Function and Influence of Database Technology in Distributed Accounting Books under Network Environment

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Abstract. As the main form of value embodiment of accounting subject, distributed account book is becoming more and more important in accounting management activities. However, due to its own specific economic attributes, it is often restricted by many internal and external conditions such as enterprise development. Especially in the objective situation of the continuous popularization of network application in recent years, with the continuous progress of database technology, its role in business management is increasingly obvious, and its impact on the quality of corporate accounting information is more and more obvious. The development of database technology in the network environment is conducive to the development of distributed accounting records through artificial system, and the establishment of a computer-based traditional system and modern Distributed Accounting registry. In this changing process, the development of innovation and management theory runs through all fields, but the influence of network information technology is the most basic. It directly or indirectly affects the evolution of distributed accounting system structure. The development of network database technology will contribute to the smooth connection between the Distributed Accounting registry and other management system subsystems. An enterprise ensures the data exchange within the enterprise, even between the supply and demand chains. In this process, the quality of accounting information improves the efficiency in the decision-making process. However, the research of computer accounting is usually dealing with the accounting treatment of specific business. It mainly studies the impact of database technology on the network environment in distributed accounting books.

Keyword: Distributed Ledger, Database, Accounting, Information Quality

1. Introduction
The emergence and development of network database technology has brought about substantial changes in human production and lifestyle in a short period of time. On the one hand, the change of enterprise management mode requires the adaptive adjustment of accounting work, which has an impact on the quality of distributed accounting books [1]. On the other hand, in the new enterprise management, enterprise organization and information management, the quality requirements of distributed accounting books will inevitably lead to changes in the process of accounting information
processing [2]. The quality of distributed accounting books is related to the specific time and space in which they are located. It is changing with time and space rather than static. The realization of the quality of ideal distributed accounting books should be a dynamic and infinite approaching process [3]. The accounting distributed account book must have the characteristics of the times, which is closely related to the specific ways and methods of "information production". The accounting distributed account book in the industrial age is necessarily different from that in the information age. There are obvious differences between the accounting distributed account book in the modern accounting system and that in the traditional accounting information system [4].

Things are always developing and changing. In the information society, the quality of accounting information under the new accounting model and accounting system will also change qualitatively [5]. Accounting distributed ledger is the accounting behavior of a specific economic entity, whose producers and consumers are separated. The disclosure process of accounting distributed ledger, in a sense, is the exchange process of accounting distributed ledger [6]. In this sense, the distributed accounting book is a special commodity, which must meet certain quality requirements. In the research on the quality of accounting distributed books, FASB's research has become a master of this research, which has had a significant impact on the development of the characteristic system of accounting distributed books in various countries [7].

The world is changing, and the way people deal with affairs and rules are changing accordingly. The rapid popularization of information technology with computer, communication and network technology as the core has greatly changed the living environment of human beings and the business management mode of enterprises, redefined the new rules for the survival and development of enterprises in the network era, and fundamentally changed the economic environment of modern enterprises [8]. In the Internet era, the information needs of users of Distributed Accounting registry are more and more diversified and personalized. However, the gap between the accounting data provided by the distributed ledger is gradually narrowing. Their personal decisions require detailed business information [9]. Therefore, the traditional accounting information system and the status of accountants are seriously threatened by the crisis of making decisions on the usefulness of accounting information provided by Distributed Accounting registries. The traditional accounting information system has been unable to adapt to the survival and development environment of modern enterprises, so it is imperative to establish a modern accounting distributed ledger [10].

2. Algorithm and Method

2.1. Sobol Algorithm

Sobol algorithm model can be divided into three parts

\[ f(x) = f_0 + \sum_{i=1}^{n} f_i(x_i) + \sum_{i<j} f_{ij}(x_i, x_j) + \cdots + f_{1,2,\ldots,n}(x_1, x_2, \ldots, x_n) \]  
(1)

Then the total variance of the model can also be decomposed into the influence of a single parameter and the combination of each parameter

\[ D = \sum_{i=1}^{n} D_i + \sum_{i=1}^{n} \sum_{j=1, j \neq i}^{n} \left( D_{ij} + \cdots + D_{1,2,\ldots,n} \right) \]  
(2)

Let the formula be normalized

\[ S_{h\ldots d} = \frac{D_{h\ldots d}}{D} \]  
(3)

The sensitivity s of single parameter and interaction between parameters can be obtained

\[ 1 = \sum_{i=1}^{n} S_i + \sum_{i=1}^{n} \sum_{j=1, j \neq i}^{n} \left( S_{ij} + \cdots + S_{1,2,\ldots,n} \right) \]  
(4)
The total sensitivity of the ith parameter is defined as:

\[ S_{ij} = \sum S_{ij} \]

It represents all sensitivities that contain the ith parameter.

2.2. It is Timely
Under the current network conditions, the full use of database technology plays an important role in ensuring the timeliness of accounting information quality, which is mainly reflected in the production and utilization of internal and external accounting information. On the one hand, based on the analysis of the internal development environment of enterprises, many enterprises often rely on the construction of internal network environment to promote the communication between raw material purchase, product production, market development, material delivery, financial management and other links, and ensure the comprehensive utilization of accounting information and data, the information formed in the above links is often transferred in the financial management information systems such as product inventory, asset registration, current account and cost accounting, and directly reflected in the general ledger system after the collection and preparation of accounting vouchers. In order to help enterprises to achieve production, sales, management, accounting and other business processes between the sound and perfect. On the other hand, due to the continuous development and application of this database technology, many information data of enterprises can be stored, collected, inquired and analyzed with the help of the database to form the financial analysis report, so as to ensure the dynamic tracking management of accounting information and ensure the quality of accounting information. At the same time, this kind of accounting information data conversion using the cyberspace environment can also solve some repetitive work brought by the previous conventional accounting operations, as well as the accounting information collection and registration errors, simplify many accounting previous operating procedures, improve the efficiency of accounting work, and improve the efficiency of accounting information generation and disclosure to the public, Ensure the timely and efficient use of accounting information.

2.3. Data Sharing
Distributed ledgers allow several business entities to share the same encrypted register over a computer network. Members can get a complete distributed register, which can only be viewed through authorized decoding. In addition, changes to the account web page also require parties to reach consensus before proceeding. Recognize the interoperability of distributed ledgers and avoid arbitrary intervention to ensure the reliability of the registry. Through this way, the enterprise financial data sharing is effectively realized in the state of security. The application of database technology in distributed ledger database has some advantages that traditional accounting books do not have, which brings opportunities to enterprise accounting and has innovative significance for the future development of enterprise accounting. But the application of database technology in the distributed ledger database of enterprise accounting, as a new thing, will also bring some challenges to enterprise accounting.

3. Model establishment

3.1. Degree, Average Degree and Degree Distribution Model
Degree represents the number of neighbors of the node. The larger the degree of a node, the more connected edges it has, and the more important the node is. It can express the number of friends in social network and the number of times research papers are cited in citation network. In undirected networks, there are two kinds of networks
\[ L = \frac{1}{2} \sum_{i=1}^{N} k_i \]  

(6)

The average degree is an important property of quantization network, then the average degree satisfies the following equation

\[ \langle k \rangle = \frac{1}{N} \sum_{i=1}^{N} k_i = \frac{2L}{N} \]  

(7)

In directed networks, the degree of a node is composed of in degree and out degree. The outdegree of a node is the number of edges linked from the node to other nodesexpress. The in degree of a node is the number of edges linked to the node from other nodesexpress. Degree of node \( i \) satisfy

\[ k_i = k_i^{in} + k_i^{out} \]  

(8)

The number of connected edges in the network is \( L \)

\[ L = \sum_{i=1}^{N} k_i^{in} = \sum_{i=1}^{N} k_i^{out} \]  

(9)

The out degree and in degree of a single node may be different, but the average out degree of the network must be equal to the average in degree of the network.

\[ \langle k \rangle = \frac{1}{N} \sum_{i=1}^{N} k_i^{in} = \frac{1}{N} \sum_{i=1}^{N} k_i^{out} = \frac{L}{N} \]  

(10)

The degree distribution sorts the degrees of all nodes from small to large, and must satisfy the equation

\[ \sum_{k=1}^{\infty} p_k = 1 \]  

(11)

With the discovery of scale-free networks, degree distribution plays a key role in network theory. One of the reasons is that most of the network properties need to be known; moreover, the degree distribution of the network determines many network phenomena. For the network, the moderate distribution value is

\[ p_k = \frac{N_k}{N} \]  

(12)

Where is degreeK. The degree distributions of different networks are different. The degree distributions of random networks and scale-free networks are the same

\[ P^{ER}(k) = e^{-\langle k \rangle} \frac{\langle k \rangle^k}{k!} \]  

\[ P^{SF}(k) \approx Ck^{-3} \]  

(13)

(14)

It can be seen that the hierarchical distribution of random network is Poisson’s distribution, but the hierarchical distribution of non scale network is power distribution.

4. Evaluation Results
Distributed ledger is a database, which is used, copied and synchronized by network members. Distributed ledgers should record transactions between network participants, such as assets or data exchanges. This overall ledger reduces the time and cost of coordinating different ledgers. Therefore, the use experience of accounting distributed ledger is investigated as follows:

**Figure (1) Are you satisfied with the distributed accounting books**

From the data analysis in figure (1), we can see that there are still big problems in the current accounting distributed ledger, and there are not a few users who are not satisfied with its current situation. Only a few users are satisfied with the current situation of distributed accounting books. Most of them think that the current distributed accounting books are good or not bad, but they are satisfied or average. From the data in the figure, we can see that the distributed accounting book is not very popular, so we should strengthen its optimization and update, so as to make the enterprises using it develop better.

**Figure (2) Is the distributed accounting book convenient**

From the data analysis in figure (2), we can see that there are still some problems in the accounting distributed ledger. The existence of these problems affects the user experience and makes these users have more opinions on the accounting distributed ledger. In order to make users have a better use experience, distributed accounting books need to overcome these problems. Only in this way can these users have a good use experience, and enterprises can develop better.

We randomly selected 50 people in the office competition, with the ratio of male to female being 1:1:
Table 1. Men's and women's understanding of distributed accounting books

| Gender | Understand | Do not understand |
|--------|------------|-------------------|
| Male   | 17         | 8                 |
| Female | 10         | 15                |

According to the data from the questionnaire survey in Table 1, there are gender differences in the understanding of distributed accounting books between men and women. Boys know more about distributed accounting books than girls, while girls know little about it. Therefore, gender will have a very different understanding of accounting distributed ledger, which is also an important factor we learned from the survey results. Therefore, the spread of distributed accounting books should be strengthened, which will be of great help to the development of database technology in the network environment, so that people can understand it and support its development.

5. Conclusion

The influence of database technology on the quality of accounting information is reflected in the database technology management of enterprise accounting distributed books, and in the database technology management information management system of enterprise accounting system. In addition, the development and use of data storage technology is the key to the realization of the company's strategic management. In the network environment, the positive impact of database technology on distributed ledger is reflected in the impact of database technology on the company's system. The accounting information of company accounting information system reflects the flow of value and the process of creating added value. The internal and external environment of an enterprise also affects the quality of accounting information. At present, with the continuous development of database technology, the business environment of enterprises is gradually concentrated on the database. In the operation and management of the whole enterprise, network database technology will play an increasingly important role. It is precisely because of the continuous improvement of production and work automation in the network environment. The company's control of each business process is more and more timely, reliable and effective, which helps to continuously improve the timeliness, reliability and related accounting information of the company.

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