

On Environmental Management Accounting

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Abstract: With the improvement of the relevant laws and theoretical basis of environmental protection and management accounting, the research literature of environmental management accounting is also increasing. Environmental management accounting is a new field formed by the combination of environmental management and management accounting, which integrates accounting, environmental economics, development economics, environmental management and other disciplines. With the help of other management methods, it provides a new and available tool for the management decision-making of enterprises, and is gradually attracting the attention of academia and industry at home and abroad. This paper focuses on the research results of environmental management accounting at home and abroad in recent years, analyzes the shortcomings of current environmental management accounting research in China and points out the future trends and hot spots of environmental management accounting in China under the new era. At the same time, it reviews the focus of environmental management accounting, and hopes to provide new ideas for follow-up scholars to study environmental management accounting.

1. Definition and connotation of environmental management accounting

The definition and positioning of early environmental management accounting (EMA) has been mentioned by the three international organizations of the US Environmental Protection Agency (epa), the UN (un) affiliates and the International Federation of Accountants (ifac), but Its meaning and role are different. Then, the international community generally agreed that EMA should be regarded as a control tool for recording, decision-making, analysis and control of physical and monetary information of environmental behavior decision-making, so as to enable enterprises to effectively monitor and control environmental issues in the implementation process. In 1996, ISO14000 series of environmental management standards were introduced by the International Standard Organization (ISO), including environmental management system, environmental auditing, environmental labeling, environmental performance evaluation, life cycle assessment and other parts, which played a huge role in promoting environmental management accounting.

Environmental management accounting is a branch of environmental accounting in micro enterprises. So far, there is no fixed and accepted explanation of environmental management accounting. The following three explanations are selected for comparative analysis: 1. According to the International Federation of Accountants (IFAC), enterprises use the designed and developed environmental accounting system for internal management, and the process of evaluating environmental and economic performance is environmental management accounting. 2. The Canadian Institute of Management Accountants pointed out that environmental management accounting mainly has two aspects: First, enterprises should consider environmental costs and pay attention to the confirmation, measurement and distribution of environmental costs before making investment decisions. The second is the disclosure of environmental information. 3. Environmental management accounting information disclosure objects are the stakeholders of the enterprise. According to Stefan Schaltegger and Roger Burritt's "Contemporary Environment Accounting" [1], environmental management accounting is the financial impact of an environment in which managers can make decisions and assume fiduciary responsibility for the consequences of decisions. The above three explanations for environmental management accounting have the same point and different points. First of all, all three advocate the consideration of environmental factors in the

process of enterprise management, the purpose is to better internal decision-making for enterprises; all are based on traditional management accounting. Second, the three focus on environmental management accounting are different. The first explanation focuses on the management of environmental and economic performance, the second explains the control of environmental costs, and conveys environmental information. The third interpretation focuses on the financial impact of environmental issues. The author believes that environmental management accounting refers to the purpose of strengthening the internal management of the enterprise. With the goal of sustainable development of the company's economy and environment, and in accordance with environmental laws, regulations, standards, accounting principles, environmental factors are incorporated into the internal management of enterprises, and the accounting system for environmental managers is provided. Environmental management accounting needs to confirm, measure, and account for environmental costs. Through the processing and improvement of financial and non-financial information, the decision-making useful information is formed, and the accounting information users of the enterprise make investment decisions, and the decision results are evaluated for performance to ensure the smooth implementation of the decision-making. Therefore, environmental cost management, investment decision-making and performance evaluation are three important stages of environmental management accounting.

2. Overview of Foreign Research on Environmental Management Accounting

The development of foreign environmental management accounting research is roughly divided into three stages. The first phase began in the 1970s, and the book "Flution Control Transform Research of Social Costs" by F. A. Beams in 1971 opened the prelude to environmental accounting research. In 1973, J. T. Malin's "Pollution of the Accounting Problem", environmental financial accounting and environmental management accounting was officially included in the field of accounting research. The second phase began in the 1990s and around 2004. Its characteristics are that the governments, research institutions, and accounting professional organizations in western developed countries attach importance to the promotion and application of environmental management accounting. Some advanced leading enterprises are also involved in the implementation of environmental management accounting. Many international accounting professional institutions are also actively exploring and researching, and have issued a series of guidelines or standards, such as the British Chartered Accountants Association (ACCA), the American Institute of Accountants (AICPA) and the Japanese Institute of Certified Public Accountants (JICPA). In the third stage, since the beginning of the 21st century, with the promulgation of IFAC-led Environmental Management Accounting Guidelines [2], environmental management accounting has a clearer status definition. Mainstream thinking basically establishes the internal value of resources in terms of reducing waste, waste gas, waste water generation and reducing the unit and total amount of "three wastes" discharge, and improving the effective utilization of resources.

3. Overview of Domestic Research on Environmental Management Accounting

In 1992, Ge Jiashu and Li Ruoshan, leaders of accounting department of Xiamen University [3], published Green Accounting Theory, a new trend of western accounting theory in the 1990s, which marked the formal introduction of environmental accounting theory in China. Summarizing domestic environmental management accounting literature, we can see that domestic environmental management accounting theory research focuses on environmental cost, environmental management accounting information disclosure and enterprise internal environmental audit.

3.1 Basic Theory of Environmental Management Accounting

Guo Yifei's Basic Theory of Environmental Accounting [4] discusses the basic theory of environmental accounting from the aspects of basic assumptions, objectives, general principles and confirmation, measurement and reporting of environmental accounting elements. In his book

"Research on Environmental Management Accounting: Summary, Evaluation and Reflection" [5], Qiu Maohua analyzed the research purpose, methods and theoretical principles of environmental management accounting, and put forward the research route of combining environmental management accounting with the reality of environmental problems in China. In addition, the representative views of environmental management accounting theory in China are sustainable development theory, information asymmetry theory, economic fiduciary responsibility theory, environmental resource value theory and economic externality theory.

3.2 Environmental Cost Accounting

Chinese scholars have also carried out related research on environmental cost accounting in different aspects, levels and extents. In 1995, the Center for Environmental and Development Research of the Chinese Academy of Social Sciences conducted a study entitled "Economic Loss of Environmental Pollution and Ecological Destruction in the 1990s". This research focused on the improvement of measurement concepts, measurement methods, and error handling. Cheng Jinxi [6] believes that the environmental cost allocation cannot correctly reflect the enterprise environmental cost accounting, which will lead to the disadvantage of enterprises in the competition. Therefore, the enterprise environmental cost should be correctly allocated and the environmental cost accounting research should be strengthened. Environmental cost accounting is mainly based on the following theoretical foundations: sustainable development theory, total cost theory, marginal opportunity cost theory and environmental cost measurement theory of SEEA accounting system. In environmental cost accounting, sustainable development theory provides the general guiding ideology; total cost theory and marginal opportunity cost theory demonstrate the basic principles of environmental cost accounting; SEEA accounting system provides methodology.

3.3 Environmental Management Accounting Information Disclosure

Meng Fanli (1999) [7] advocates that on the basis of compulsory disclosure and voluntary disclosure, the level of enterprise environmental information disclosure should be improved in terms of form, content and accounting methods. Professor Xie Qi classifies the methods and tools of environmental management accounting, and points out the limitations of the practice of voluntary disclosure of external environmental reports.

Zhang Yongjie (2012) [8] Take 16 enterprises in Jiangxi Province as an example to investigate and study the environmental accounting information disclosure of enterprises by empirical method in "Brief Analysis of Environmental Accounting Information Disclosure of Enterprises in China". At present, the latest research in China analyses the motivation of enterprises' environmental information disclosure from the perspective of external pressure, such as laws and regulations of environmental supervision, public opinion supervision, government supervision and so on. Shen Hongtao (2012), Hu Huan (2014) [9], Ye Chen Gang (2015) [10] and other listed companies in China as examples, found that media coverage can significantly improve the level of environmental information disclosure. Similarly, Zhang Mengting (2017) [11] also confirmed that with the increase of media supervision, the positive correlation between the two is becoming more and more significant.

3.4 Application of Environmental Management Accounting

The direct purpose of studying environmental management accounting theory and practice is to strengthen the application of environmental management accounting in enterprises. Tian Tian (2013) [12] advocated the establishment of an environmental management system, the design of a reasonable balanced scorecard to evaluate environmental performance and other methods to strengthen the application of environmental management accounting in enterprises. Fan Yingjie and Li Xiaomei (2014) [13] took Tsingtao Brewery as an example to study the internal driving mechanism of enterprise environmental management accounting. Meng Yan, Zhou Hang, Liu Wei (2015) [14] believe that under the era of big data, the focus and functions of environmental management accounting objects will change, and environmental management accounting will be applied to a wider range. These studies have emphasized the necessity of enterprise application

environment cost accounting methods, environmental information disclosure, and environmental auditing.

4. Environmental management accounting objectives

Environmental management accounting can provide internal managers with a tool to minimize company costs and environmental impacts. Therefore, environmental management accounting will make two of the three components of sustainable development, namely, economic and environmental linkages.

Get up. Through environmental management accounting, management can improve the efficiency of resource use and effectively reduce environmental costs. Specifically in the following areas to play an effective role: 1. pollution prevention; 2. life cycle assessment; 3. environmental supply chain management Rationality; 4. Environmental Performance Report; 5. Product and Process Design; 6. Cost Control and Allocation; 7. Capital Budget; 8. Product Pricing; 9. Procurement, etc. Environmental management accounting can be applied not only to enterprises, but also to the government. The government can also use environmental management accounting in its daily operation. In addition, companies using environmental management accounting can help governments promote and meet environmental policy goals. Sun Canming and Zhang Yalian (2007) [15] divided environmental management accounting objectives into three levels: specific goals, basic goals, ultimate goals and analysis of the objectives of environmental management accounting. The environmental management accounting objectives are considered to be diverse, hierarchical and phased. Wang Jian (2007) [16] pointed out that enterprises should internalize the sustainable development goals as part of their strategic goals, and maximize the shareholder value while taking into account sustainable development goals and improve the competitiveness of enterprises.

5. Review on the Current Situation of Environmental Management Accounting

The increasingly serious problems of environment and sustainable development should be given full attention by the authorities, which include both government departments and enterprise management. The guiding role of government policy in the industry can not be ignored. At the same time, the goal setting of enterprises and the sense of responsibility of enterprises also affect the implementation of environmental management accounting. Only when the authoritative departments pay enough attention and play a good guiding role can they promote the research and application of environmental management accounting.

In 2006, the Ministry of Finance issued Accounting Standards for Enterprises, which for the first time increased the environmental accounting module; in 2007, in the Measures for Environmental Information Disclosure, it emphasized that listed companies must publish environmental information to the outside world. In 2014, the Ministry of Finance issued the Guiding Opinions and so on. Because of the late introduction of environmental management accounting in China, there is still a big gap compared with developed countries. The future research trends are as follows:

5.1 Combining with the national conditions and paying attention to research techniques and methods

The study of environmental management accounting is not like the environmental financial accounting research. At present, the domestic research on environmental management accounting is mainly based on qualitative analysis. It mainly describes the concept, content and information disclosure of environmental management accounting. However, there is no standardized accounting standard for the collection, measurement and estimation of environmental management accounting. The depth and breadth of research are not enough. The reason is that environmental management accounting is a cross-cutting field between management accounting and environmental management. It belongs to the emerging field and has less integration with China's national conditions.

5.2 Attaching importance to the construction of the theoretical system of environmental management accounting

When enterprises implement environmental management, there is not a complete set of environmental management accounting system as a basis. This may be due to the following reasons: on the one hand, management accounting is an interdisciplinary subject, and the boundary between financial accounting and management has gradually been clear, but the boundary between financial management and management is still very vague, where the two intersect. For example: budget management, Financial Sharing and other modules, but the focus of the two is different, financial management biased towards business decision-making, financial management biased towards financing decision-making. Different scholars have put forward their own views on environmental management accounting from different perspectives, but they have not formed a systematic theoretical framework of environmental management accounting. On the other hand, compared with environmental financial accounting, environmental management accounting has less research results, lagging behind theoretical research and marginalization, which needs further improvement.

5.3 Focusing on Dynamic Hypothesis

Summarizing the current research results of environmental management accounting in China, most of them are based on the static assumption that static assumptions are put forward for environmental management accounting. However, the external environment of the enterprise is in the process of constant change. The static view of the problem is not conducive to the development of environmental management accounting. Therefore, when studying environmental management accounting, we should pay attention to the change of external environment of enterprises, link with the reality of our country, pay attention to the premise of dynamic environmental management hypothesis, and promote the development of environmental management accounting in our country.

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