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Under Digital Age the Popularization Of Accounting Information System and the Change Of Operating Cost

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ABSTRACT
It is the tradition of this paper to investigate how accounting information systems have gained mass usage during the digital era, as well as its implications for the expense of operating an enterprise. The theoretical analysis and case studies presented in the paper provide an in-depth study of the popularization of accounting information systems, emphasizing the development of more advanced functional modules, the improvement of technical architecture, and the deployment of their application to various scales and types of enterprises in contemporary times. The study showed that the democratization of accounting information systems brought enterprises the ability to automate and to make the processing of accounting and data generation intelligent, resulting in a remarkable enhancement in the comprehensiveness and correctness of accounting information processing. As for operating costs, although during the early stage of applying accounting information systems, funds for hardware acquisition, software authorization, and personnel training are needed, and thus the process can be said to be a bit burdensome, in the long term, human costs (which may result from accounting mistakes) are eliminated through optimization of the process to reduce the requirements of human involvement, while resource allocation quality is improved by real-time data sharing and analysis, thus, operating costs and decision-making error costs are reduced. Yet, there are also new glitches, for instance, the proliferating costs of system security maintenance and the ever-rising costs of data protection.

KEYWORDS
Digitalization; Accounting information system; Popularization of accounting information system; Popularized; Operating cost; Cost management

1 Introduction

In the IT epoch, the latest tech advancements are a boon for the accounting information system. Digital technologies, such as big data, cloud computing, and artificial intelligence, give technical backing to the conversion of accounting information systems. On the other hand, cloud computing empowers businesses to use high-performing computing and storage resources for an affordable price, and favors the distribution of accounting information systems as SaaS from local installation.

During the conversations about the business environment disruptions, we can clearly notice a factor of the market competition level that is on the rise, while companies need consistent and valid financial data to support the decision-making process. Traditional process of accounting do not fit into the requirements and prompts enterprises to search for digital accounting information systems able to improve their competitiveness.

Without supportive policies and regulations, this giant stride cannot be realized. It means stricter rules and transparency requirements are imposed on the kinds of corporate financial information that directors need to disclose, and companies should use digital accounting information systems for ensuring compliance. For example, the introduction of electronic invoices has led to the upgrading of the corporate accounting information systems to operate with electronic invoices.

Accounting information system is a human-machine integrated system based on computer technology and information technology that collects, stores, processes, and transmits accounting data to provide financial information required for decision-making. It consists of elements such as hardware, software, data, personnel, and regulations.

In terms of functionality, accounting information systems have powerful accounting functions that can complete basic tasks such as accounting processing, fixed asset accounting, salary accounting, cost accounting, and report preparation. They automate tedious manual accounting processes, greatly improving work efficiency and accuracy. At the same time, the system also has management functions, providing a basis for budget management, cost control, performance evaluation and other management activities through data analysis and mining, helping enterprise managers make scientific decisions.

From the perspective of development, accounting information systems have undergone a transformation from simple computerization to integration and intelligence. Early computerized systems mainly implemented basic functions such as bookkeeping and accounting; With the development of information technology, enterprise resource planning (ERP) systems have emerged, integrating business modules such as finance, procurement, sales, and production to achieve data sharing and business collaboration; Nowadays, the application of new technologies such as big data and artificial intelligence has enabled accounting information systems to have more advanced functions such as intelligent analysis

and risk warning.

The advantages of accounting information systems are significant. It improves the efficiency and accuracy of accounting data processing, reducing manual errors; Realize deep integration of finance and business, promote internal information flow and collaborative work within the enterprise; It can also generate real-time financial reports, providing timely and accurate financial information for enterprise managers and external stakeholders.

However, accounting information systems also face some challenges. The issue of data security cannot be ignored. Once data leakage or tampering occurs, it will bring huge losses to the enterprise; The construction and maintenance costs of the system are relatively high, and there are certain requirements for the financial and technological capabilities of the enterprise; In addition, the system updates rapidly, requiring accounting personnel to constantly learn new knowledge and skills to adapt to changes in the system.

2 Popularization of accounting information system

2.1 The development of accounting information system

The development of accounting information systems has mainly gone through the following important stages.

The first period is called "Manual Accounting Information System Stage". This is the initial form of accounting development. Starting from the ancient practice of knot - tying for record - keeping and spanning through the long era of manual book - keeping, accountants mainly relied on tools such as paper, pens, and abacuses to manually record, calculate, and organize accounting data. The entire process required a large amount of manual operation, resulting in low efficiency, high susceptibility to errors, slow data processing speed, and limitations in information transfer and sharing. However, it laid the theoretical and practical foundation for the subsequent development of accounting information systems.

In the 1950s, with the rise of computer technology, the stage of Computerized Accounting Information System came. It was applied to the accounting field, marking the beginning of the computerization process. Initially, computers were mainly used to replace manual work in simple and repetitive calculations, such as payroll accounting and book - keeping. As technology advanced, the computerized accounting information system was continuously improved, equipped with various functional modules such as accounting processing, financial statement generation, and cost accounting. It achieved centralized storage and management of accounting data, significantly improving data processing speed and accuracy, and greatly enhancing the efficiency of accounting work.

With the development of technology, Informatized Accounting Information System soon come into sight. After the 1990s, with the rapid development of the Internet and information technology, the accounting information system entered the informatization era. It was no longer limited to the accounting department itself but was deeply integrated with other enterprise management systems, realizing the integration of business and finance. Business data from various departments of the enterprise was transmitted to the accounting information system in real - time, and accounting information could be promptly fed back to each department, providing comprehensive and real - time support for enterprise business decision - making. At the same time, with the help of network technology, enterprises could achieve remote financial monitoring and management, breaking through geographical limitations.

Nowadays, Intelligent Accounting Information System Stage takes the mainstream. In recent years, emerging technologies such as artificial intelligence, big data, and blockchain have emerged, driving the accounting information system towards intelligence. Artificial intelligence technology can achieve automatic identification, classification, and analysis of financial data. For example, intelligent financial robots can handle repetitive financial tasks. Big data technology enables enterprises to collect and analyze massive amounts of financial and non - financial data, tap the value of data, and provide more accurate decision - making basis. The distributed ledger and encryption algorithms of blockchain technology enhance the security and credibility of financial data, ensuring the authenticity and integrity of data.

2.2 The influence factors of digitalization on the expansion of accounting information system

The impact factors of digitalization on the expansion of accounting information systems are multifaceted, mainly including dimensions such as technology, business, management, and external environment

At the technical level, cloud computing technology enables accounting information systems to access computing resources through the network, reducing enterprise hardware investment and achieving elastic expansion. Enterprises can rent cloud services as needed to easily meet the system performance requirements of business peaks. Big data technology enhances the ability of accounting information systems to process massive amounts of data and extract valuable information from it, providing support for financial analysis and decision-making. Artificial intelligence and machine learning technologies can achieve financial process automation, such as intelligent invoice recognition,

automatic bookkeeping, etc., improving efficiency and promoting system functionality expansion to integrate more intelligent applications.

Modern digital products such as cloud computing, big data, and artificial intelligence have provided invaluable assistance for the extensive expansion of accounting information systems. In daily life, we can see that Yunnan Baiyao adopts Kingdee Cloud Cangqiong to build a financial sharing platform, utilizing the elastic scalability of cloud computing to easily handle large amounts of data processing and business requests during peak financial settlement periods, without worrying about server overload, and reducing local hardware construction and maintenance costs. JD utilizes big data technology to analyze massive amounts of data such as orders, logistics, and users. Its accounting information system can deeply mine financial data such as cost structure and sales gross profit, providing accurate financial support for pricing strategies, inventory management, and more. The financial robot launched by Deloitte utilizes artificial intelligence and machine learning technology to automatically identify, classify, and process large amounts of financial documents and data. It is applied in the audit process and can automatically detect potential issues and risks, generating detailed audit reports.

At the business level, in the digital age, enterprise business is diversified and complex, with an increase in cross regional and cross industry operations. Accounting information systems are required to adapt to different business scenarios and accounting needs, such as supporting multi currency settlements, switching accounting systems between different industries, etc., to continuously enrich system functional modules. The rise of emerging business models such as online transactions and e-commerce has generated new financial data and business processes, such as electronic payments and online order processing, prompting accounting information systems to expand their corresponding functions to meet business processing and financial accounting requirements.

Due to the increasing complexity of the company's business operations and the growing demand for accounting information systems, we can see their diversified needs and flexible handling of complex issues. For example, in China National Petroleum Corporation, the accounting information system plays a crucial role. China National Petroleum Corporation conducts oil and gas exploration, extraction, refining, and sales in multiple countries and regions around the world. Faced with such a huge business, the accounting information system has multilingual and multi currency processing functions, supports switching between accounting standards in different countries, and accurately calculates the financial status of various business segments. Let's take a look at Meituan again. Meituan focuses on online platforms to carry out businesses such as food delivery and hotel reservations. Its accounting information system has expanded its integration with third-party payment platforms, automatic accounting of order revenue and cost, and other functions, achieving real-time conversion and processing of business data and financial data.

At management level, enterprises pursue refined management and have higher requirements for the timeliness, accuracy, and in-depth analysis of financial data, which promotes the expansion of accounting information systems to provide more detailed management accounting functions such as cost analysis, budget control, and performance evaluation. The management hopes to achieve collaboration between finance and business through system integration, such as through the integration of business and finance systems. Business department operations can be reflected in real-time in financial data, and the finance department can also monitor business activities in real time, promoting the deep integration and functional expansion of accounting information systems and business systems.

At the management level, Midea Group has introduced advanced cost management modules into its accounting information system to achieve refined cost control. It uses activity-based costing and other methods to analyze production, sales, and other costs in detail, effectively controlling costs and improving profit margins. Huawei's business finance integration system enables close collaboration between sales, procurement, production, and finance departments. Business operations are reflected in real-time in financial data, and finance can also monitor business in real-time, providing timely and accurate information for decision-making.

At the external environmental level, digital development has led regulatory agencies to demand higher timeliness, accuracy, and transparency in the disclosure of financial information by enterprises. In order to meet compliance requirements, enterprises will expand the functions of their accounting information systems and achieve standardized collection, processing, and reporting of financial data. The pressure of industry competition also forces enterprises to use digital technology to enhance their competitiveness. Accounting information systems, as an important component of enterprise management, provide more competitive financial support and decision-making basis for enterprises through functional expansion and upgrading.

At the external environmental level, as a listed company, Ping An of China has upgraded its accounting information system to meet the strict requirements of securities regulatory authorities for financial information disclosure, achieved standardized collection and automated reporting of financial data, and ensured compliance and timeliness of information disclosure. Xiaomi has introduced digital financial analysis tools into its accounting information system to stand out in the fierce market competition. Through in-depth analysis of financial and market data, it provides strong support for product pricing, investment decisions, and enhances the competitiveness of the enterprise.

3 The impact of the digital age on the operating costs of accounting information systems

3.1 Labor cost

In the digital age, the automation and intelligence of accounting information systems have significantly increased. Previously, a large amount of tedious basic accounting work, such as bookkeeping, accounting, and reimbursement, can now be automatically completed with the help of advanced accounting software and systems. This significantly reduces the demand for accounting personnel engaged in basic accounting work in enterprises, and correspondingly lowers labor costs such as recruitment, compensation, and benefits. However, the digital age has also put forward new requirements for the skills of accounting personnel. Enterprises need composite talents who not only understand accounting professional knowledge, but also master information technology and data analysis capabilities to maintain the stable operation of the system, explore the value behind data, and provide support for enterprise decision-making. These types of talents are relatively scarce in the market, difficult to recruit, and often require higher salaries. At the same time, in order to adapt existing accounting personnel to new job requirements, companies also need to invest funds in professional training, further increasing labor costs.

After introducing the intelligent financial shared center, Haier Group reduced the number of basic financial accounting personnel from thousands to hundreds, significantly reducing labor costs. However, at the same time, there is an increasing demand for versatile talents. Taking Alibaba as an example, in order to maintain and optimize its complex financial information system, it is necessary to recruit high-end talents who not only understand accounting professional knowledge, but also master big data analysis and cloud computing technology. The annual salary of these talents often exceeds hundreds of thousands of yuan, and the recruitment and labor costs have significantly increased. Moreover, in order to help existing employees adapt to new job requirements, many companies such as Huawei regularly organize professional training for their employees, with each training session costing hundreds of thousands of yuan.

3.2 Hardware cost

With the rapid development of digital technology, the performance requirements of accounting information systems for hardware devices are also increasing. High performance servers, large storage devices, and fast data transmission lines are key to ensuring efficient system operation. Purchasing these advanced hardware devices requires a significant initial investment, which increases the hardware procurement cost for the enterprise. However, the emergence of cloud computing technology has provided new options for enterprises. By leasing cloud services, enterprises do not need to purchase and maintain physical hardware equipment on their own, but only need to pay fees based on usage. This not only reduces the procurement cost of hardware, but also reduces the subsequent costs of equipment maintenance, upgrades, and data center construction. In addition, cloud service providers usually have professional operation and maintenance teams and comprehensive backup mechanisms, which can ensure the stable operation of hardware and reduce the risk of business interruption caused by hardware failures for enterprises.

Cloud computing technology provides new options for enterprises. Taking Ctrip as an example, by leasing Alibaba Cloud services, there is no need to purchase and maintain physical hardware on one's own. Only a few hundred thousand yuan of cloud service fees need to be paid annually, greatly reducing hardware procurement and maintenance costs. Moreover, cloud service providers have professional operation and maintenance teams and comprehensive backup mechanisms, such as Amazon Web Services, which can ensure stable hardware operation and reduce the risk of business interruption caused by hardware failures for enterprises.

3.3 Software cost

Accounting software in the digital age is becoming increasingly powerful and complex, covering not only traditional financial accounting functions but also integrating multiple modules such as data analysis, budget management, and risk management. The cost of purchasing or customizing advanced accounting software with rich features is usually much higher than traditional software. However, the rise of the Software as a Service (SaaS) model has provided enterprises with a more flexible and cost-effective way of using software. Enterprises only need to pay a certain fee in the form of a subscription to use the software online, without the need to pay a high software purchase fee at once. At the same time, software updates and maintenance are the responsibility of service providers, and enterprises do not need to invest additional manpower and funds in software upgrades, further reducing software usage costs. In addition, the SaaS model can flexibly adjust software functions and usage scale according to the business development and changing needs of enterprises, with high cost-effectiveness.

Many small e-commerce companies choose to use SaaS financial software, which can be used online for only a few hundred yuan per month without the need for a one-time high purchase fee. Software updates are also handled by service providers, reducing software usage costs and allowing for flexible adjustments to software functionality and

usage scale based on business development.

3.4 Security cost

Accounting information systems in the digital age face severe network security threats, such as data breaches, hacker attacks, virus infections, etc. Once a safety accident occurs, the enterprise may not only suffer direct economic losses, but also damage its reputation and customer trust. In order to ensure the security of accounting information, enterprises need to invest a large amount of funds in security protection. This includes purchasing advanced security equipment and software such as firewalls, intrusion detection systems, encryption software, establishing a comprehensive security management system, regularly conducting security vulnerability scans and repairs, and providing security awareness training to employees. In addition, enterprises also need to develop emergency plans and conduct regular safety drills to cope with possible security incidents. These measures have greatly increased the security cost expenditure of enterprises, but they are crucial for protecting the core assets and stable operation of the business.

In 2017, the WannaCry ransomware broke out globally, attracting numerous companies, including some large manufacturing enterprises, who suffered huge economic losses due to their financial data being encrypted and extorted. To prevent such risks, enterprises have increased their investment in security. For example, Industrial and Commercial Bank of China invests hundreds of millions of yuan annually in security protection, purchasing advanced firewalls, intrusion detection systems, encryption software and other security equipment and software, establishing and improving security management systems, regularly scanning and repairing security vulnerabilities, providing security awareness training to employees, developing emergency plans and conducting regular drills to ensure financial information security, and maintaining the stable operation of core assets and business of the enterprise.

3.5 Data processing costs

In the digital age, the amount of data generated during enterprise operations is exploding, and the amount of data that accounting information systems need to process and store is also significantly increasing. This leads to an increase in data storage costs, requiring enterprises to purchase more storage devices or expand cloud storage capacity. Meanwhile, the demand for network bandwidth during data transmission is also higher, which increases the cost of network communication. In order to extract valuable information from massive amounts of data, enterprises also need to invest funds in purchasing data analysis tools and software, and cultivating professional data analysts. All of these significantly increase the cost of data processing. But from another perspective, through effective data analysis, companies can more accurately grasp market dynamics, optimize cost control, and make scientific decisions, thereby avoiding huge losses caused by decision-making errors. In the long run, it may save companies a lot of hidden costs.

Taking JingDong as an example, it generates massive transaction data every day. To store this data, it is necessary to continuously expand cloud storage capacity, with an annual storage cost of tens of millions of yuan. At the same time, to ensure data transmission speed, network bandwidth needs to be continuously upgraded, resulting in high network communication costs. To extract value from massive amounts of data, enterprises need to invest funds in purchasing data analysis tools and cultivating professional talents. Tencent uses big data analysis tools to deeply mine financial data and cultivate a professional team of data analysts. Although the initial investment is large, through precise cost control and decision optimization, it saves billions of yuan in costs every year, reducing hidden costs in the long run.

4 Conclusion and prospect

4.1 Research conclusion summary

In this article, I have analyzed the research background, development status, popularity and factors of accounting information systems in the digital age, as well as the impact of digitalization on their operating costs, by reviewing and organizing information. In the digital age, accounting information systems are rapidly becoming popular, gradually transforming from traditional manual bookkeeping to highly automated and intelligent financial management models. A large amount of basic financial work is automatically completed by the system, greatly improving work efficiency and data accuracy. And this popularization has also had a profound impact on operating costs. In terms of manpower, the cost of basic manpower has decreased, but the cost of composite talents has increased; In terms of hardware, the procurement cost of high-performance equipment is high, while the cloud computing leasing model reduces investment and maintenance costs; At the software level, although advanced software is expensive, the SaaS model reduces one-time expenses and maintenance costs; The cost of data processing has increased due to the dramatic increase in data volume, but it has also brought benefits for decision optimization; On the security front, enterprises need to increase investment to ensure data security. Enterprises need to balance cost changes, plan resources reasonably, and achieve maximum

efficiency.

4.2 Reasearch deficiency and prospect

There are certain limitations in exploring the popularization of accounting information systems and changes in operating costs in the digital age. Research data is mostly concentrated on specific industries and scale enterprises, lacking comprehensive coverage of different industries and scale enterprises, resulting in a lack of universality of conclusions. The analysis mainly focuses on the current popular technologies, and the cost changes that may be brought to the accounting information system by cutting-edge technologies such as quantum computing and edge computing are underestimated.

Looking ahead to the future, relevant research should broaden its horizons, incorporate diverse data from different industries and scale enterprises, deeply explore the cost changes of different enterprises when applying accounting information systems, and enhance the universality of research conclusions. At the same time, closely tracking the development of cutting-edge technology, exploring in advance the cost changes caused by the application of new technologies in the accounting field in terms of hardware, software, manpower, etc., providing more forward-looking and practical cost control suggestions for enterprises, and helping them achieve sustainable development in the digital wave.

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