

Research on accounting transition from computerization to informationization

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ABSTRACT: The application for computer technology, digitalization technology and network technology in the accounting field has promoted the development of accounting informationization. Accounting informationization is a product integrated with traditional accounting theory and modern information technology, which is an inevitable trend of continuous development of modern accounting. This paper discusses the basic concepts and characteristics of accounting computerization and informationization based on the normative research method and literature data method, analyzes the feasibility of accounting transition from computerization to informationization, and finally puts forward the specific approaches and ultimate goals of accounting transition from computerization to informationization.

Keywords: accounting computerization; accounting informationization; transition; approaches

1 RESEARCH BACKGROUND

On the basis of rapid development of computer technology, digitalization technology and network technology and other advanced technology, modern society has fully entered into a new stage of informationization^[1, 2]. In the accounting field, due to the gradual thorough application for information technology, the concept of accounting transition from computerization to informationization has been proposed in the accounting theory circle. It is a substantial transition of the accounting model that takes place on the basis of recognizing the inadequacy of accounting computerization and advantages of accounting informationization, rather than a transition at the conceptual level^[3, 4].

However, in recent years, most scholars believe that accounting informationization and accounting computerization are the same (similar) concept, without substantive difference, which can even be replaced to use; some scholars believe that the concept of accounting informationization is an improvement and extension of the concept of accounting computerization, but they do not know where is the improvement and extension, and just perceptually understand that

accounting computerization may be completely replaced by accounting informationization. Therefore, the understanding of the accounting transition from computerization to informationization is still at the level of concept and slogan. How to distinguish the concept of accounting computerization and accounting informationization? What is the feasibility of accounting transition from computerization to informationization? How should be the accounting transition from computerization to informationization? This paper carries out researches based on the above ideas under a large background of enterprise informationization and society informationization.

2 REVIEW OF RELATED RESEARCHES

Foreign accounting computerization and informationization started earlier, which was the earliest proposed and applied by the United States. In the 1960s, America General Electric Group completed wage accounting and payoff work in the enterprise. The publication of *The REA: Accounting Mode A Generalized Framework for Accounting System in A Shared Data Environment*, a paper written by W.E.McCarthy - a professor majored in Accounting in Michigan State University marked the beginning of modern accounting informationization^[5]. Wilkinson first proposed

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that accounting information system was AIS for short, which was very important for any company and organization. The profitable enterprises and non-profitable colleges or organizations actually required the assistance and support of AIS [6]. In the 1990s, the University of Florida first launched “campus card”. The campus card in China’s colleges and universities was basically modeled on this model, which can be not only as identification, but also used to pay tuition fees and a variety of expenses. The research of Gunasekaran believed that the information technology promoted the progress of accounting information system, benefited to improve the organizational performance, and promoted the enterprise to occupy a dominant position in the global competition [7]. Jeremy Rifkin, a well-known American economist elaborated the future development of the financial system in colleges and universities in his latest work, *An Internet of Things, a New Win-win Economic Era – Zero Marginal Social Costs* [8].

A large number of scholars in China also researched the accounting informationization. The suggestions of Yang Xiaohong on the existing problems of accounting informationization were to cultivate high-quality information talents, safeguard data and network security and so on [9]. Dong Nailiang and Mou Chengxiang believed that the existing problems of enterprise accounting informationization were low comprehensive quality of talents, insufficient leadership attention, and lack of security precautions and so on, and put forward corresponding countermeasures [10]. Yang Xiaojun believed that the existing problems of accounting enterprise accounting informationization were the lack of comprehensive talents and software versatility, insufficient leadership attention and internal control, and also put forward the corresponding countermeasures [11]. Zhang Jing introduced REA model and its significance on the accounting informationization [12]. Sun Heqi analyzed the relationship between accounting informationization and enterprise management reform in *To Promote Enterprise Management Efficiency with Accounting Informationization*, and proposed some effective measures, such as promoting the enterprise management efficiency with accounting informationization [13]. In *Construction of Integrated Financial Information Management Platform based on Informationization*, Cai Wei, Sun Li and Yao Jianing made a specific plan for how to build a comprehensive financial information management platform for modern enterprises under the informationization condition, proposed to make full use of various resources of enterprise management informationization in the comprehensive financial information management, and improved the sharing and use efficiency of resources [14].

3 DEVELOPMENT TREND OF ACCOUNTING

3.1 *Correlation theory of accounting computerization*

3.1.1 *Definition of accounting computerization*

Accounting computerization is an abbreviation of application for modern electronic technology and information technology in the accounting practice based on the electronic computer. It is an information operating system, which uses the electronic technology to check the enterprise accounting elements and changes in increase and decrease of financial revenues, and manages the enterprise budget, logistics costs and capital flow and so on [15].

3.1.2 *Characteristics of accounting computerization*

Accounting computerization improves the efficiency and quality level of accounting work. It has the following characteristics:

(1) Improvement of data accuracy. High accuracy and strong logicity are the biggest advantages of the computer, so the use of accounting computerization software for data processing improves the accuracy and logicity of results.

(2) Improvement of data processing speed. Computer has the ability to process data at a high speed, and accounting computerization software greatly improves the data processing speed and efficiency, and enhances the timeliness of accounting information.

(3) Specialization of data storage. In the accounting computerization software, the raw data of economic business is stored in the form of documents, and this storage medium is subject to magnetic materials. It is characterized by easy storage, no trace after deletion and modification and so on; meanwhile, it also brings a great threat to the security and reliability of the accounting information data, making the future track of audit trail more difficult.

(4) Centralization and automation of data processing. With the continuous development of accounting computerization, the complexity of computerization system is getting higher and higher, and data processing is becoming more and more centralized. This characteristic is particularly prominent in the networking and multi-user work environment. In the process of centralized processing of data, the raw data collection in the system is generally coded as identification. Such coding is not only a demand of centralized processing of computer data, but also a junction point of data exchange in each subsystem. Automation means that the computer automatically controls and processes data via program, and the manual operation and human intervention are greatly reduced.

(5) Diversity of knowledge of accounting personnel. Accounting computerized information system is a man-machine exchange system. The computer obtains electronic vouchers, account books and statements in

accounting data reflects instantaneity. In the accounting information system, once the accounting data are input in the system, it will immediately trigger the corresponding processing system, and then implements a series of operations, such as classification, aggregation, calculation, analysis and updating of the input data, in order to ensure dynamic reflection of the business performance and financial situation of the entire business organization. Third, the collection and processing of accounting data reflect instantaneity and dynamic performance. The instantaneity and dynamic performance of the release, transmission and use of the accounting information can be achieved, and the users of accounting information data can timely make management decisions.

(4) Progressivity. Modern information technology has subjective initiative to reconstruct the accounting model, and such initiative is a progressive process. This process is divided into three steps: the first step: the traditional accounting model should adapt to the modern information technology, that is, the establishment of accounting information system can achieve informationization accounting. The second step: the traditional accounting model and modern information technology should adapt to each other, that is: in order to adapt to modern information technology, the traditional accounting model makes a small local amendment to the accounting theory and methods; it expands the application scope of technology used from the computer to network, and expands the application scope of technology used from the accounting to management, in order to achieve informationization accounting management. The third step: the modern information technology is used to reconstruct the traditional accounting model, in order to form a modern accounting information system, including the overall accounting informationization, such as accounting informationization, informationization of accounting management, informationization of accounting decision support.

3.3 *Accounting informationization is the development trend of accounting*

With the development of enterprise group and implementation of diversification strategy, in order to maximize the wealth and effectively monitor business activities of the group company, a lot of large group companies manage finance in a unified way, so that all of the capital operation of the branch companies and subsidiary companies within the group is monitored by the group company, in order to ensure the rational and effective use of capital. In the face of above problems, accounting computerization is obviously powerless, but accounting informationization can effectively solve problems of enterprises in the development process, such as backward in management, delay in response to risks (such as more management levels, more scattered data, larger standard difference, lower

degree of system integration and so on). Therefore, as the service function of enterprise development, the implementation of accounting informationization is an inevitable trend of accounting development^[16].

4 ACCOUNTING TRANSITION FROM COMPUTERIZATION TO INFORMATIONIZATION

4.1 *Feasibility analysis of accounting transition from computerization to informationization*

4.1.1 *Computer network technology is widespread*

With the advent of globalization of information economy and knowledge economy, especially the application and development of typical network technology – Internet, the world is gradually moving towards society informationization. With the continuous development of the application for data processing technology of computer in the accounting field, it completely changes the traditional accounting information storage and processing methods, and the accounting work efficiency is greatly improved. With the continuous progress of science and technology, computer network technology is becoming more and more mature, and begins to be gradually applied and popularized in many enterprises and the whole society. Computer network technology possesses data communication, distributed processing, resource sharing, system reliability, centralized control and other functions and features, so that the computer network technology has a great attraction for the accounting work with flexibly distributed data sources, large data processing workload, strict data processing requirements, timely data transmission requirements, wide information feedback object and higher information storage security. Under the support of computer network, accounting work can be more rapid and effective, and accounting information can be smoothly transferred and shared between the information users and information makers, and the relevant information of various departments in the enterprise can be shared and transferred to enhance the business efficiency of the enterprise^[17].

4.1.2 *Quality of accounting personnel is improved*

After the concept of accounting informationization being proposed, accounting informationization education is gradually concerned, major colleges and universities add information technology and information management, accounting informationization and other courses, and specifically train the school students to grasp related knowledge of accounting informationization, in order to provide students with useful professional knowledge in the future employment, and also develop more comprehensive accounting talents for the enterprises. After recognition of the importance of

maintenance staff with excellent technology. The majority of business operators and accountants must further realize the significance of realization of accounting informationization, and urgency and importance of implementation of accounting informationization from the perspective of society informationization. Especially the enterprise leadership must have a correct understanding and pay adequate attention to accounting informationization, and fully play the role of financial software, so that the accounting information system provides more useful information for the management of enterprise. Meanwhile, in the implementation process, there is a need to provide comprehensive informationization training for staff timely, in order to train the enterprise's accounting informationization talents.

4.2.2 *Accelerate improvement of comprehensive quality of accounting personnel*

In recent years, the state adopts different forms to improve the comprehensive quality of accounting personnel. In order to develop accounting informationization, talent training is concerned by the whole society, and training effort becomes greater. To carry out the construction of accounting informationization, the key is talents. On the one hand, the state should expand the investment in informationization education, and set up related professions of informationization in colleges and universities, in order to train more talents who adapt to the development requirements of accounting informationization for enterprises and society; on the other hand, the enterprise should actively promote continuing education project of the accounting staff through a variety of ways from its actual situation, and establish a "compound" talent team with an excellent technology and high quality who can meet the development needs of accounting informationization. In addition, for personnel training, there is also a need to pay attention to the level of talents, including senior personnel and general personnel; meanwhile, there is also a need to pay attention to the knowledge structure of training personnel, such as accounting staff and computer professionals, and then gradually develop towards compound talents.

4.2.3 *To improve the overall informationization system of the enterprise*

Accounting informationization is a very important part of enterprise informationization management, so there is a need to combine with the actual situation and needs of enterprise to develop an overall plan of the enterprise informationization management, and also develop a development plan of accounting informationization on this basis. The purpose of enterprise informationization management is to integrate the enterprise management ideas into a complete system, so that this system can completely control over the staff, materials and financial situations of the enterprise, in order achieve best use of staff, smooth opera-

tion of materials, and maximization of benefits. Therefore, informationization of enterprise management is a system engineering, and a large investment project highly concerned by the enterprise, which requires an overall planning and step-by-step implementation, development of a practical and feasible implementation program, identification of beginning breakthrough of implementation, and gradually and steadily constant advancing.

4.2.4 *Strengthen the safety management control of accounting informationization*

An improved safety management control can effectively reduce harm caused by moral hazard of internal staff and risks of system resources. Under the accounting informationization environment, all the accounting information is stored in the computer database system in the form of electronic data in a centralized way. Accounting informationization system is likely to suffer illegal access, or even hacker or virus. Once the enterprise informationization system is destroyed, it will lead to data loss, data destruction and other problems. In order to avoid losses caused by the infringement, the enterprise should establish and improve some internal safety control management system. The advent of informationization era has a huge impact on various aspects of society, and accounting work is no exception. Therefore, the modern enterprise must establish a real-time monitoring and highly centralized financial information management system, while accounting informationization is precisely in line with the informationization development trend in the modern society. As a core content of enterprise informationization, to speed up the development of accounting informationization has become an important task of informationization construction at the next stage.

4.2.5 *Improve the internal control system, and enhance the internal environment of accounting informationization*

Internal control activities are integrated into all levels and departments of the enterprise, including approval, authorization, confirmation, verification, review and division of responsibilities and so on. Accounting informationization system implements process management, and breaks segmentation of the original functional departments due to the realization of information sharing, so that negotiation of information with superiors can be more accurate and comprehensive. Strict internal control system is a powerful guarantee of true and reliable accounting informationization. The practice of domestic and international accounting information system shows that the probability of dealing with errors by the computer itself is almost zero, but errors and frauds caused by human reasons are very common. Therefore, to provide high-quality information services for the accounting management work, there is a must to further improve the internal

control system of the accounting informationization system.

Accounting informationization makes the written manual accounting books turn into documents stored on the disk in the form of data that are processed by accounting software. Meanwhile, the original human and human connections and containment relationship are also partly replaced by the relationship between human and computer. Such shift makes the previous internal control system of the traditional manual accounting greatly challenged. Therefore, it is particularly important to improve and perfect the internal control system to make it more suitable for accounting informationization system. The internal control system of accounting information system should not only include the control system of traditional manual accounting system, but also include the safety control system of accounting informationization system, authority control system, revision procedure control system and internal supervision and audit control system, as well as other wider and more complex control procedures and systems.

4.3 *Ultimate goals of accounting transition from computerization to informationization*

The ultimate goals of accounting transition from computerization to informationization are to enhance the function of accounting information system, not only to accurately check the original accounting data, but also provide useful information for enterprise management, and provide strong support for management decisions, and ultimately make the accounting information system become a core subsystem of the enterprise informationization system, and really realize enterprise informationization.

4.3.1 *Connotation of enterprise informationization*

Enterprise informationization is a process of continuously improving the production, management, operation and decision-making level and efficiency by using modern information technology and through the extensive use and deepening development of information resources, thereby enhancing the competitiveness of the enterprise and the economic benefits of the enterprise. From the perspective of content, enterprise informationization includes informationization of product design, informationization of production process, informationization of products and service sales, informationization of business management, informationization of decision-making, informationization of talents training and other many aspects. The rapid popularization and rapid development of modern information technology makes the survival and competition environment of the enterprise undergone fundamental changes. The construction of informationization is the best choice for the enterprise to obtain competitive advantages.

4.3.2 *Structure analysis enterprise informationization*

Enterprise informationization includes three elements. First, information technology: information technology is a prerequisite for enterprise informationization. Since the advent of computer, the rapid development of information technology, and gradual maturity of information technology provide rich means and more tools for the implementation of enterprise informationization. The establishment of an efficient and safe information platform for the enterprise by the rational use of information technology to make all information of the enterprise timely reflected and correctly handled is a strong guarantee and prerequisite for the realization of enterprise informationization. Second, information is a foundation. Information will have a huge direct impact on the strategic objectives and future development of the enterprise. Therefore, whether each information user can provide timely, applicable, complete and correct information is a foundation for whether the enterprise can correctly handle various problems in the production and operation, and correctly judge the future and estimate situation. Whether the information can meet its integrity, timeliness, correctness and applicability is also an important evaluation standard for the construction results of enterprise informationization. Third, the starting point of informationization: the success of enterprise informationization depends on the starting point of enterprise informationization. According to some cases, the following conclusions can be obtained: the success rate is very small when the enterprise informationization is implemented with an advanced technology; the success rate is relatively large when management problems are handled by the use of informationization. Their starting points are different, and represent the enterprise's determination to implement enterprise informationization. If the starting point is management, the enterprise will have relatively large effort to reform, and will not easily retreat in the face of obstacles. It also shows that the expected goals of the enterprise are not only to use new technology, and improve work efficiency, but also solve the existing problems in management, and improve the management level to a higher level. So, the management is not only a driving force of enterprise informationization, but also an ultimate goal of enterprise informationization.

4.3.3 *Relationship between accounting computerization, accounting informationization and enterprise informationization*

Accounting computerization is a basis of the development of accounting informationization, while accounting informationization is an inevitable trend of the development of accounting computerization. The development of accounting computerization and accounting informationization aims at adapting to the needs of enterprise informationization for the ac-

counting information subsystem, and ultimately enhancing the comprehensive competitiveness of the enterprise. However, they have significant differences in the theoretical basis, guiding ideology and technical means, so they also have different functions on the construction of enterprise informationization. Accounting computerization actually passively adapts to such requirement. It helps the development of enterprise informationization to a certain extent, and helps connection with accounting information subsystem and other subsystems of the enterprise, so that accounting data are more accurate, transferred in a more rapid way, and used in a more convenient manner compared to the stage of manual accounting, but its function on the construction of enterprise informationization is still relatively limited due to some of its shortcomings. Accounting informationization is different, which actively adapts to this requirement. Accounting informationization was proposed late, so it was identified as a subsystem of a whole enterprise information system when generated, and organically combined with other several subsystems, such as production, inventory, procurement and sales and so on. It not only makes the financial information more widely used, and plays the role of financial accounting, but also provides the enterprise with decision support, and plays the role of accounting management in the entire enterprise information system, so that the development of accounting informationization can fully meet the needs of construction of enterprise informationization.

5 CONCLUSION

Accounting computerization and accounting informationization are different stages of accounting stepping into the informationization era. Accounting computerization is the basis of accounting informationization, while accounting informationization is the development direction of accounting computerization. Accounting informationization represents a brand new accounting idea and concept, which is a product integrated with traditional accounting theory and modern information technology, computer network technology and so on, and an inevitable trend of continuous development of modern accounting. Based on the feasibility of accounting transition from computerization to informationization, this paper puts forward concrete transition measures: to completely change manager's management concept; to accelerate improvement of comprehensive quality of accounting personnel; to improve the overall informationization system of the enterprise; to strengthen the safety management control of accounting informationization;

to improve the internal control system, and enhance the internal environment of accounting informationization.

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