness to implement environmental audits, and "$P_1 + P_2 + P_3 + P = 1$". "$\boldsymbol{\beta_1, \beta_2, \beta_3}$" respectively

represent the influence of the four stakeholders ($\boldsymbol{X}$) on the willingness to implement internal, external, and internal and external environmental audits, and "$\boldsymbol{\phi_1, \phi_2, \phi_3}$" represent the influence of the control variable ($\boldsymbol{C}$) on the willingness to implement internal environmental audit, external environmental audit, and both environmental audits.

$$\log\left(\frac{P_i}{1-P}\right) = \beta_{0i} + \boldsymbol{\beta_i} * \boldsymbol{X} + \boldsymbol{\phi_i} * \boldsymbol{C}, \text{i=1,2,3}$$

The basic logistic regression classifies environmental audits as a binary variable that equals 1 if the manager is willing to participate in any type of environmental audit, and 0 otherwise. Compared managers who are willing to accept any type of environmental audit with managers who are unwilling to accept environmental audits. Likelihood ratio X2 shows that when p <0.01, the invalid effect of the independent variable can be rejected. The Pseudo-R2 statistic is an approximation of the square of the random coefficient. Aldrich & Nelson (1984) explained that its range is between 0 and 1. When the quality of the fit improves, it will be close to 1.

The results of Model 1 showed that p<0.05, which means that this model construction is meaningful. In the Model 1, Pseudo R^2=0.251, the value of Rho-squared is between 0.2 and 0.4, which means it is very suitable (Henher & Stopher, 1979). Pseudo-R^2=0.251 means that the independent variable and the control variable can explain the 25.1% change of DV.

Model 2 clarifies how managers' perceptions of stakeholder impact are associated with different types of environmental audits. It compares managers' willingness to implement internal environmental audits, external environmental audits, and both types of environmental audits with managers who do not use any type of environmental audits. The specific regression analysis results are presented below:

Table 5.6 Multiple Logistic Regression Analysis

	Model1		Model 2					
	Any environmental audits		Internal environmental audit only		External environmental audit only		Both environmental audits	
	Odds ratio	SE	Relative risk ratio	SE	Relative risk ratio	SE	Relative risk ratio	SE
Perceived Internal stakeholders influence	1.30*	0.147	1.58**	0. 32	1.77**	0.288	1.98**	0.119
Perceived Regulatory stakeholders influence	1.40**	0.102	1.17	0.261	1.75**	0.238	1.13	0.151
Perceived Public stakeholders influence	1.04	0.266	1.12	0.347	1.15	0.384	1.30	0.399
Perceived Value chain stakeholders influence	1.36*	0.157	1.29*	0.105	1.34*	0.193	1.38	0.408
Eastern	1.25**	0.077	1.20*	0.255	1.29*	0.204	1.57**	0.135
Central	1.61**	0.096	1.26**	0.125	1.02	0.125	1.68**	0.054
Light and textile industry	1.26*	0.107	1.48*	0.298	1.44*	0.063	1.11	0.023
Resource processing industry	1.46	0.028	1.51*	0.484	1.54*	0.154	1.18*	0.152
N	210				210			
Likelihood ratio X^2	$\chi^2(8)=23.129$, P=0.003		$\chi^2(8)=17.589$, p=0.025					
Pseudo- R^2	0.251		0.236					

* $p<0.05$ ** $p<0.01$

5.6.1 Perceived Internal Stakeholders Influence and Environmental Audits

Perceived internal stakeholders influence show significance at the 0.05 level ($p < 0.05$), which means that perceived internal stakeholders influence by managers have a significant positive influence on whether they are willing to implement environmental audits. Its Odds ratio is 1.30 in model 1, which means that when the number of perceived internal stakeholders influence by managers increase by one unit, the probability of willingness to implement environmental audits increase by 1.3 times. Therefore, the conclusion shows that H1a is supported, that is, managerial perceptions on internal stakeholders audit are positively associated with environmental audits.

Among them, compared to those managers who choose no environmental audits, the managers who have willing to implement internal environmental audit have 58.0% more likely ($p < 0.01$) to be associated with greater perceived internal stakeholders influence. The managers who have willing to implement external environmental audit have 77.0% more likely ($p < 0.01$) to be associated with greater perceived internal stakeholders influence. The managers who have willing to implement both internal and external environmental audit have 98.0% more likely ($p < 0.01$) to be associated with greater perceived internal stakeholders influence.

5.6.2 Perceived Regulatory Stakeholders Influence and Environmental Audits

Perceived regulatory stakeholders influence show a significance level of 0.01 ($p < 0.01$), which means that perceived regulatory stakeholders influence by managers have a significant positive influence on whether they are willing to implement environmental audits. And the odds ratio is 1.40 in model 1, which means that the probability of

willingness to implement environmental audits increases by 1.4 times when the number of perceived regulatory stakeholders influence by managers increase by one unit. The conclusion shows that H1b is supported, that is, managerial perceptions on regulatory stakeholders influence are positively associated with environmental audits. Among them, compared to those managers who choose no environmental audits, the managers only have willing to implement external environmental audit, without internal environmental audit, they have 75.0% more likely ($p < 0.01$) to be associated with greater perceived external stakeholders influence .

5.6.3 Perceived Public Stakeholders Influence and Environmental Audits

Perceived public stakeholders influence do not show significance ($p > 0.05$), which means that perceived public stakeholders influence by managers do not affect whether they are willing to implement environmental audits, indicating that H1c is not supported. That is, managerial perceptions on public stakeholders influence are not positively associated with environmental audits.

5.6.4 Perceived Value Chain Stakeholders Influence and Environmental Audits

Perceived value chain stakeholders influence show significance at the 0.05 level ($p < 0.05$), which means that perceived value chain stakeholders influence by managers have a significant positive influence on whether they are willing to implement environmental audits. And the odds ratio is 1.36 in model 1, which means that when the perceived value chain stakeholders influence by managers increases by one unit, the probability of being willing to implement environmental audits increases by 1.36 times. The conclusion shows that H1d is supported, that is, managerial perceptions on value

chain stakeholders influence are positively associated with environmental audits. Among them, compared to those managers who choose no environmental audits, others have willing only choose to implement one type of environmental audits, that is internal environmental audit or external environmental audit, there are 29% ($p < 0.05$) and 34 % ($p < 0.05$) more likely respectively.

5.7 Moderating Effect Analysis

Next, in order to explore whether there is a moderating effect between each perceived stakeholders influence and the dependent variable environmental audits, the moderating variable and the interaction terms of the adjustment and the four factors are added to the model. See the Table 5.7.

From the results of Model 1, it can be seen that $p = 0.008 < 0.05$, which means that this model construction is meaningful. Pseudo $R^2 = 0.379$, which means that independent variables, control variables, and adjustment variables can explain 37.9% of the reasons for changes in whether they are willing to implement environmental audits. The specific analysis is as follows:

Table 5.7 Moderating Effect Analysis

	Model 1		Model 2					
	Any environmental audits		Internal environmental audit only		External environmental audit only		Both environmental audits	
	Odds ratio	SE	Relative risk ratio	SE	Relative risk ratio	SE	Relative risk ratio	SE
Perceived Internal stakeholders influence	1.24*	0.275	1.36	0.514	2.08**	0.491	1.68*	0.219
Perceived Regulatory stakeholders influence	1.22*	0.18	1.17	0.303	2.05**	0.289	1.03	0.151
Perceived Public stakeholders influence	1.17	0.141	1.19	0.616	1.37	0.609	1.10	0.299
Perceived Value chain stakeholders influence	1.14	0.181	1.43*	0.362	1.40	0.342	1.21	0.408
Eastern	1.14*	0.025	1.45**	0.161	1.65*	0.136	1.26	0.135
Central	1.15	0.121	1.97**	0.016	1.56	0.30	1.55**	0.054
Light and textile industry	1.14*	0.035	1.54*	0.149	2.06*	0.43	2.48**	0.023
Resource processing industry	1.14	0.148	1.36	0.085	1.03	0.28	1.79**	0.152
Stakeholders in the board of directors	1.23*	1.131	1.50*	0.12	1.31	1.104	1.32	0.576
MV*IV1	1.34*	0.18	2.13*	0.462	1.97**	0.596	1.23	0.606
MV*IV2	1.39*	0.104	1.04	0.579	1.88**	0.548	1.32	0.563
MV*IV3	1.05	0.239	1.01	0.056	1.66	0.31	1.17	0.419
MV*IV4	1.28*	0.025	1.92**	0.473	2.48**	0.24	1.86*	0.376

N	210		210
Likelihood ratio X^2	$\chi^2(8)=24.149$, P=0.008	$\chi^2(8)=16.543$, p=0.031	
Pseudo- R^2	0.379	0.281	

* $p<0.05$. ** $p<0.01$.

Model1: Using binary logistic regression with the unwillingness to implement environmental audits as the control group.

Model2: Using multiple logistic regressions with the unwillingness to implement environmental audits as the control group.

The interactions of stakeholders' proportion in the board of directors and perceived internal stakeholders influence shows a significance level of 0.05 ($p < 0.05$), which means that stakeholders' proportion in the board of directors positively regulates perceived internal stakeholders influence, namely that the higher of the stakeholders' proportion in the board of directors, the greater of the influence of perceived internal stakeholders influence by manager on the willingness to implement environmental audits. H2a is supported.

The interactions of the stakeholders' proportion in the board of directors and perceived regulatory stakeholders influence shows a significance level of 0.05 ($p < 0.05$), which means that stakeholders' proportion in the board of directors positively regulates the perceived regulatory stakeholders influence, namely that the higher of stakeholders' proportion in the board of directors, the greater of perceived regulatory stakeholders influence by manager on the willingness to implement environmental audits. H2b is supported.

The interactions of stakeholders' proportion in the board of directors and perceived public stakeholders influence is not significant ($p > 0.05$), which means that stakeholders' proportion in the board of directors has no regulating effect on perceived public stakeholders influence by manager and environmental audits. Hence, H2c is not supported.

The proportion of stakeholders in the board of directors and the perceived value chain stakeholder influence' interaction shows a significant level of 0.05 ($p < 0.05$). That is, the higher stakeholders' proportion of stakeholders in the board of directors the greater of perceived value chain stakeholders influence by manager on willingness to implement environmental audits. Therefore, H2d is supported.

5.8 Chapter Summary

Through binary logistic regression and multiple regression analyses, this chapter obtains the relationship between managerial perceptions on each stakeholder influence and environmental audits. It also analyzes the role of moderator variables in moderating effect analysis. These results are explained from the perspective of data analysis. The next chapter will explain the research results of this chapter in more detail.

CHAPTER 6: DISCUSSION AND CONCLUSION

6.1 Introduction

This final chapter summarizes the findings and expresses the research conclusions through six sections. Firstly, Section 6.2 summarizes the findings and provides explanations of the established relationships. Next, Section 6.3 offers an overview of the research, and Section 6.4 highlights the prominent contributions of the research finds to the knowledge system and the practical implications. Section 6.5 presents the limitations of the study and proposes directions for future researches. Finally, Section 6.6 concludes this chapter.

6.2 Summary of Findings

In this research, through descriptive statistical analysis, reliability analysis, validity analysis, correlation analysis, multiple logistic regression analysis, and moderating effect analysis, the results of the hypothesis testing are summarized in Table 6.1 as follows:

Table 6.1 The Summary of the Hypothesis Testing

Hypothesis	Results
H1a: Managerial perceptions on internal stakeholders influence is positively associated with environmental audits.	Support
H1b: Managerial perceptions on regulatory stakeholders influence is positively associated with environmental audits.	Support

H1c: Managerial perceptions on public stakeholders influence is positively associated with environmental audits.	Not Support
H1d: Managerial perceptions on value chain stakeholders influence is positively associated with environmental audits.	Support
H2a: The relationship between the managerial perceptions' internal stakeholder influence and environmental audits is moderated by stakeholders' proportion in the board of directors.	Support
H2b:The relationship between the managerial perceptions' regulatory stakeholder influence and environmental audits is moderated by stakeholders' proportion in the board of directors.	Support
H2c: The relationship between the managerial perceptions' public stakeholder influence and environmental audits is moderated by stakeholders' proportion in the board of directors.	Not Support
H2d: The relationship between the managerial perceptions' value chain stakeholder influence and environmental audits is moderated by stakeholders' proportion in the board of directors.	Support

This section illustrates the key findings from the study based on the research objectives stated in Chapter one. Presented research objectives are as below:

RO1: To examine the relationship between managerial perceptions on stakeholders' influence and environmental audits.

RO2: To examine the moderating effect of the stakeholders' proportion in board of directors between managerial perceptions on stakeholders' influence and environmental audits.

6.3 Discussion of Main Research Findings

Based on stakeholder-agency theory, this paper constructs a framework for the impact of managerial perceptions on each stakeholder's influence and stakeholders' proportion in the board of directors on environmental audits. Managers play a role in the procurement, inventory, and sales of the enterprise, and play a large role in guiding the behavior of the enterprise. The manager's supporting for environmental audits is to directly promote the environmental performance of the enterprise in a way of low agency cost. The disclosure of environmental information related to corporate social responsibility makes all stakeholders respond positively and indirectly promotes the attention and participation of all stakeholders and interested directors incorporate environmental audits, thereby promoting the implementation of corporate environmental audits. After theoretical derivation and test of questionnaire data, this study draws the following conclusions:

6.3.1 Managerial Perceptions on Internal Stakeholders Influence and Environmental Audits

In the first objective of this study, to examine the relationship between managerial perceptions on internal stakeholders' influence and environmental audits, the multiple logistic regression analysis results presented in Chapter five suggest that managerial perceptions on internal stakeholders' influence have association with the use of

environmental audits. The results also depict that under internal stakeholder influence, managers will implement a type of environmental audits, but managers have strong willing to implement not only the internal but also external environmental audit. Hence, both statistical results indicate that H1a can be supported.

This conclusion is consistent with previous research results of researchers (Esposito, Scandurra & Thomas, 2015; Sha, 2021). Sha (2021) concluded that managerial perceptions have a positive effect on sustainable operations adoption. The purpose of sustainable operations adoption is the same as that of environmental audits. Both are to contribute to the reduction of the emissions of various wastes, such as waste gas and waste water, and ease the environmental pressure firms face nowadays (Goh & Balaji, 2016; Qu et al., 2022).

The influence of important stakeholders will affect the company's sustainable operations adoption. However, the existing research does not specifically classify stakeholders, but only classifies internal stakeholders, such as managers, employees, suppliers and buyers, as important stakeholders in their research. Inspired by this, when studying managers' perceptions of important stakeholders, the important stakeholders are further divided from the inside and the outside.

The role of corporate internal personnel is to initiate and implement effective sustainable development activities and integrate the concept of green sustainable development into the company culture (Ruban & Rydén, 2019), which is the main reason for the establishment of H1a. Managers are paying more and more attention to the opinions of corporate employees, and the influence of internal personnel is the key to whether a company can generate a strong internal drive. This process helps strengthen the stability of the company's internal structure, and better reflects the company's attitude towards social responsibility. Taking environmental audits as a practical action reflects the company's sense of social responsibility. Therefore, internal

stakeholders influence can become an important factor in improving the implementation environment of the enterprise in the perception of managers.

6.3.2 Managerial Perceptions on Regulatory Stakeholders Influence and Environmental Audits

In the first objective, to examine the relationship between managerial perceptions on regulatory stakeholders' influence and environmental audits, the data results presented in Chapter five suggest that managerial perceptions on regulatory stakeholders' influence have association with the use of environmental audits. However, there is a possible to use external environmental audit only, perceived regulatory stakeholders influence does not promote managers' decision on implementing the company's internal environmental audit. We can conclude that H2 can be supported.

This conclusion is different from the research results of Chinese scholars (Zeng et al., 2020). They concluded that the pressure of the Chinese government has no significant impact on the adoption of sustainable development by enterprises because following environmental laws is the necessary conditions and basic premises of the activity (Zhang & Ma, 2021).

However, there is no clear law on environmental auditing in China, and there are no laws and regulations that impose mandatory regulations on companies that produce pollution in the manufacturing industry. The policies put forward by the Chinese government on the environmental audits are not mandatory, but encouraging (Meng et al., 2019). Therefore, in this case, managers' perception of the influence of regulatory stakeholders is only reflected in the implementation of external environmental audits, not internal environmental audits. Regulatory stakeholders will put pressure on the company to comply with environmental protection requirements (Earnhart & Mark,

2016; Guo, 2020; Rong & Wang, 2022). When companies are under pressure from government regulators, they will choose to obey the requirements of the external environment to take relevant actions that can promote sustainable development. And now more and more companies are participating in measures related to sustainable development in order to obtain a more advantageous environment in an increasingly competitive market (Sun et al., 2021; Pavel et al., 2020).

Therefore, managerial perceptions on regulatory stakeholders influence will only promote the implementation of the external environmental audit of the enterprise when pressure is felt, and will not actively promote the development of the internal environmental audit. This provides a way for Chinese policy researchers to consider how to formulate laws and regulations related to environmental audits in China. And in this case, how to avoid the government's mental pressure from weakening (Zhang et al., 2018).

6.3.3 Managerial Perceptions on Public Stakeholders Influence and Environmental Audits

The third objective is to examine the relationship between managerial perceptions on public stakeholders influence and environmental audits. As expected, there is not positively associated between managerial perceptions on public stakeholders influence and any type of environmental audits. Thus, H3 is not support.

Hu and Sun (2018) also come to the same conclusion. They classify public stakeholders as secondary stakeholders and believe that the influence and pressure of secondary stakeholders have no significant impact on the company's sustainable behavior. Although managers in companies are also increasingly under pressure from public stakeholders. Public opinion also not only affects the company's social image, it

may attract the attention and in-depth investigation of the regulators, but also create high industry barriers for the company (Dixon-Fowler et al., 2017; Zhang et al., 2019).

However, public stakeholders do not involve transactions that have a direct economic relationship with the company. Therefore, companies rarely pay attention to them and rarely make efforts to satisfy their requirements. In addition, public stakeholders do not have an effective way to express their opinions. Although they will generate public opinion pressure, the voice of public opinion is always fickle and incomplete. It will not change the company's impact on the environment, and it will not let it affect the development direction of the company's environmental strategy. The above reasons may be the reason why managerial perceptions on public stakeholders influence cannot promote the implementation of environmental audits by enterprises.

6.3.4 Managerial Perceptions on Value Chain Stakeholders Influence and Environmental Audits

The fourth objective is to examine the relationship between managerial perceptions on internal stakeholders influence and environmental audits. The multiple logistic regression analysis' results indicated that managers' willing on implementing the environmental audits is positively associated with the perceived value chain stakeholders influence by managers. And they have a weak and equal willingness to choose to implement the internal environmental audit only or external environmental audit only, rather than both. We can conclude that H4 can be supported.

This conclusion is consistent with existing academic research results (Airike et al. 2016; Lu & Wang, 2021). The implementation of environmental audits can improve the company's internal reputation in the industry, and a better reputation and image can attract more buyers and business partners (Dangelico & Pontrandolfo, 2015). Then

companies can use environmental audits to more effectively use raw materials and energy, and then reduce corporate operating costs (Cai et al., 2019). Realize the optimization of the value chain industry and form a good circle of strong cooperation.

On the other hand, suppliers, as one of the value chain stakeholders, can put pressure on the company by stopping providing necessary materials to express satisfaction or dissatisfaction with the company's environmental performance (Airike et al., 2016). Buyers and consumers can regard environmentally friendly products or services as their purchasing preferences, and blacklist products and services that are not environmentally friendly, which will affect the company's sales and revenue and increase pressure on the company (Maniatis, 2016; Endrikat et al., 2021). Therefore, managerial perceptions on internal stakeholders influence could push the company to carry out the environmental audits.

6.3.5 Stakeholders' Proportion in the Board of Directors, Managerial Perceptions on Each Stakeholders Influence and Environmental Audits.

The last objective is to examine whether the stakeholders' proportion in the board of directors can moderate the relationship between the managerial perceptions' each stakeholders influence and environmental audits. Due to stakeholders influence are divided into four types in this study, therefore, under this objective, there are 4 specific hypotheses for perceived internal, regulatory, public, and value chain stakeholders influence respectively. The Spearman correlation analysis indicates that the stakeholders' proportion in the board of directors has a weak positive correlation with managerial perceptions on internal and value chain stakeholders influence, and it does not have correlation with managerial perceptions on regulatory, public stakeholders influence. Illustrating a possible moderating role of the stakeholders' proportion in the board of directors. It is further supported by the moderating effect analysis results,

which found that managerial perceptions on stakeholders influence is moderated by the stakeholders' proportion in the board of directors, excluding managerial perceptions on public stakeholders influence. Hence, H5a, H5b and H5d can be supported, but H5c is not supported.

It is worth noting that after adding the moderating variable, the H5 conclusion obtained is different from which types of environmental audits have a positive correlation. That is, managerial perceptions on internal, regulatory, and values chain stakeholders influence have an association with environmental audits, but the moderating effect analysis results show that managerial perceptions on internal stakeholders influence are now only willing to implement internal or external environmental audits only instead of both environmental audits.

Chinese scholars have not yet reached a unified conclusion on the relationship between the board of directors and the environmental audits of Chinese companies. Song & Li (2010) empirically concluded that they believe that the board of directors is promoting corporate social responsibility performance. But Zhao, Yi and Li (2020) came up to the conclusion that increasing the size of the board of directors negatively affects corporate social responsibility performance, and the effect is not significant. The empirical results did not confirm the relationship between the two (Li et al., 2018).

In this research, the ratio of the number of stakeholder directors to the total number of board members is used to measure the adjustment effect of the board of directors. The main reason is that the size of the board of directors in China is too restrictive. When making decisions, the board of directors generally adopts a voting method. The greater the number of stakeholder directors, the greater the possibility of promoting the company to implement environmental audits and assume corporate social responsibility (Liang, 2016). The large-scale board of directors contains more representatives of

stakeholders, who will fight for more interests for their interest groups (Zhao et al., 2020). Wang et al. (2016) also proved this point in empirical research.

Judging from the research results of this article, stakeholders' proportion in the board of directors play a moderating effect between manager perceptions on stakeholders influence and environmental audits. The results are similar to Lin et al. (2017), Guo (2020), and Zheng et al. (2021). They believed that the implementation of the company's environmental protection actions depends to a large extent on the resources owned by the relevant companies. Companies with more beneficial shareholders have more resources, and companies have more resources needed to implement environmental audits, such as human resources, related knowledge, and technology. And necessary intangible assets resources, such as qualified qualifications, collaboration with external parties. The more resources a company has, the more positive the company's view of sustainable development measures, such as environmental audits. Sufficient resources also enable companies to take action earlier than their competitors, helping them become leaders in this field and gain a first-mover advantage (Amorelli et al., 2020).

Therefore, if companies' stakeholders' proportion in the board of directors has sufficient resources, the managers of these companies may think that the adoption of environmental audits will produce more positive results.

6.4 Theoretical and Practical Implications

Based on the existing literature, this research focuses on the Chinese manufacturing industry, and conducts a discussion and research on the environmental audits of companies in this industry and stakeholders. Provided the following contributions to theory and practice.

First, there is a lack of research on environmental audits (Wang, 2020). The existing research on environmental audits in China mainly explores the theory, framework, content, elements, and elements of environmental audits (Qiu, 2021). Some scholars have studied the development momentum and trends of environmental audits (Khan, 2017). In recent years, more and more scholars have begun to conduct research from the perspective of environmental audits implementation methods (Adrian et al., 2018; Shvarts et al., 2018; Cai et al., 2019; Pavel et al., 2020). Since developed countries implemented environmental audits earlier, the internal environmental audit has developed into a permanent organization for corporate internal auditing (Tang & Li, 2019).

However, China started late, and there is a large lag in both the implementation in practice and the theoretical research. Moreover, China's current environmental audits' type is still an external environmental audit led by the government (Rong & Wang, 2022). With China's new positioning and new demands for environmental audits in recent years, Chinese scholars have also begun to attach importance to external environmental audit that do not include the government as the main body, and conduct research on corporate internal environmental audit (Ningsih et al., 2020). He also believes that an internal environmental audit of companies is a prerequisite in China (Guan & Bao, 2021).

Stakeholders have been studied since 1960, so there is a relatively mature theory and framework system (Meng, Wang & Lu, 2019; He, 2018; You, 2021). Environmental audits have emerged from the development of the major task of protecting the environment, and an effective way to protect the environment is to audit the environmental issues related to companies (Qu et al., 2022). In other words, environmental audits were created as a result of the expansion of governance issues in the course of corporate governance development (Wang et al., 2022).

The expansion of corporate governance issues has also led to the expansion of the groups involved in governance, from management and shareholders to all stakeholders. In other words, the issue of corporate governance is expanding with the development of society, so that the issue of governance covers environmental protection, and environmental audits are created to protect the environment; at the same time, while the issue of corporate governance involves environmental protection, the subjects involved in corporate governance are not only shareholders and management, but also other environmental stakeholders (Esposito et al., 2021).

Therefore, from the perspective of the internal relationship between environmental audits and corporate governance, it is necessary to use stakeholder theory to reveal the relationship between stakeholders and environmental audits.

In recent years, there have been many types of research on corporate social responsibility performance based on stakeholder theory. However, environmental audit is an aspect of the company's fulfillment of social responsibility, and there are few types of research on the implementation of environmental audits by stakeholders and Chinese companies. In addition, scholars from various countries have done less direct research on the relationship between board structure and environmental audits, but there are more research documents on the relationship between board structure and social responsibility performance (Liang & Wang, 2016; Marwa et al., 2020).

Therefore, this article combines these two aspects and is the most important Knowledge Implication of this research. At the same time, the results show that when government supervision is not mandatory, it can change the top-down thinking. From the perspective of public and value chain stakeholders, it provides new ideas for China to promote the implementation of environmental audits by companies.

This study also has important practical implications and guidance for firm managers. The objectives of environmental audits should both meet the individual objectives of different stakeholders, that is specific objectives, and accomplish the overall objectives of environmental audits, that is ultimate objectives, based on the achievement of specific objectives. The results of this study show that the types of environmental audits driven by different types of stakeholders vary among managers, but that the final and specific objectives of environmental audits are not independent of each other but are highly integrated. Different stakeholders have different specific environmental audits objectives, but the ultimate goal is to reduce environmental pollution and promote the sustainable development of society and enterprises.

Therefore, in the future, we can combine the influence of various stakeholders in the specific environmental management practice and create an environmental audits model with the common participation of stakeholders, so as to mobilize the enthusiasm of all stakeholders in the enterprise to protect the environment and maximize the role of environmental audits in environmental management and protection.

6.5 Limitation and Recommendation for Future Research

First of all, the questionnaire sample selected in this study does not cover all managers of manufacturing companies in each region, and cannot fully represent the views of managers of Chinese manufacturing companies. There are certain universal defects. The sample scope of the questionnaire can be expanded in the future. Secondly, the research method adopts the form of a questionnaire survey. The data provided by the questionnaire survey object is different from the actual situation of the company.

In the future, it can be incorporated into the company and environmental audits, related public data and related indicators. Thirdly, future research can further expand the definition of moderating variables, such as directly using the board of directors as

moderator variables, to provide more comprehensive guidance and a basis for managers to implement environmental audits and conduct green innovations.

6.6 Chapter Summary

This chapter includes a summary of the research to provide the essence of the research conducted. The theoretical and practical implications of this study's findings have been discussed comprehensively. In addition, the limitations of this research have been highlighted, and recommendations were provided to point the future research direction and offer more insights into the relationship between managerial perceptions on stakeholders influence and environmental audits along with the moderating stakeholders' proportion in the board of director.

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