Opportunities and Challenges Faced by Environmental Management Accounting in the Age of Big Data

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Abstract: After the Internet of things and cloud computing, big data has brought another big technological change to the IT industry, and has already had a huge impact on the management and operation philosophy, business decision-making model and organizational business process of modern enterprises. Environmental management accounting is an important tool and information support system for environmental performance improvement of enterprises or other organizations. The advent of the era of big data will bring unprecedented development opportunities and challenges to environmental management accounting. This paper first introduces the concepts of big data era and environmental management accounting, then analyzes the challenges faced by the development of environmental management accounting in the era of big data, and finally expounds the development opportunities of environmental management accounting in the context of big data era.

1. Introduction

Environmental problem is a major concern of all sectors of society. In order to meet the needs of stakeholders for enterprises or other organizations for environmental information and improve environmental performance, environmental accounting came into being in the 1990s. Environmental management accounting, as an information system providing decision support for environmental management, can not be obtained without collecting, processing and processing the data of the information carrier. With the emerging information technology and application mode, the global data volume presents an unprecedented explosive growth trend. With more and more data, more and more complex data types and more and more rapid data changes, the era of "big data" has arrived[1].

2. Overview of big data and environmental cost management accounting

Big data is actually an Abstract concept. If you understand it purely on the surface, you may think that it is a huge data group. It may be associated with "massive data", but it is quite different from massive data. Massive data is mostly composed of structured and semi-structured transaction data, while big data is mostly composed of unstructured data and interactive data. There is currently no definitively widely accepted definition of big data. The main characteristics of big data are huge data volume, large data types, flow speed, and low value density[2].

Environmental management accounting involves many disciplines such as environmental management, statistics, computer, operations research, etc. It mainly refers to the enterprise's comprehensive accounting system and results evaluation system, which comprehensively realizes the business performance of a certain accounting period. System accounting and assessment, analyze the production, sales and cost utilization of the enterprise, so as to effectively predict the business activities of the enterprise, and carry out environmental management of the decision, assessment and evaluation content of the enterprise, and realize the future economic activities of the enterprise through these work activities. Effective guidance and regulation to enhance the operational efficiency of the company to provide specific and effective decision support for the company's future business activities. Therefore, environmental accounting has the potential to communicate, promote and influence organizational environmental decisions. Environmental

accounting includes environmental reporting (ER) and environmental management accounting (EMA). The relationship between the two is shown in Figure 1.
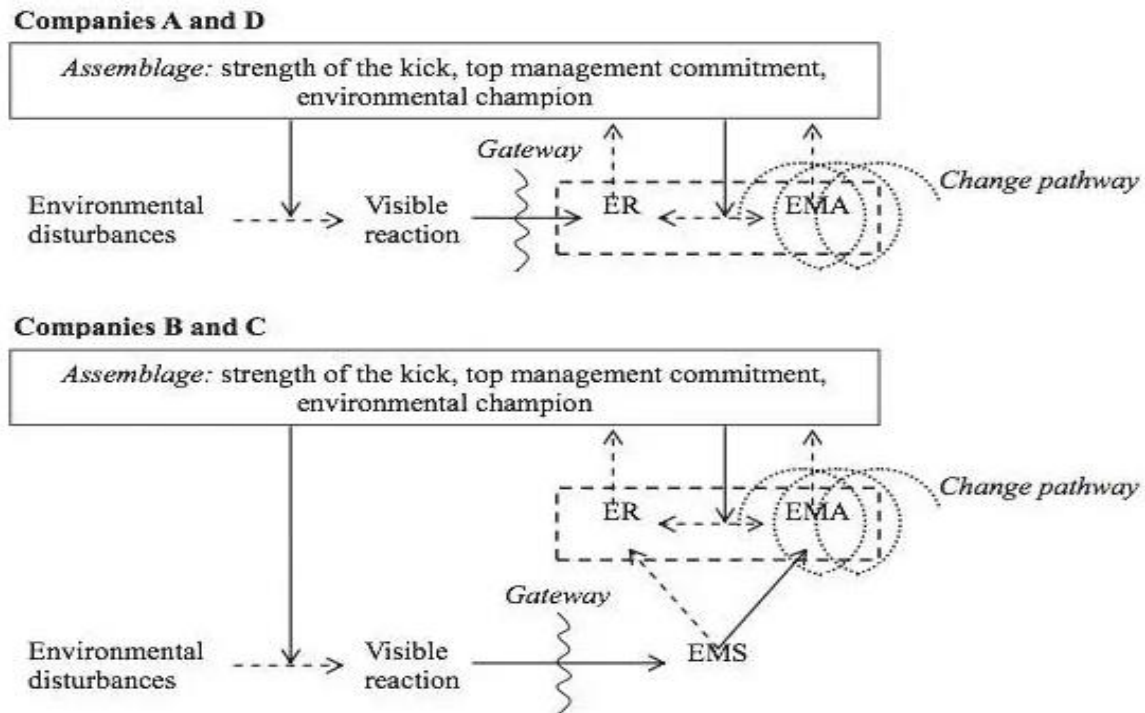
Companies A and D

Companies B and C

Figure 1: Mind map of the interplay between ER and EMA practices

3. Problems in the development of environmental management accounting in the era of big data

3.1 Small application range

At present, the application of environmental management accounting in Chinese enterprises is only limited to some enterprises in specific regions and large enterprises, but the application of environmental management accounting in these enterprises is not very high. Many enterprise environment management does not have high comprehensive quality, unreasonable ratio of environmental management personnel team, most of the older, and the old knowledge structure, with the advanced development phase synchronization, a lot of environmental management ideas and the traditional environmental management concept, for the advanced environmental management accounting can't skilled application, which makes the environmental management accounting can't well application in various enterprises in our country, impeded the development of environmental management accounting.

3.2 Insufficient application depth and lack of understanding

Although has been used a lot of enterprises in our country environmental management accounting to assist in business operations, but the enterprise for the application of environmental management accounting is still in its infancy, still cannot effectively play its real role, related to the environmental management personnel to the understanding and awareness of the does not reach the designated position, so the modern enterprise is unable to effective application of environmental management accounting, so as to make the enterprise culture and environmental management accounting cannot be achieved between fusion.

3.3 Lack of information storage space and imperfect data analysis methods

In the era of big data, enterprises should be able to collect relevant information in a timely and rapid manner, and require effective storage of data on the basis of ensuring comprehensive, sufficient and complete data. At the same time, a large amount of social information, such as

location, preferences, etc., can help companies make comprehensive decisions in the era of big data, which is especially important, but often such data sources are more extensive and larger, and they also need a large amount of storage. Therefore, if enterprises need to use big data to provide valuable information for business environment management, they must improve the space shortage of the original data storage equipment and provide preliminary reserves for effective use of data[3].

4. Development countermeasures of environmental management accounting under big data environment

4.1 Accelerate the construction of information

The measurement of environmental costs needs to be more precise in the era of big data, which puts higher demands on the ability to use big data tools. In addition to having a solid financial processing capability, accounting personnel must also have the processing power and technology of big data. Therefore, it is necessary to speed up the construction of enterprise management accounting information to meet the needs of environmental management accounting development in the era of big data[4].

4.2 Strengthen the integration and utilization of information resources within and outside the enterprise

The content of music is the soul of music and the artistic expression of music. As a popular commodity, music should not only pay attention to the commodity attribute of music, but also pay attention to the value attribute of music. Popular music is an important part of creative culture in its own right. Like other cultures, it has both regional and global characteristics. China's popular music industry is still in the development stage, so we cannot abandon China's local culture and blindly imitate Europe, America, Japan and South Korea. Instead, it should be based on China's 5,000 years of traditional culture and absorb the achievements of other countries and regions as the fresh nutrients of the popular music content. Only in this way can China's popular music industry be based on the long term and focus on the future.

4.3 The level of function is extended from the tactical level to the strategic level

The practice of environmental management makes people gradually realize that the final environmental decision is made at the management level rather than the accounting level, and it is necessary to set up an environmental management system to solve environmental problems from the perspective of management and decision-making, so as to promote the research of environmental accounting to the research stage of environmental management accounting. In the era of big data, the technology of big data can provide management accounting support, decision-making and control data required by environmental strategic management[5].

4.4 Data processing technology turns to big data technology

Traditional environmental management accounting places great emphasis on the measurement of the environment. It is not known that such measurement is too simple, ignoring the qualitative, qualitative and qualitative aspects of environmental factors. Corporate environmental management, especially environmental strategic management, is linked to a number of factors outside the enterprise, internal complexity, and unpredicTable. The mere currency-based measurement method is obviously difficult to handle environmental management data. In order to meet the needs of environmental strategic management, environmental management accounting must fully consider the environmental factors of strategic issues and the strategic factors of environmental issues. Therefore, the data processing technology of environmental management accounting needs to be transformed from traditional technology to big data technology. Table 1 is the investigation and analysis of enterprise personnel's environmental management accounting information system based on big data.

Table 1 Statistical analysis of survey results of environmental management accounting information system

Variabies	Mean	S.D.	1	2	3	4	5	6
Availability	3.77	0.75	1					
Controllability	3.90	0.44	0.5**	1				
Auditability	3.71	0.74	0.34**	0.42**	1			
Reliability	2.91	0.54	0.46**	0.69**	0.34**	1		
trust	3.90	0.55	0.56**	0.66**	0.40**	0.60**	1	
Use attitude	3.29	0.64	0.27**	0.41**	0.41**	0.31**	0.42**	1

5. Conclusions

With the development of social economy, environmental problems have become a hot issue in today's world. All sectors of society are looking for ways to protect and govern the environment. The accounting industry should also take an active part in environmental protection activities and actively explore how to improve environmental management accounting which is closely related to social and economic development. The era of big data has arrived, and all aspects of society have been strongly impacted by it. With the rapid expansion of data level, the extraction and sorting of data will become more and more complex. In the era of big data, environmental management accounting faces significant opportunities and challenges. Therefore, environmental management accounting should accelerate the construction of informatization and focus on cultivating more management accounting talents who can use big data technology.

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