Study on Corporate Environmental Auditing based on Environmental Management Systems

Xiao-Feng LIU\textsuperscript{1,a,*}, Yang-Yang LIU\textsuperscript{1,b}, Xiao-Ling WU\textsuperscript{1,c}

\textsuperscript{1}School of Accounting, Nanjing University of Finance and Economics, Nanjing, China;
\textsuperscript{a}lxf@njue.edu.cn, \textsuperscript{b}784513441@qq.com, \textsuperscript{c}xiaoling__wu@126.com

*Corresponding author

Keywords: corporate environmental auditing, performance audit, corporate governance, environmental management system

Abstract. Corporate environmental auditing mode needs the transition from dominated by government to mainly by corporate internal management in China. In this paper, firstly the concepts and goals of the corporate environmental auditing are defined, and then the content system on environmental auditing based on environmental management systems is built with expounding PDCA cycle path from the key point of auditing from regulation auditing to performance auditing. Finally, it puts forward some suggestions on how to realize environment audit based on environmental management system from the aspects of internal control environment, external power constraint, audit mode and audit organization. It is considered that corporate environmental auditing based on environmental management system is conducive to the realization of enterprise environmental audit objectives, the implementation of enterprise environmental audit work, and the development of corporate environmental audit theory.

Introduction

Compared to corporate environmental auditing in the developed countries which arises from the enterprise internal management, it is a passive choice which is based on government audit in China. For example, national audit office surveyed the energy conservation and emissions reduction situation of 41 state-owned enterprises from 2006 to 2007 in 2008; 18 missions for the national audit office take an dependent audit to the energy conservation and emissions reduction of 18 key industries in 2010. Yunnan provincial audit office takes an audit to the air pollution reduction in Kunming in 2014. Lanzhou Environmental Protection Agency audits the policy implementation on the "2013-2014 annual air pollution control plan of Lanzhou City" in 2015.

With the industrial point source pollution of large enterprises gradually under control, the pollution of small and medium enterprises has become a point source pollution control problem, tens of thousands of small and medium enterprises have brought great challenges to the government environmental audit. The adaptive management has become a reasonable choice which core idea is to play the enterprise's own initiative, to carry out corporate internal audit. It conforms to the spirit of "Cleaner Production Promotion Law" and "Environmental Protection Law" and other environmental laws and regulations, for example, the most chapters of "Cleaner Production Promotion Law" are to promote the voluntary enterprises to carry out cleaner production audit. As an internal management tool, environmental management system is designed to help organizations to achieve the level of environmental performance set by
themselves and improves environmental behavior to involve the environmental management in
daily operating system which aims at promoting enterprises’ competitiveness and profitability
[1]. Therefore, this paper analyzes the theory and reality of environmental auditing in Chinese
enterprises, and builds a corporate environmental audit system that is suitable for China's
national conditions based on the environmental management system.

Necessity Analysis of Environmental Auditing Based on Environmental Management
System

It is no uniform definition of corporate environmental auditing, reference the 15th INCOSAI in
Cairo[2], basic description underlying this framework are that: (i) Environmental auditing is not
significantly different from normal auditing as practiced by supreme audit institutions; the main
body of corporate environmental audit includes the national audit institutions, internal audit
institutions and social audit organizations. The audit subjects have mutual value and space.
However, due to environmental attributions of public goods and information asymmetry, these
are needs for government to audit in some projects that are weak environment awareness of
stakeholders, the relevant legal system is not perfect or government-led projects.
(ii) Environmental auditing may be included in financial, compliance, or performance audits.
The immediate goal of corporate environmental auditing is to ensure the authenticity and
legality of performing environmental responsibility in enterprises, which reflects compliant
objectives in traditional audit. However, the more important goal of environmental auditing is
to evaluate the efficiency of environmental responsibility, that is environmental performance
auditing. It is the power of implementing internal environmental audit and also reflects the new
development trend of audit practice and theory to performance audit. (iii) Environmental
auditing requires companies to guarantee that it meets regulatory and internal policy
requirements not only at present, but also in the future. To be clear, taking all aspects of the
desired environmental performance into account, combining the whole management activities,
environmental auditing should be carried out within the framework of enterprise risk
management system and internal control system.

Under this framework, the main body and content objectives of enterprise environmental
auditing are diverse. It requires that the enterprise environment audit should be regarded as a
complex system project, which requires the enterprise to set up the overall operation framework
with the concept of environmental protection, and make the enterprise from "end governance"
to "clean production". From this perspective, the goal of environmental management system is
to ensure that the economic behaviors meet the requirements of environmental laws and
regulations, to develop and publish internal policies and procedures needed to meet the
environmental objectives of the business and to determine and control the environmental risks
of enterprises to minimize the environmental risks[3]. Considering the current situation of
corporate environmental auditing and the demand of environmental auditing, the necessity of
reality and theory to establish the system of enterprise environmental auditing based on
environmental management system are that:

Help to Realize the Goal of Corporate Environmental Auditing. It mainly has: (i) Help to
achieve the internal management functions of enterprises. The corporate environmental
auditing belongs to a part of environmental management system. IIA emphasizes that
environmental auditing is a part of environmental management system, by which management
department can determine that if it is full that the organization's environmental management
system ensures that the organization's business activities comply with the requirements of the relevant regulations and internal policies. Establishing a positive plan of environmental auditing, identifying existing environmental problems and assessing the performance of the whole process also constitute an important cornerstone of environmental management system. (ii) Help enterprises carry on the risk control. It makes the internal audit of the risk management guide type obtain the basic data platform support, and makes the environmental auditing of the risk management guide type more efficient. (iii) Help to manage the relationships between the stakeholders. Corporate environmental auditing should assume the responsibility of environmental information disclosure, should ensure the reliability of environmental information report and provide trustworthy conclusions related to the enterprise's environmental performance for stakeholders.

**Help to Carry Out Corporate Environmental Auditing Work.** Chinese academy of sciences realizes that if the external audit institutions make full use of the favorable factors of environmental management system in the process of implementing environmental audit, it not only reduces the audit workload, but also improves the quality of audit, in the process of auditing the funds of the "three rivers and a lake water pollution control project implemented by national audit office". At present, the corporate environment audit work is seriously lack of the database related environment and standards which measure the degree of environmental damage and the surrounding influence. The establishment and the effective use of environmental management system can make the results of environmental auditing reasonable.

**Help to Develop the Theory of Corporate Environmental Auditing.** It can be predicted that with the gradual maturation of environmental auditing process and more confidence in the legitimacy of businesses’ activities, the focus of audit will be transferred to environmental management system, and even to systemic environmental management system audit. The focus of audit is whether the system in the management of future environmental risks is proper and runs well or not.

**Contents and Executor of Corporate Environmental Auditing Based on Environmental Management System**

According to the different audit subjects, the audit content includes corporate environment internal audit for the purpose of enterprise management, auditing for market needs such as product audit, cleaner production audit, treatment, storage and disposal facility auditing (TSD auditing), and auditing meeting the requirements of the relevant regulatory required by the government (Table 1).

From the content and objectives, corporate environmental audit is mainly the compliance audit and performance audit[4]. Among them, the compliance audit refers to the enterprise in the operation process in line with environmental guidelines, mainly including three aspects: (i) Do environmental policy and production standards comply with environmental regulations, such as: corporate environmental policy compliance audits, corporate environmental organization compliance audits and corporate environmental standards audits? (ii) Does the production process conform to the environmental specifications, such as: cleaner production
audit, energy audit and TSD auditing? (iii) Does the company's environmental management system comply with environmental regulations?

The performance audit refers to the judgment on the effectiveness of environmental protection and environmental pollution in enterprise activities. It is an estimate of the effectiveness of an enterprise's environmental management system based on environmental policy, objectives and targets and control of its environmental factors. Reflected in the following two aspects: (i) Financial perspective. It mainly analyzes the relationship between environmental income and environmental expenditure, such as: tax relief caused by environmental protection products, successfully enters a market and expands sales through the environmental certification, as well as the opportunity to achieve a certain environmental protection targets from being punished by the rules or economic sanctions. (ii) Environmental quality perspective. It mainly refers to the subjective efforts of enterprises to contribute to the protection and improvement of the ecological environment, including the implementation of environmental laws and regulations, ecological environment protection and improvement, as well as ecological and environmental damage reduction.

Table 1. Corporate environmental auditing types.

<table>
<thead>
<tr>
<th>Types</th>
<th>internal environmental audit</th>
<th>Market environmental audit</th>
<th>Governmental environmental audit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functions</td>
<td>(i) a management method; (ii) operation and continuous improvement of environmental management system.</td>
<td>(i) select the right partner; (ii) confirm partners meeting the requirements;(iii) meet customers’ requirements; (iv) provide the gist of environmental pollution and risk for the banking and insurance.</td>
<td>(i) improve organization's environmental management system; (ii) meet the requirements of the public.</td>
</tr>
<tr>
<td>Executor</td>
<td>internal audit institutions</td>
<td>accounting firms and other institutions</td>
<td>national audit office</td>
</tr>
</tbody>
</table>

The Realization of Corporate Environmental Auditing based on Environmental Management Systems

The realization of the corporate environmental audit system based on the environmental management system mainly includes the design of the auditing target, the audit content, the audit flow and the audit organization mode. This paper has the innovative value of building enterprise environmental audit content system, based on the realization of corporate environmental management system PDCA cycle (Fig 1). Among it, P(plan) is an environmental standard and plan for the analysis of environmental management objectives, including enterprise environmental policy, index and implementation plan[5]. For the initial cycle, it is the establishment of environmental policy, index and implementation plan. D (Do) refers to the implementation of the system, including resource allocation, responsibility and authority setting, information exchange, system operation control and so on. C (Check) refers to the regular or irregular inspection, assessment of the progress and implementation of standardized work. A (Action) is that if the results of the examinations are not consistent with the expected results, enterprises will carry on analysis research, find out the
reason, and put forward the plan to solve the problem. The PDCA cycle is spiraling, with a systematic environmental audit, and an environmental standard system will be improved once per cycle.

From the perspective of implementing the PDCA cycle of environmental management system, it requires the corporate environmental auditing to develop from the compliance audit to the performance audit, which is the concrete manifestation of the continuous improvement of the environmental system.

The essence of this model is that auditors conduct environmental audits on all aspects of their production processes to evaluate their environmental management systems are effective, based on the existing management system. It requires the support of corporate governance, constraints of external force, matching audit models, and adaptive auditing organizations.

**The Support of Corporate Governance.** Corporate environmental audit is a number one project involving the entire enterprise operations and the coordination of multiple departments, the need for the Board and the management of the strong support. At the macro level of the company, it is necessary to invite environmental experts to enter the board of directors and management to make plans. At the micro level of the enterprise, it should be considered that most internal auditors lack technical background, need to strengthen departmental cooperation and cultivate compound talents to join the environmental audit team.

**Constraints of External Force.** Many European countries found that regulatory sanctions are not enough to promote the organizations to reach the target of environmental activists. However, they found that the protection of organizations’ public image and reputation promotes the environmental protection more than regulatory sanctions. In other words, enterprises on the cost of environmental violations and the "green consumer" pressure on the impact may be more than the potential cost savings. Therefore, the disclosure of corporate environmental information, and playing the power of the media and the public for the implementation of corporate environmental auditing have become more valuable.

**Matching Audit Models.** Environmental auditing models based on environmental management system generally use the audit investigation and the combination of audit method as well as the combination of the conventional auditing method and the professional technical
method and the system analysis method, which belongs to the intersection of modern information technology and auditing. Moreover, corporate environmental auditing is a continuous auditing work, for which continuous audit can be used as a valid model that forms are of integrating real-time audit, computer assisted audit, network audit, etc. Continuous audit can achieve a timely link and interaction between the audit data and the enterprise operating data and solve the problems of data exchange, system integration, lower audit efficiency under heterogeneous platform.

**Adaptive Audit Organizations.** Since environmental protection activities involve many different subjects, which belong to different sectors, the environmental audit becomes an inter-departmental audit activity. Moreover, Due to the uncertainty of many corporate environmental issues, auditors need to discuss and study it over and over again. In addition to multi-sectoral coordination, multidisciplinary joint audits are necessary for environmental audits. For example, environmental lawyers assess compliance with environmental laws and regulations, environmental science experts analyze strategies and analysis of hazardous substance content and environmental impact, assessors evaluate the value of environmental management systems, data experts evaluate the completeness of environmental system data, and data consistency of operational and financial. Therefore, it is necessary for enterprises to establish an adaptive environmental auditing coordination mechanism. Considering the projects of environmental audit and the focus of the audit systematically, enterprises can establish a platform to share the experience and results of the audit, which promotes the audit department to carry out related audit from the perspective of the environment.

**Acknowledgement**

This research was supported by: (i) the NSFC under Grant 71301070, 71471082, 71571099 and 71671080; (ii) Jiangsu Planning Office of Philosophy and Social Science under Grant 13SHC014; (iii) A Project Funded by the Priority Academic Program Development of Jiangsu Higher Education Institutions.

**References**