An Accounting Resource Sharing Platform Based on Cloud Computing Technology

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Abstract. Accounting information is the most important economic information of every unit, and is an indicator of the income and operating status of an enterprise. Through comprehensive collection, careful analysis and rational application of accounting information, the goal of strengthening economic management and improving economic efficiency can be achieved. How to establish an accounting resource sharing platform adapted to the modern information environment is the key for enterprises to establish their own economic system. The purpose of this paper is to study the construction of an accounting resource sharing platform based on cloud computing technology. In studying the concepts related to accounting information platform, the construction of accounting resource sharing platform under cloud computing environment is proposed in conjunction with cloud computing technology, and various aspects of accounting resource sharing platform are studied and discussed, including cloud computing technology provides solutions for resource management and information sharing of large amount of accounting information. Finally, the application effect of the accounting resource sharing platform is analyzed, and the platform can help enterprises improve their profitability.

Keywords: Cloud Computing Technology, Accounting Resources, Sharing Platform, Platform Construction

1 Introduction

With the development of the economy, companies are becoming more and more closely related to each other. For better development, companies need to be aware of not only their own accounting information but also the business conditions of competition [1-2]. While there is a need for multiple economies to share accounting information, the current situation is that businesses, institutions and other economies generate accounting information through their own accounting systems, and investors, businesses and other stakeholders share accounting information that affects changes in the way information is generated [3-4]. This requires a unified accounting information platform to handle accounting information generated by microeconomic transactions in

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order to better integrate accounting information resources and establish an effective and coordinated accounting information exchange mechanism [5-6].

With the establishment of the modern enterprise system and the emergence of some large enterprise groups formed through asset restructuring, industrial alliances and industrial mergers, new requirements have been put forward for the financial management model of enterprise groups. antoinette L. Smith focuses on the development of an intelligent accounting management model architecture from the perspective of artificial intelligence. In the accounting exchange service platform, the accounting clearinghouse does not belong to any regional logistics department. Through the accounting exchange centre, a unified and standardised accounting, asset management, monetary income and expenditure is provided to the branches of logistics enterprises. At the same time, in a network environment, the financial and accounting exchange platform is not one-sided. Like each centrally managed subsidiary, it is entitled to feedback, consultation and monitoring of the financial and accounting exchange platform [7]. Accounting information sharing is important for making full use of the distributive effect of accounting information resources and for modernising national governance.Kanthana Ditkaew discusses mechanisms and ways of sharing accounting information in terms of national governance, horizontal interaction, internal integration and national harmonisation for a range of issues such as multi-sectoral reporting, different calibres, mutual independence and lack of communication. The establishment of an accounting information platform helps to enable the exchange of accounting information [8]. The knowledge-based economy places higher demands on corporate accounting information resources. In this regard, advanced computer technology must be used to innovate traditional accounting, improve the processing and output of financial information and enhance the quality of financial information.Issam A. R. Moghrabi designed and implemented a data mining-based enterprise accounting management platform. The design and implementation of an accounting information process based on business requirements was initiated and the platform reviewed. The results show that the constructed enterprise accounting platform is able to perform most accounting and financial management functions and provide a basis for financial management decisions in the business. The platform has proven to be effective and feasible for accounting applications [9].

Cloud computing provides a service platform provided that sufficient data is available. Only large amounts of data can maximise the technical advantages of cloud computing. Without large amounts of data, cloud computing services cannot reflect their economic benefits. Companies need to define their customers' requirements for service levels, security and monitoring contracts. Of these, the security of software service provision is a major concern for users today and for software service providers, especially for some large organisations or enterprise customers. We therefore investigate the use of cloud computing in accounting resource sharing platforms, which has important positive implications for further improving accounting systems.

2 Related Theories

2.1 The Theory of Economies of Scale

The theory of economies of scale can be summarised as the inverse change in the number of products produced by a firm and the unit cost of products in a fixed production cycle. The deployment of shared financial services centres can also fully reflect the theory of economies of scale. It is clear from the definition of shared services that they are implemented to improve the efficiency of business processes while reducing costs for financial institutions, which is consistent with the theory of economies of scale. In addition, shared service centres are established in a large number of molecular firms that require sufficient business processing flows to allocate costs and achieve economies of scale [10].

2.2 Business Process Reengineering Theory

Process re-engineering theory can be summarised as: the sequencing, analysis and re-engineering of an organisation's business processes to enable it to achieve significant improvements in key performance indicators. Business process reengineering is the process of classifying, segmenting and reorganising operations in an organisation in order to integrate business processes. Operational efficiency is improved through process reclassification and new, simple and efficient processes are generated [11].

The key to creating a shared centre is to optimise business process re-engineering to give finance teams the opportunity to do more valuable work and increase overall value.

2.3 Resource Allocation Theory

Resource allocation theory is the rational allocation of limited resources to where they are most effective and optimised. The resources mentioned here are collectively referred to as people, money, things, etc. In the process of economic development, resources are always scarce and cannot meet the needs of the people. Therefore, these resources should be allocated rationally, and relatively scarce resources should be allocated to where they will yield the greatest benefit in order to avoid waste. Rational allocation of resources is important for long-term economic development. Optimising the allocation of resources is therefore an ongoing process. The company has established a Shared Financial Services Centre with the aim of separating important from worthless financial operations, thus enabling the finance team to focus more on general and macroeconomic operations such as investment, financing, budget management, cost control, etc [12].

2.4 Shared Services Theory

Shared services theory sees shared services as a strategic integration in itself, and as information technology has matured, the advantages of starting shared services for large companies in a group have led to significant results and predictable financial management goals for many large companies in the group, further driving global recognition of shared services.

3 The Construction of an Accounting Resource Sharing Platform Based on Cloud Computing Technology

3.1 Application of Cloud Computing Accounting Resources Sharing

The cloud and the client are the two parts of a cloud computing accounting resource sharing platform, each of which contains different levels, as shown in Fig.ure 1:

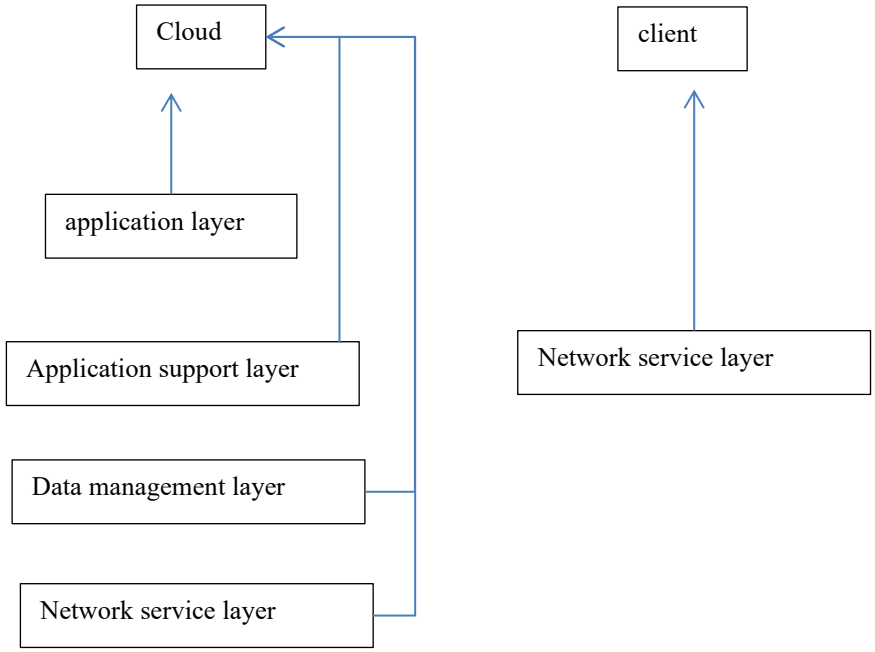

Fig. 1. Schematic diagram of accounting resource sharing platform architecture based on cloud computing

In the cloud, the cloud computing server can be divided into four levels from top to bottom: (1) the application layer mainly provides services such as reporting management, centralized payment management and centralized accounting management to clients; (2) the application support layer mainly provides services such as website management, authority management, traffic management and statistical analysis to the sharing centre; (3) the data management layer mainly classifies and stores data such as basic data, business data and decision data; (4) the network service layer mainly provides mail services and authentication services; in the client side, it is relatively simple, mainly users can get access to it by inputting commands through laptops, mobile phones and desktops according to their needs. (4) the network service layer mainly provides mail service and authentication service; on the client side, it is relatively simple, mainly users can get efficient and convenient services by inputting instructions through laptops, mobile phones, desktops, etc. according to their own needs.

The cloud server can be divided into four layers from top to bottom: (1) the application layer provides reporting management, centralised payment management and centralised accounting management services for the client; (2) the execution assistance layer mainly provides website management, skills management, traffic management and statistical analysis services to the sharing centre; (3) data management

mainly classifies and stores basic data, business data and decision data; (4) the web service layer mainly provides mail and authentication services.

3.2 Massive Accounting Information Processing in Cloud Computing Environment

This paper gives a massive accounting information processing architecture combined with Hadoop technology.

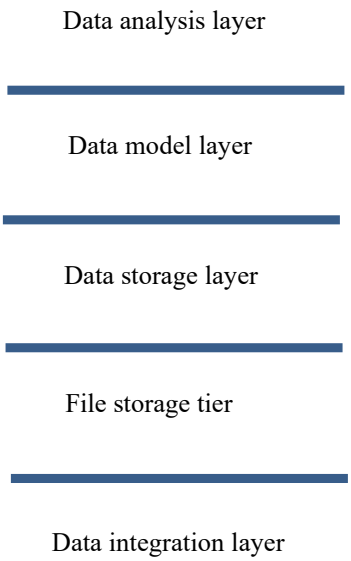

Fig. 2. Accounting information processing architecture

The data integration layer, shown in Fig.ure 2, sits at the bottom of the overall data architecture and is the source of the data needed to validate and process the accounting information platform. This includes unstructured, semi-structured, media, graphical and other formats of data. On the one hand, the Sqoop Data Integration Layer component imports data stored in a single relational database from the accounting information system into the Hadoop component, facilitating subsequent processing by MapReduce or HIVE, or even directly into the database; in addition, processed data can be exported to the relational database. The file storage layer organises a large number of network-attached devices to the bottom, distributes them to different locations, provides object-level file access for top-level applications through a unified interface, accesses specific data sources and storage resources in the data integration layer, and provides a data model layer providing a parallel computing model for large data processing. The data analysis layer provides advanced analysis tools for data analysts to access detailed accounting information. Platform management ensures the secure operation of the data processing platform.

3.3 Mining Massive Accounting Information in Cloud Computing Environment

In the Hadoop open source software framework environment, HIVE can play the same role as data warehouse decisions in a traditional data analysis environment, providing analysts with a similar set of database access and storage mechanisms. pig greatly simplifies the Hadoop data analysis task, greatly simplifying the loading, representation, transformation and storage of the final results of the data.

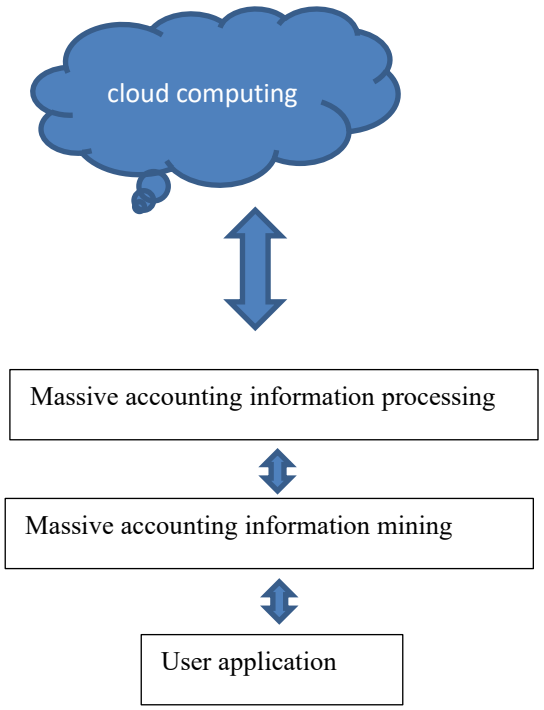

Fig. 3. Massive data mining model in cloud computing environment

Fig.ure 3 shows that the cloud computing platform provides massive data storage and distributed parallel data processing services. Massive data pre-processing is a series of operations such as extraction, transformation, cleaning and integration of irregular data to improve the quality of data mining results. Because the new MapReduce algorithm used in cloud computing needs to be optimised and improved on the basis of the original data mining algorithm, different data mining algorithms (clustering algorithms, association rules, etc.) are used according to the different data requirements of users.

One of the core operations in large-scale data analysis is the join query operation, which, with the help of the MapReduce computing framework, is the key to obtaining valuable information from large-scale data. Assuming that the two tables participating in the join query are R and S respectively, R is agreed to be the master table and S is agreed to be the slave table, ri and si are the attributes of R and S respectively, and nr and ns are the number of attributes of R and S respectively, the sets R' and S' of attributes of tables R and S can be represented as:

$$R' = \{r_i | 1 \le i \le n_r\} \tag{1}$$

$$S' = \{s_i | 1 \le i \le n_s\} \tag{2}$$

where the attributes x ∈ R' ∩ S ', y ∈ R ' and z ∈ S ' are non-intrusive, the query conditions are CR and CS, and the projection attribute is P. So the join query in this paper can be defined as:

$$(\pi_P(\sigma_{R.x=S.x \wedge C_R \wedge C_S}(R \times S))) \tag{3}$$

4 Analysis and Research of Accounting Resource Sharing Platform Based on Cloud Computing Technology

4.1 Evaluation of the Effectiveness of the Service Model

Taking the application of Company M in the accounting resource sharing platform as an example, the effectiveness of the service model was evaluated and the results are shown in Table 1. through the accounting resource sharing platform, Company M has strengthened the implementation and regulation of the Group's financial system, information processing is more timely and efficient, it is no longer limited by business expansion and abnormal manpower, data sharing is higher, accounting is more realistic and effective, and the Group's control is effectively enhanced.

Table 1. Application effect of M company's accounting resource sharing platform

project	M Company Accounting Resource Sharing Center
Monthly invoice processing volume:	About 6500
Processing capacity of the day before use:	About 150
Daily processing capacity after use:	About 300
work efficiency:	Overall increase by 1.5 times

4.2 Evaluation Based on Profitability Perspective

This paper evaluates the profitability of Company M based on the application of a shared service platform for cloud computing accounting resources. Profitability is the goal of a company's production and operation. It is an important measure of the success of an enterprise. The assessment of a firm's profitability reflects whether the cloud-based accounting resource shared services model can generate profits for the provider and whether the model has future growth prospects. The analysis in this paper will be based on financial data for the period 2019-2022.

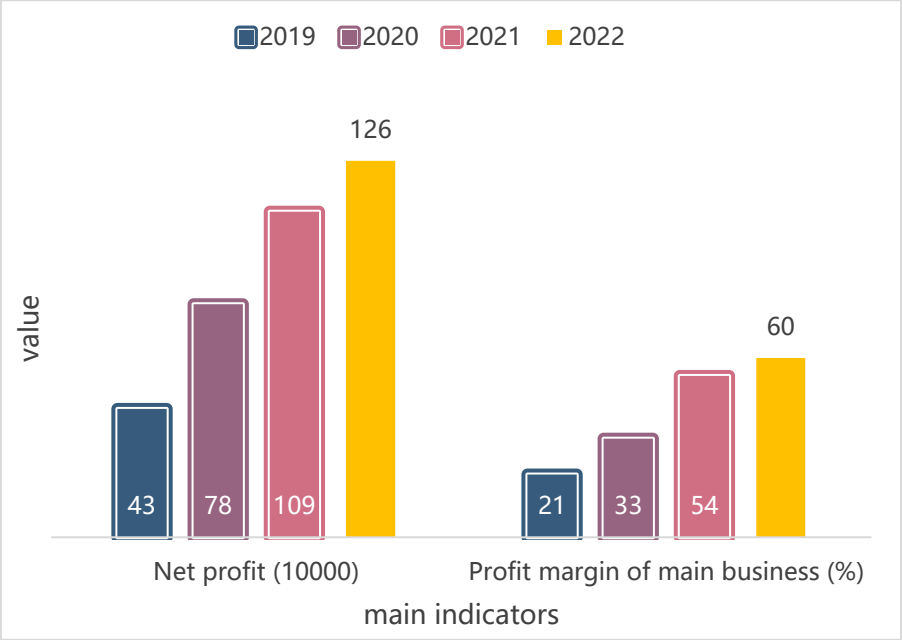

Fig. 4. Profitability Analysis of Company W

Fig.ure 4 shows core operating income for the last four years, almost three times that of 2019. Key operating expenses are also increasing, but at a relatively modest rate. net revenue increases significantly between 2019 and 2022.

M's shared services model for accounting resources enables companies to conduct business processes and save on administrative costs; improve the efficiency of data processing in large enterprises and enhance data sharing and group control. Combined with the profit-oriented business evaluation, M Enterprises' cloud-based accounting resource shared services model has good future growth prospects and the business is beginning to enter a growth phase.

5 Conclusions

The use of modern technology can provide comprehensive accounting information, analyse financial data based on specific models, forecast economic activity and develop sound economic plans. At the same time, it can support financial decision-making, improve risk control, enhance the economic efficiency of enterprises and improve their competitiveness in the market environment. This paper adopts cloud computing technology to solve the problem of information sharing and resource integration in accounting resource sharing platforms, combining accounting information platforms to realise the advantages of parallel computing, low-cost computing and resource sharing. This paper studies the storage and management of a large amount of cloud-based accounting information, and constructs a large-scale accounting information processing architecture using the open-source parallel software framework Hadoop. The

architecture of the accounting information platform is introduced and how to store, manage and explore large amounts of accounting information in a cloud computing environment is discussed.

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