

The Impact and Prospect of "Cloud Accounting" on Small and Medium-sized Enterprises in the Context of the Internet

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Abstract

With the advent of the Internet era, cloud accounting has gradually integrated into accounting-related work. The application of cloud accounting to small and medium-sized enterprises has strengthened the combination of accounting information and network cloud information platform, promoted the development of accounting work, effectively improved the work efficiency of accountants, and promoted the development of small and medium-sized enterprises' market and the improvement of their competitiveness in the field. Based on this environment, this paper explores the application of cloud accounting in small and medium-sized enterprises, predicts the application prospects, and uses SPSS to establish a fuzzy comprehensive evaluation model to evaluate the current software efficiency and function. Analyze the penetration of cloud accounting in the accounting work of small and medium-sized enterprises from the current and future aspects.

Keywords

Cloud Accounting; Small and Medium-sized Enterprises; Internet.

1. Introduction

With the advent of the Internet era, cloud accounting came into being. It is a digital virtual accounting information processing system based on cloud computing and using the Internet as the communication carrier. It can complete a series of financial accounting work online. It is convenient, intelligent and greatly accelerates the work efficiency of accounting practitioners, which is of great significance to the accounting work of small and medium-sized enterprises.

Cloud accounting is a digital virtual accounting information processing system based on cloud computing, which can complete a series of financial accounting work on the Internet. With the Internet as the communication carrier, customers can make full use of the Internet to analyze financial data and conduct accounting processing, with powerful and complete functions. Through the data processing function, accountants can complete various accounting-related work on this platform, such as enterprise accounting and accounting decision-making. In the context of the Internet era, cloud accounting, as one of the important changes, has not only improved the level of accounting informatization of small and medium-sized enterprises in China, but also provided more efficient and convenient financial management ideas to all enterprises, which will play a significant role in the accounting work of small and medium-sized enterprises.

Deng Shu (2021), on the basis of analyzing the characteristics and advantages of "cloud accounting", listed the problems existing in the implementation process of "cloud accounting"

in small and medium-sized enterprises, and put forward reference suggestions [1]. Guo Chao (2021) took the current situation of small and medium-sized enterprises' investment decision-making under the background of big data as the starting point, and analyzed the existing shortcomings. Then it analyzes the application value of cloud accounting in small and medium-sized enterprises' decision-making from the aspects of low cost and high efficiency, reducing decision-making risk, and standardizing decision-making process, constructs the investment decision-making framework of small and medium-sized enterprises based on cloud accounting, and finally puts forward suggestions on improving decision-making [2]. Lan Lin (2022) briefly introduced the concepts of cloud computing and cloud accounting. From the domestic research status, it shows that the understanding of cloud accounting is shallow. This paper analyzes the advantages of cloud accounting in network manipulation, risk prediction and cost saving, and discusses the shortcomings of cloud accounting promotion and application, as well as the challenges to audit and accounting judicial expertise [3]. Li Longfei (2022), from the perspective of financial management, summarized the challenges faced by the financial management of small and micro enterprises in the era of big data, and extracted the need for innovation in the financial work of small and micro enterprises in the current era and the flexibility of the financial management model as the focus of work. At the same time, based on these two points, several innovative countermeasures have been proposed for the financial management of small and micro enterprises [4]. Tian Ye (2022) also considered the background of the times, relying on the Internet and big data, explained the generation of cloud accounting and the service model. Reflect the development advantages of cloud accounting from four aspects: low cost, high efficiency, flexibility and liquidity. At the same time, based on the current situation of cloud accounting application in small and medium-sized enterprises in China, the deficiencies are pointed out. This paper discusses the development countermeasures of cloud accounting in small and medium-sized enterprises from the aspects of government strengthening the promotion, establishing standards and other independent construction of cloud accounting, enterprises improving the quality of staff, and cloud service providers establishing security mechanisms [5]. To sum up, cloud accounting plays an important role in the current accounting information technology field.

2. Development Advantages of Cloud Accounting

2.1. High Efficiency

Due to budget constraints, financing is difficult and capital shortage, small and medium-sized enterprises will continue to invest and operate basic enterprises based on the income and output obtained from normal production and operation. Relatively speaking, there is not too much capital invested in cloud accounting. Especially in recent years, the manufacturing situation is not optimistic, which makes China's small and medium-sized enterprises in a long-term state of insufficient capital. Cloud accounting can provide more efficient financial management and save time and cost for enterprises. Cloud accounting can automate the financial process, complete the preparation and review of financial statements faster, and save the human and time costs of enterprises.

2.2. Strong real-time

Cloud accounting can provide real-time financial statements, which can help enterprises better grasp the financial situation. Cloud accounting can track the financial situation of enterprises in real time, provide real-time financial statements, and help enterprises better grasp the financial situation, timely identify financial risks, and take timely measures.

2.3. High Safety Factor

Cloud accounting can provide more secure data storage and effectively prevent data leakage. Cloud accounting can adopt a variety of security technologies, such as encryption technology, access control technology, etc., which can effectively prevent data leakage and protect enterprise data security.

2.4. Strong Flexibility

Cloud accounting can provide more flexible financial management. It can provide customized financial management services according to different needs of enterprises to better meet the needs of enterprises.

2.5. Convenient and Easy to Operate

Cloud accounting can provide more convenient financial statement analysis, and can better help enterprises make financial decisions. Help enterprises analyze financial statements, better understand the financial situation of enterprises, and better make financial decisions.

3. Current Situation of Cloud Accounting Application in Small and Medium-sized Enterprises

At present, small and medium-sized enterprises are using cloud accounting more and more. More and more small and medium-sized enterprises begin to use cloud accounting to improve financial management efficiency, reduce costs and improve financial security. Cloud accounting can provide more efficient financial management, save time and cost for enterprises, provide real-time financial statements, provide more secure data storage, provide more flexible financial management, provide more convenient financial statement analysis, and better help enterprises make financial decisions. As a technology that has only been used in recent years, cloud accounting also has certain problems in the application of small and medium-sized enterprises that need to be solved.

3.1. Enterprise's Understanding of Cloud Accounting is One-Sided and Lacking

Most small and medium-sized enterprises do not pay too much attention to cloud accounting. According to data, more than 70% of enterprises do not want to easily experience cloud accounting service mode, mainly because many managers of small and medium-sized enterprises do not understand the use of cloud accounting. Managers of small and medium-sized enterprises have a strong desire for subjective control. Due to the lack of enterprise financial data, they generally pay more attention to the online sharing platform under the cloud accounting model, and are not willing to store the information of enterprise financial data to the cloud server. At the same time, because the cloud accounting service information system can be accessed remotely using computers or mobile phones anytime and anywhere, it requires that managers and employees should learn how to operate and use cloud accounting - which is obviously not available to all small and medium-sized enterprises.

3.2. Cloud Accounting Talents are Scarce

As the name implies, "cloud accounting" is different from traditional accounting. It not only requires accountants to master accounting knowledge, but also requires that their daily work is closely related to the operation of Internet technology. However, small and medium-sized enterprises tend to be relatively small in scale, with insufficient funds and relatively low salary levels to be paid to employees, which often makes it difficult to attract high-quality talents who understand enterprise management and accounting and master information technology.

3.3. Information Security is not Adequately Guaranteed

In the process of applying the cloud accounting platform, the potential security risks generated by the Internet information technology cannot be ignored. As a technology closely connected with the Internet, the problem of information security leakage caused by the Internet itself cannot be avoided. However, if the data stored on the platform and related to corporate finance is lost, stolen or damaged, it will lead to irreparable economic losses for the enterprise and cause adverse consequences for the development of the enterprise. Under the constraints of their own conditions, managers are mainly concerned about the intrusion of Internet viruses, the theft of internal financial data and the backup of enterprise financial data. Data risk mainly comes from the inherent risk of cloud accounting system, supplier risk and external risk.

In addition, the author has more accurately investigated the current situation of some small and medium-sized enterprises and the supervisor's views on the application of cloud accounting through questionnaire survey. Through a questionnaire survey of 200 managers of small and medium-sized enterprises, the results show that more than 97% of managers believe that the application of cloud accounting can effectively improve the work efficiency of enterprises and thus improve the overall management level; In addition, more than 90% of managers said that compared with traditional accounting systems, cloud accounting can enable SMEs to disclose financial statements more safely, timely and accurately, which can effectively attract more investors to invest and promote enterprise development. In addition, through literature research and experimental research, this paper also found that cloud accounting has great potential in the financial management of small and medium-sized enterprises, which can continuously improve the financial efficiency of small and medium-sized enterprises, help enterprises complete the submission and audit of financial statements in a timely manner, and enable the supervision department to make more timely and accurate use of the financial situation of enterprises.

4. Efficiency of Cloud Accounting-related Software

4.1. Software Introduction

4.1.1. U1 -- Software Service

(1) U11 -- Accounting module. U11 mainly includes the receipt and payment of funds and securities, the receipt and delivery, increase and decrease and use of property, the increase and decrease of capital funds, the occurrence and settlement of creditor's rights and debts, and the calculation of income, expenditure, expenses and costs.

(2) U12 -- Financial management module. U12 mainly includes financing management, investment management, working capital management, cost management, income and distribution management, etc. Enterprise financial management is the management of asset acquisition, capital accommodation, cash flow in operation and profit distribution under a certain overall goal.

(3) U13 -- Provide financial decision support module. U13 mainly evaluates the ability of enterprises in terms of profitability, operation and debt repayment through the analysis of financial data, and provides certain support for enterprises' decision-making.

4.1.2. U2 -- Platform Service

(1) U21 -- Software development module. U21 is mainly the process of building a software system or software part of the system according to user requirements. Software development is a system engineering that includes requirements capture, requirements analysis, design, implementation and testing.

(2) U22 -- Data storage module. U22 is mainly based on cloud platform massive data storage technology, providing efficient, reliable and uninterrupted storage and access services for

massive accounting data, and providing a data support platform; The cloud computing parallel data real-time processing technology framework is adopted to realize real-time retrieval, statistics, analysis, mining, visualization and other processing of accounting data, and provide valuable data services for the upper level.

(3) U23 -- Software maintenance and upgrade module. U23 mainly includes the daily operation and maintenance, fault emergency treatment, technical support and other special implementation of the cloud platform. It needs to be responsible for providing daily maintenance and support services for the end user's client operating system and application software.

4.1.3. U3 -- Infrastructure Services

(1) U31 -- Provide virtual computing resources. U31 mainly provides users with dynamic computing resources in the form of virtual machines to achieve flexible storage and computing capabilities.

(2) U32 -- Provide infrastructure resources. U32 mainly provides virtual machines and components, such as servers, memory, network switches, firewalls, load balancers and storage.

(3) U33 -- Provide daily operation and maintenance of equipment and machine room. U33 mainly refers to the repair and maintenance of computers and related equipment to ensure that the equipment is in good operating condition.

4.1.4. U4 -- Hardware Service

(1) U41 -- Improve the computing capacity of the computer center. U41 is mainly used to install the virtual machine management system on the server. The system can be divided into many computing units according to the user's requirements. These computing units have the same functions as a single computer, greatly improving the upper limit of computing power.

(2) U42 -- Improve the mental activity in computers. U42 mainly uses the virtual machine system to divide virtual machines that can achieve different functions according to user needs. Users can move according to the status of the server, which is very flexible.

4.1.5. U5 -- Data Service

(1) U51 -- Data service centralization. U51 is mainly the centralized deployment of data-related services, including data storage, data retrieval, data management, data cleaning and other functions.

(2) U52 -- Integrate relevant information resources. U52 mainly classifies the processed accounting information resources, integrates the data of the same aspects and outputs them to the corresponding systems and users.

4.2. Efficiency Evaluation

4.2.1. Evaluation Factor Set

Main factor set.

$U = \{U1, U2, U3, U4, U5\} = \{\text{Software service, Platform service, Infrastructure service, Hardware service, Data service}\}.$

Sub-factor set.

$U1 = \{U11, U12, U13\} = \{\text{Accounting module, Financial management module, Financial management module}\}.$

$U2 = \{U21, U22, U23\} = \{\text{Software development module, Data storage module, Software maintenance and upgrade module}\}.$

$U3 = \{U31, U32, U33\} = \{\text{Provide virtual computing resources, Infrastructure resources, Daily operation and maintenance of equipment and computer rooms}\}.$

$U4 = \{U41, U42\} = \{\text{Improve the computing capacity of the computer center, Improve the mental activity in the computer}\}.$

U5={U51, U52}={Centralized data services, Integrate relevant information resources}.

4.2.2. Evaluation Set

The functions provided by various service modes of the cloud accounting system are divided into five levels according to their efficiency:

V={V1, V2, V3, V4, V5}={Low, Average, Higher, High, Very high}.

4.2.3. Evaluation Matrix

Table 1. Evaluation Matrix

Efficiency		Low	Average	Higher	High	Very high
		V1	V2	V3	V4	V5
U11	Accounting module	1	3	8	6	2
U12	Financial management module	3	5	2	8	2
U13	Provide financial decision support module	0	2	3	10	5
U21	Software development module	8	7	3	2	0
U22	Data storage module	2	3	4	8	3
U23	Software maintenance and upgrade module	6	8	3	2	1
U31	Provide virtual computing resources	2	4	4	7	3
U32	Provide infrastructure resources	9	7	3	1	0
U33	Daily operation and maintenance of equipment and machine room	7	5	4	2	2
U41	Improve the computing capacity of the computer center	2	5	9	3	1
U42	Improve the mental activity in the computer	5	4	8	2	1
U51	Data service centralization	3	2	8	3	4
U52	Integrate relevant information resources	2	4	6	6	2

Single factor evaluation matrix:

$R_i = 1/20 (C_{ij})$ ($i=1, 2, 3, \dots, 5; j=1, 2, 3$), C_{ij} is the number of votes that evaluate U_i as V_j . Therefore, the single-factor evaluation matrix is as follows:

$$\begin{aligned}
 R_1 &= \begin{bmatrix} 0.05 & 0.15 & 0.40 & 0.30 & 0.10 \\ 0.15 & 0.25 & 0.10 & 0.40 & 0.10 \\ 0 & 0.10 & 0.15 & 0.50 & 0.25 \end{bmatrix} \\
 R_2 &= \begin{bmatrix} 0.40 & 0.35 & 0.15 & 0.10 & 0.00 \\ 0.10 & 0.15 & 0.20 & 0.40 & 0.15 \\ 0.30 & 0.40 & 0.15 & 0.10 & 0 \end{bmatrix} \\
 R_3 &= \begin{bmatrix} 0.10 & 0.20 & 0.20 & 0.35 & 0.15 \\ 0.45 & 0.35 & 0.15 & 0.05 & 0 \\ 0.35 & 0.25 & 0.20 & 0.10 & 0.10 \end{bmatrix} \\
 R_4 &= \begin{bmatrix} 0.10 & 0.25 & 0.45 & 0.15 & 0.05 \\ 0.25 & 0.20 & 0.40 & 0.10 & 0.05 \end{bmatrix} \\
 R_5 &= \begin{bmatrix} 0.15 & 0.10 & 0.40 & 0.15 & 0.20 \\ 0.10 & 0.20 & 0.30 & 0.30 & 0.10 \end{bmatrix}
 \end{aligned}$$

4.2.4. Weight Set

Set weights according to the importance of each single factor.

In this paper, expert survey method is adopted, and 10 experts give weight to each factor in each sub-factor set. The results are as follows:

$A1=(0.3, 0.3, 0.4)$, $A2=(0.5, 0.25, 0.25)$, $A3=(0.35, 0.4, 0.25)$, $A4=(0.7, 0.3)$, $A5=(0.45, 0.55)$.

The importance of each model relative to the other models can be obtained according to the expert scoring, and the weight of each model can be obtained through the analytic hierarchy process (AHP), which makes the conclusion more convincing.

Table 2. AHP data

	Software service	Platform service	Infrastructure services	Hardware service	Data service
Software service	1	0.5	0.833	1.25	0.667
Platform service	2	1	2.5	1.25	1.429
Infrastructure services	1.2	0.4	1	0.556	1.25
Hardware service	0.8	0.8	1.8	1	0.667
Data service	1.5	0.7	0.8	1.5	1

Table 3. Results of AHP hierarchy analysis

Term	Feature vector	Weight value	Maximum characteristic value	CI value
Software service	0.779	15.58%	5.174	0.044
Platform service	1.472	29.45%		
Infrastructure services	0.796	15.92%		
Hardware service	0.931	18.62%		
Data service	1.022	20.43%		

Table 4. Summary of consistency inspection results

Maximum characteristic root	CI value	RI value	CR value	Consistency inspection results
5.174	0.044	1.12	0.039	pass

From the above table, the weight of $U= \{U1, U2, U3, U4, U5\}$ is $A= (0.16, 0.29, 0.16, 0.18, 0.24)$.

4.2.5. Multi-layer Fuzzy Evaluation

Comprehensive evaluation shall be carried out according to the factors at the lowest level, and then comprehensive evaluation shall be carried out according to the factors at the upper level until the last level.

$A_i \times R_i = B_i$ ($i=1, 2, 3...5$), using $M (\bullet, \oplus)$ model, the following formula is obtained after normalization:

$$B_1 = A_1 \times R_1 = (0.30, 0.30, 0.40) \times \begin{bmatrix} 0.05 & 0.15 & 0.4 & 0.3 & 0.1 \\ 0.15 & 0.25 & 0.1 & 0.4 & 0.1 \\ 0 & 0.1 & 0.15 & 0.5 & 0.25 \end{bmatrix} = (0.06, 0.16, 0.21, 0.41, 0.16)$$

$$B_2 = A_2 \times R_2 = (0.50, 0.25, 0.25) \times \begin{bmatrix} 0.4 & 0.35 & 0.15 & 0.1 & 0 \\ 0.1 & 0.15 & 0.2 & 0.4 & 0.15 \\ 0.3 & 0.4 & 0.15 & 0.1 & 0 \end{bmatrix} = (0.3, 0.3125, 0.1625, 0.175, 0.05)$$

$$B_3 = A_3 \times R_3 = (0.35, 0.4, 0.25) \times \begin{bmatrix} 0.1 & 0.2 & 0.2 & 0.35 & 0.15 \\ 0.45 & 0.35 & 0.15 & 0.05 & 0 \\ 0.35 & 0.25 & 0.2 & 0.1 & 0.1 \end{bmatrix} = (0.3025, 0.2725, 0.18, 0.1675, 0.0775)$$

$$B_4 = A_4 \times R_4 = (0.70, 0.30) \times \begin{bmatrix} 0.1 & 0.25 & 0.45 & 0.15 & 0.05 \\ 0.25 & 0.2 & 0.4 & 0.1 & 0.05 \end{bmatrix} = (0.145, 0.235, 0.435, 0.135, 0.05)$$

$$B_5 = A_5 \times R_5 = (0.45, 0.55) \times \begin{bmatrix} 0.15 & 0.10 & 0.40 & 0.15 & 0.20 \\ 0.10 & 0.20 & 0.30 & 0.30 & 0.10 \end{bmatrix} = (0.1225, 0.155, 0.345, 0.2325, 0.145)$$

$$B = \begin{bmatrix} B_1 \\ B_2 \\ B_3 \\ B_4 \\ B_5 \end{bmatrix} = \begin{bmatrix} 0.06 & 0.16 & 0.21 & 0.41 & 0.16 \\ 0.3 & 0.3125 & 0.1625 & 0.175 & 0.05 \\ 0.3025 & 0.2725 & 0.18 & 0.1675 & 0.0775 \\ 0.145 & 0.235 & 0.435 & 0.135 & 0.05 \\ 0.1225 & 0.155 & 0.345 & 0.2325 & 0.145 \end{bmatrix}$$

$$A \times B = (0.16, 0.29, 0.16, 0.18, 0.24) \times \begin{bmatrix} 0.06 & 0.16 & 0.21 & 0.41 & 0.16 \\ 0.3 & 0.3125 & 0.1625 & 0.175 & 0.05 \\ 0.3025 & 0.2725 & 0.18 & 0.1675 & 0.0775 \\ 0.145 & 0.235 & 0.435 & 0.135 & 0.05 \\ 0.1225 & 0.155 & 0.345 & 0.2325 & 0.145 \end{bmatrix} = (0.1970, 0.2355, 0.2612, 0.2153, 0.0910)$$

It can be seen that the order of efficiency from high to low is $U_3 > U_2 > U_4 > U_1 > U_5$, that is, infrastructure-based services > platform-based services > hardware-based services > software-based services > data-based services.

5. Conclusion and Suggestions

5.1. Conclusion

In terms of cloud accounting application, domestic small and medium-sized enterprises are still at the stage of development. The importance of cloud accounting and their own advantages are unknown. The popularity and informatization level of cloud accounting is relatively low. There are mainly problems such as one-sided and insufficient understanding of cloud accounting, scarce cloud accounting talents, and insufficient information security. These problems are mainly caused by the characteristics of small and medium-sized enterprises, and the development of cloud accounting has just started. In the evaluation of cloud accounting software system, infrastructure-based services are more than other aspects, while data-based services are temporarily inefficient. Therefore, if you want to improve the compatibility of cloud accounting software system and accounting work of small and medium-sized enterprises, you must start with data-based services to improve their office efficiency, so that more and more small and medium-sized enterprises use the system to work. Through analysis, due to the continuous development of the cloud computing era, the development prospect of accounting informatization is bound to be cloud accounting. Cloud accounting can be operated remotely at home. On the basis of reducing the operating costs of enterprises, it can still guarantee the

accounting working environment. The widespread application of cloud accounting in small and medium-sized enterprises will be the general trend.

5.2. Suggestions

5.2.1. Strengthen Data Security

Whether small and medium-sized enterprises adopt cloud accounting and whether data security is the most priority and priority. Therefore, it is urgent to improve the security of data. In order to protect the key information of the enterprise, the security factor should be improved by setting access rights, enabling firewalls, and strengthening data encryption. For example, improve data storage through multiple local and remote backups; It is forbidden for irrelevant personnel to view the data without permission, and protect the data with multiple encryption to prevent data leakage due to human factors during transmission.

5.2.2. Establishment of Specifications and Standards

Relevant departments should formulate relevant normative documents to clarify the norms and standards of cloud accounting system and ensure smooth data transfer between platforms; Such as the establishment of industry standards, the use of third-party evaluation mechanism, etc. Set up a "cloud accounting" supervision and management team under the National Accounting Information Commission, and establish an enterprise external supervision system; Establish cloud accounting information security indicators and give appropriate punishment to cloud accounting service providers that do not meet the standards. At the same time, relevant departments should timely collect the feedback information of enterprises, listen to and absorb opinions and suggestions, constantly improve the standards, make the standards more practical, and greatly safeguard the interests of small and medium-sized enterprises.

5.2.3. Strengthen Publicity and Promotion

Carry out relevant publicity and promotion activities and regional demonstration and promotion work, and provide certain funds and infrastructure support in the promotion. Managers of small and medium-sized enterprises need to change their thoughts on cloud accounting, pay more attention to cloud accounting, actively arrange relevant department staff to carry out education and training on cloud accounting technology, gradually expand the scope of training to all employees, and strengthen the enterprise's attention to cloud accounting from top to bottom.

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References

- [1] Deng Shu. Problems and countermeasures in the application of "cloud accounting" in small and medium-sized enterprises [J]. Modern Commerce and Trade Industry, 2021(13): 93-94.
- [2] Guo Chao. Research on investment decision of small and medium-sized enterprises based on cloud accounting [J]. Finance and Accounting Communication, 2021(10): 150-153.
- [3] Lan Lin. Deficiencies and development suggestions in the promotion and application of cloud accounting [J]. Cloud Browse, 2022(01): 133-134.
- [4] Li Longfei. Financial management of small and micro enterprises in cloud accounting in the era of big data [J]. Finance and Audit, 2022(11):172-173.
- [5] Tian Ye. Current situation and analysis of cloud accounting for SMEs in the context of big data [J]. Value Engineering, 2022(01): 40-42.