Research on the Early Development of Computerized Accounting in China

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Accounting computerization began in the 80s of last century in China. It is significant to understand its development. Unlike other countries, the main driving force for early China’s computerization was the policy guidance and support of Chinese government; at the same time, China’s reform and development and the gradual popularization and application of computer technology have created conditions for the development of accounting computerization. Since then, the related theoretical research and personnel training has begun to attract people’s attention. Now, the development and research of accounting information system in China needs to be further improved, at this time, review the early development of accounting computerization in China and study its characteristics, for the future development and research to seek inspiration and enlightenment.

Keywords: accounting information system, accounting, information technology

Basic Review

At the end of the 1970s, China computer applications were almost blank except for some advanced fields of science and technology. The development of computerized accounting, first of all, is facing the difficulties of expensive computers and the serious shortage of development and application talents. Nevertheless, there is still no obstacle to the exploration of computer applications in accounting in China. In 1979, the Ministry of Finance and the Ministry of Machine Building of China funded the RMB five million to First Automobile Work shop (FAW), which was used to purchase an EC-1040 computer from German Democratic Republic. The application of computer in accounting work began. Since computers couldn’t handle Chinese characters, computer processing had been done only in terms of wage calculation. By 1981, about 40 enterprises had purchased the IBM-PC computer, and to the development of wage accounting, material accounting, financial accounts compiled applications, they became China’s earlier a group of accounting computerization pilot enterprises. In 1982, the accounting staff of Guangzhou catering company took the lead in researching and developing a number of individual accounting software, such as fixed assets management, warehouse materials calculation, voucher collection and so on. In 1983, Shanghai carried out the work of computerized accounting in Shanghai Wu chemical plant. In the same year, the State Council set up a leading group on electronic rejuvenation to guide and promote the application of electronic computers. Since then, the country has set off the upsurge of computer application: many businesses bought computers, and most of them took financial
accounting as a breakthrough application of computer, computerized accounting work in the first period of rapid development. This period of accounting software was basically developed by institutions of higher learning and scientific research institutions. From the beginning of 1984 parts of the organizations such as the graduates of Renmin University of China have developed accounting software for Beijing forklift factory, Beijing Machine Tool Works Co., LTD, Shijiazhuang pump factory, Shijiazhuang cotton textile factory and other enterprises. The function modules of this software include: accounting, reporting, wage accounting, material accounting, cost accounting etc.

Some of the early computer graduates in the enterprise actively studied the accounting business, and cooperated with the accounting staff closely to develop accounting software; there were also some accountants who worked hard at computer knowledge and became experts in the preparation of computer programs. Because there was no experience, the accounting software function was relatively simple in this period, poor ability to adapt to changes in the software, the success rate was not high, at the same time, enterprises carrying out the accounting computerization of enterprises lack the support of the organization management system and control measures. However, this is in the case of almost no successful experience can draw on, relying entirely on their own exploration, it is commendable.

On October 28, 1986, the State Council Leading Group “on promoting the revitalization of the electronic application of our computer work outline report” (SCS [1986] No. 92), from expanding sources of funding, continued to take the financial support policy, in cost management, the respect such as depreciation, retained profits, tax preferential, support the development of domestic computer, support technology introduction, support talent development and the punishment on overdue failed to realize computer application or development projects or the computer equipment idle, etc., all of which are from the policy support—the development of China’s accounting computerization. At the same time, microcomputers began to flow into our country in large numbers. Therefore, in the last five years of 1980s, the pace of computerized accounting in our country quickened.

Along with China’s reform and opening up, and the IBM/XT as the representative of a group of micro computer into the domestic market, the function of operating system with the sixth Institute of Ministry of electronic industry development of the CCDOS as the representative of a group of Chinese is becoming more perfect, the field of computer application to great expansion, widely used in accounting work the computer has gradually become a reality from possibility. At the same time, the Ministry of Finance has made policy guidance and supported for computerized accounting. In 1987, the Ministry of Finance issued “The regulations on some financial problems in the application of electronic computers by state-owned enterprises”. Documents: “accounting computerization needs computer purchase of all enterprises, it should first use enterprise development fund to solve, there are difficulties, approved by the finance department at the same level, the value of individual systems in 50 thousand yuan, can stand production cost breakdown.” At that time, the cost management of state owned enterprises was strict, and the prices of computers were relatively high. This regulation undoubtedly played an important role in promoting the development of computerized accounting.

Application Research & Propaganda

In terms of its content, mainly introducing the system analysis and design of accounting software, in a total of 17 lectures and 10 lectures respectively on accounting, monetary funds accounting and settlement funds accounting, payroll accounting, material accounting, fixed assets accounting, cost accounting, product sales accounting, special fund accounting and the accounting statement compiling module analysis and design. These lectures are easy to understand, mainly for the secondary professional and technical level of the accounting staff. The lecture not only tells BASIC language (second Lectures), but also introduces C-DBASE II Chinese character database management system. When it comes to the computerized accounting model, they list three forms of “single application”, “accounting information system”, and “computer network”, which are forward-looking. When it comes to the development of accounting information system, the life cycle method is proposed. The most important feature of these lectures is that the system analysis and design is followed by the manual accounting model. It has a great influence on the development and application of large-scale commercial accounting software.

In September 1986, Professor Wang Jingxin published *Accounting Information System Analysis and Design* published by Renmin University of China press, the book is concise and comprehensive, first discussing the characteristics and design principles of accounting information system, and on this basis, the analysis and design of accounting information system, focusing on accounting and accounting report system and accounting computerization internal design control. This pointed out the direction for enterprises that did not know how to develop accounting software at that time. The monograph, especially for the internal control of accounting computerization, which is not yet taken seriously, is first proposed that should be based on the reliability of accounting data and the integrity of the property.

**Search for Accounting Software Development Tools**

As the earliest teaching material to explain the application of electronic computers in accounting, it is the *Application of Computer in Accounting*, which was edited by Wang Jingxin (1998), professor of accounting and finance at Renmin University of China at that time. COBOL language using this book, to set up processing, program design and data files of fixed assets, wages, materials, cost, accounting statement system of accounts for many pioneering study, design thought on China’s development of accounting software has a direct role in guiding.

The foreign textbook that entered China earlier is *the Application of Electronic Computer in Counting* (Svejnar & Peng, 1979), the computer language it used was FORTRAN. It can be said that before 1983, the domestic accounting software development tools were COBOL, there was a small part of the use of FORTRAN, BASIC, from 1983 to 1990, the use of more tools is BASIC, C, DBASE II, C-DBASE + III, FOXBASE, and Clipper etc. From this we find that the data management system suitable for data processing gradually replaced FORTRAN, BASIC, which was quick in computation but weak in data processing ability. From the development process of its development tools, the computerized accounting subsystem should adopt the database processing system as the tool.

**Explore the Training of Accounting Staff**

In the early 1980s, because computerized accounting is essentially still in the exploratory stage, there is no commercial accounting software on the market. Thus, at that time, the financial departments of all regions organized computerized training to introduce basic knowledge of computers. Among them, the BASIC
language is the most typical, but because the majority of the teachers failed to basically command statement combined with accounting application, many students couldn’t apply, so that they can stop shouting “long live BASIC”. The Ministry of Railways as an example, the “75” period, the unified organization of the Ministry of Railways, held a number of leading cadres and technical backbone of the senior class popularization and application personnel training, training staff of 2,700 people, the team has 17,000 Railway applications, accounting for 25% of the total number of all accounting personnel, which can compound talent the “500” programming, so as to ensure the smooth development of computerized accounting.

**Software Identification and Application Standards Have BeenIntroduced and Implemented**

The standard of software identification was first proposed in Shanghai. As Shanghai is the largest industrial city in China, the technical force is strong, the management level is high, and the conditions are also better. In the early 1980s, the accounting computerization in Shanghai developed rapidly, and a large number of enterprises such as Wu Jing chemical factory were successfully developed. In this case, the Shanghai Municipal Finance Bureau in July 1986 issued “On the Promotion of Certain Provisions of the Accounting Computerization in the State-owned Industrial Enterprises in the City (Trial regulations)”, which is China’s original accounting computerization management system. The provisions of the accounting software design “legitimacy, adaptability, correctness, integrity, authenticity, timeliness, mandatory, recovery function” requirements. On the basis of this trial regulation, many industries in Shanghai have also set up the relevant acceptance standards for accounting computerization according to the characteristics of this industry. For example, the Shanghai Textile Industry Bureau of the financial department of computerized accounting application level assessment, inspection, scoring system (100 points). Among them, the basic conditions of accounting computerization, 23 points, accounting for 25 points of the accounting system, all types of data from the computer accounting, correct and timely 30 points, strict implementation of computerized accounting system of internal management of 22 points. This method of quantification through the implementation of enterprise computerization procedures and procedures to regulate, accounting for the healthy development of computerized accounting played a good demonstration role.

The developed software is usually fixed point type, it is unavoidable to have only “exclusive”, not “universal” shortcomings, but it is beneficial for the promotion in the industry. Some software has also been identified by competent authorities. For example, the Ministry of Water and Power commissioned the Zhejiang Power Supply Bureau to develop accounting software in 1987 through ministerial appraisal and nationwide promotion.

**Formulate Plans and Relevant Management System, and Organize the Implementation of Accounting Computerization to Promote the Healthy Development**

From the Ministry of Water and Power, the Ministry of Railways, the Ministry of Electronics, the Ministry of Chemical Industry, Shanghai, Jilin, Shandong and other computerized accounting work to carry out relatively good departments and regions, there are plans and systems in advance. For example, the Ministry of Water and Power set up the “financial accounting application computer planning group” in 1986, and formulated the master plan of “75” for the water and electricity financial accounting application computer. Implementation plan of the Railway Finance and accounting information management system was formulated
by the Ministry of Finance and the Ministry of Railways and the electronic computing technology center of the
Ministry of Railways in April 1988. Jilin province, established in October 1987 (Jilin provincial state-owned
to account interim provisions of the people’s Bank of Chinese work), enacted in April 1987,
“certain provisions on” computer accounting and management, ICBC in 1987 developed the “accounting
application of electronic computer in the Interim Provisions” etc. At the same time, many industries and units
were developed, identification and promotion of accounting software. For example, the electronics department
used the Hangzhou magnetic recording plant as a “point”, and the Ministry of Chemical Industry and the
Shanghai Municipal Finance Bureau took “Shanghai Wu Road chemical plant” as “point”.

During this period, the active promotion of the competent departments of the industry played an important
role in the development of computerized accounting. After 1986, some of the accounting computerization
earlier industry departments, such as railway, machinery, construction, water conservancy and electric power,
electronics, telecommunications and other industries, met through the development plan, training courses and
other forms of publicity and promotion of accounting computerization, at the same time, in terms of policy and
funding support for grass-roots units to carry out the accounting computerization. In order to solve the problem
of repeated development of accounting software low level, but also for the convenience of the audit, accounting
report summary of the work, began to explore the use of the first trial, after the promotion way, organized to
develop special accounting software, unified promotion in the industry, in order to promote faster development
of the accounting computerization. Such as: the Ministry of Railways in 1986 in Tianjin, Bengbu, Jilin, Datong
4 Railway Bureau of financial accounting by computer pilot, in 1987 in the railway transportation system to
promote the basic unit of a series of software; Ministry of Machinery, Ministry of Water Conservancy and
Electric Power and other ministries also chose part owned enterprises to carry out the pilot work of accounting
work and the promotion of computer application, in a certain range.

In 1988, the computerized accounting work conference was held in Shanghai, and unified arrangements
were made for the application and planning of the provinces (municipalities) in the application of accounting in
the accounting, the evaluation of the accounting software and so on. Subsequently, the accounting
computerization is listed as the outline of accounting reform in China, which is an important content and
necessary condition for accounting reform in the future.

Statistical Analysis of Accounting Computerization Application Range and Degree

According to the 23 provinces, autonomous regions, municipalities directly under the central government
and the 10 Department, municipalities and the State Council Committee, bureau, company statistics, as of the
end of March 1988, 33,018 units were investigated, to carry out the work of the accounting computerization for
4,619 units, accounting for 13.99% of the surveyed units, accounting for total computerized computer 5,884
units, 220 units directly under the minicomputer; all departments of the State Council in 4,488, to carry out the
accounting computerization for 1,810 units, accounting for 40.33%, with computer 2,213 units, 73 units in the
provinces, minicomputer; area, surveyed 28,530 units, to carry out the accounting computerization the unit is
2,089, accounting for 9.85%, with computer 3,617 units, 147 units. In enterprises directly under the state and
local enterprises, departments, regions, and industries, the situation of computerized accounting is as follows:
among the departments under the State Council, the highest level is up to 87.50%, and the lowest is 21.67%.
From the data of provinces, autonomous regions, municipalities directly under the central government, and
cities directly under state planning, 10% provinces and municipalities with more than seven provinces and
municipalities have been developed. There are 15 provinces, cities, and districts in the area below 10%. From
the industry’s point of view, the ratio of accounting information carried out by administrative organizations is
15.43%, 14.32% for industrial enterprises, and 5.15% for commercial enterprises. In the investigation, the
computerized accounting is divided into nine individual items: accounting treatment, bank reconciliation, wage
accounting, fixed assets accounting, sales accounting, material accounting, cost accounting, statements and
other items. According to statistics, in 2006, 4,619 enterprises have computerized accounting, and 73.54% of
them developed one or two items, the development of three to four individual enterprises accounted for 19.01%,
more than five individual development of enterprises accounted for only 7.45%; statistics from the industry’s
point of view, the five individual development of administrative organization accounted for more than 4%,
industrial enterprises accounted for 7.95%, commercial enterprises accounted for 4.81%. The most developed
project is wage accounting, accounting for 58.82% of the enterprises engaged in accounting computerization,
followed by statements, accounting for 31.41%; once again accounts processing, accounting for 23.79%.

The survey results show that Chinese accounting computerization has made certain achievements in this
stage, but the development of the surface to be widened; on the other hand, the development of accounting
computerization was imbalance: in state council, large- and medium-sized cities, large- and medium-sized
enterprises, the eastern coastal area, because of financial advantage and material resources advantage and
manpower advantage, so rapid development; accounting computerization is relatively slow in small enterprises
and central and western regions. In addition, from the development and application of the number of modules,
China’s accounting computerization in this period is still at a relatively low level.

It should be particularly noted that the Ministry of Railways during the “75” period, rapidly develop
accounting computerization. By 1991, 29 software projects had been identified by the Ministry of Railways.
Accounting, payroll accounting, settlement audit department and other projects in the Ministry of Railways,
Railway Bureau, railway station, a penetration rate of 100%, a penetration rate of 65% at the grassroots level,
that is to say, the main business accounting levels Four Departments of Transportation Ministry of Railway, the
12 Railway Bureau, 56 branches, more than 2,500 main stations and sections basically realize the
computerization, and achieve the basic system and network.

Summary

Comprehensive analysis of software, hardware, accounting personnel of the computer master degree and
other aspects, summed up the 1980s development of China’s accounting situation, we believe that China’s early
work of the accounting computerization has the following characteristics: (1) the development of computerized
accounting software, from a single development to the system; (2) in terms of hardware, from a single
application to network development; (3) the research and development of accounting software, processing to
the development of management control and prediction and decision system from pure data; (4) a part of the
accounting personnel has mastered the technology of the computer, playing in the development of
computerized accounting system while computer technical staff cannot do.

References