The impact of information technology on accounting theory, accounting profession, and Chinese Accounting education

Liu Liyan
Business School, Jianghan University, Wuhan, Hubei, 430056

Follow this and additional works at: http://aisel.aisnet.org/whiceb2013

Recommended Citation
http://aisel.aisnet.org/whiceb2013/103

This material is brought to you by the Wuhan International Conference on e-Business at AIS Electronic Library (AISeL). It has been accepted for inclusion in WHICEB 2013 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.
The impact of information technology on accounting theory, accounting profession, and Chinese Accounting education

Liu Liyan
Business School, Jianghan University, Wuhan, Hubei, 430056

Abstract: Application of information technology in accounting has improved the efficiency and quality of the work, optimized business decision and risk management. However, the research on application of accounting information system, as well as the application level is far behind the development of the information system itself. The paper analyzes the impact of information technology on accounting theory, on accounting profession, and further analyzes its impact on accounting education, and tries to give some suggestions.

Keywords: accounting information system, accounting theory, accounting profession, accounting education

1. INTRODUCTION

Information technology (IT) as well as internet has dramatically changed the way organizations operate their business. The influences of IT and internet can be seen on all dimensions of an organization: strategic objective, structure, business processes, and people [1] (Davenport, 1998). For instance, flat structure is more common than before due to the implementation of ERP (Enterprise Resource Planning) system, less middle management, more decentralization of power and more autonomy, and new roles created in the organization, etc. “the most effective executive education programs are the ones that are customized to a business needs” (Vitiello, 2000) [2]. To prepare our students to succeed in the new economy, business schools have to understand the real impact of IT on the business and on business school education, and make some changes.

In China, “computerized accounting” was first brought out in the Conference on Application of Computer in Finance, Accounting and Cost Management in 1981. With the rapid development of information technology and increasing demand for accounting information, traditional computerized accounting products are broadening their fields by providing analytic information, and adding management and decision supportive functions, etc. Accounting software becomes the core of business management software and ERP system. In 1999, accounting experts from theoretical circle believe “accounting information system(AIS)” fits better than “computerized accounting” in the information era [3].

The application of AIS can provide timely, accurate and complete financial information for enterprises, thereby enhancing the helpfulness of the decision, improving the efficiency and standardization of accounting practice. However, the application level of accounting software falls far behind the development of software itself [4], the research on the impact of AIS on accounting theory and accounting education also lag behind the development of information technology. Accounting information system changes not only the tool of accounting, but also the functions of accounting; not only the theory and principles of accounting, but also the accounting profession, thus challenges traditional accounting education in Chinese universities.

2. THE IMPACT OF ACCOUNTING INFORMATION SYSTEM ON ACCOUNTING THEORY

2.1 The impact on traditional accounting cycle

Accounting information system is based on and can do more than computerized accounting. With a comprehensive use of modern information technology as computers, internet and intranet, and communication
technology, accounting information system is open to other business resource system, has a high degree of integration and shared information[5], and makes deeper and more extensive use of accounting information resources, and real–time reporting can be achieved.

The theory and methods of traditional accounting are based on manual accounting. However, they are and will go on changing with the inference of information technology. It is known that accounting cycle includes the following steps: journalizing the transactions, posting to ledger accounts, preparing trial balance, making adjustments and preparing adjusted trial balance, preparing financial statements and appropriate disclosure. In manual accounting era, accountants have to perform the whole accounting cycle manually. Voucher classification and summary, control ledger and subsidiary ledger posting, and accounts checking are basic theories in manual accounting. While in the accounting information system, the only thing that accountants do is to record transactions into the computers which processes the other steps automatically or by a request, without worrying about posting or adding mistakes.

2.2 The impact on internal control and audit

In manual accounting, internal control are achieved by separation of duties, by checking whether the numbers from different sources can be matched, and by checking seals and signatures, etc; auditors begin from source documents, auditing up to trial balance, or begin from financial statements to source documents or carry out a selective examination to find errors and cheatings.

In accounting information system, as more accounting processes are now done by computers or through internet, anything wrong with application program or system, or operation authority unreasonably set, will cause serious consequences, the audit trail and focus has changed. As most procedures are automatically finished, so it is important to identify the operator and make proper authorization controls; hardware and software security , voucher auditing and the separation of duties are key points of internal control [6]. And the accounting records storage has changed from paper to electronic memory, which is easily corrected and altered, thus how to prevent unauthorized modification of data and commit crime through computer are important factors to consider in accounting information system. And the audit of internal control system is necessary, in order to ensure accounting information system safe, reliable, effective and in efficient use.

2.3 The impact on principles of accounting

The fundamental qualitative characteristic of accounting is relevance to decision. Limited by manual accounting, traditional accounting stresses materiality principle, or accountants must consider the relative importance of any transactions, which reduces the precision of accounting information and limits the service capability of accounting information to management. In the information era, the data collection, processing and utilization are all through computers, which have much greater data processing ability, and the accounting information resources are broadened and deepened, fine and detailed management is possible. For instance, traditional inventory system include specific identification method, first-in-first-out method, last-in-first-out method, and average cost method, but specific identification method is only used to value expensive goods; in the accounting information system, specific identification method is possible for most goods except fresh commodities [7], and can bring more accurate information.

Besides all mentioned above, accountants have to keep paper accounting files as well as digital accounting records in an information accounting system. From tangible to intangible files, digital records broken up means great damage to businesses. Thus, management of accounting files is more complex and high demanding than before.

Review from the history, it is learned that the functions of accounting was essentially reflecting and supervision, which are passive and backward, forecasting before the event and controlling in the process are just wishful thinking. Information technology promotes the business information processing capability and capacity
so much that the functions as forecasting, controlling and management can be realized to some degree.

3. THE IMPACT ON ACCOUNTING PROFESSION

With the rapid development of information technology and increasingly matured e-commerce, in accounting information system, data processing is highly automatically, information is open to insiders and outsiders under control and highly shared, there is no routine works, and journalizing may be automatically done when transactions happened. For example, in supermarkets when goods is sold, records is made at the same time to reflect the increase of cash and revenue, the cost of goods sold and decrease of inventory. Which means the need for traditional accountants who do just accounting will be greatly reduced, and more accountants will focus on analyzing and utilizing the accounting information.

On the other hand, the quality of accounting information depends on the reliability of hardware and software, as well as the personnel proficiency in accounting software. An employee with only the knowledge of accounting and economic laws may not meet the demand of information era. People familiar with accounting theory and skillful in practice, knowing about economic laws, and can making good use of information technology are more welcomed.[8]

In a word, in the accounting information system, the jobs structure has been affected, and the quality of employees is more demanding.

4. THE IMPACT ON CURRENT ACCOUNTING EDUCATION

A survey in 2012 showed, in China, more than 80% large and medium-sized enterprises has employed information technology; about 30% key enterprises has built information system in main production steps; in industries as machinery, automobiles, shipping, rail transit, textile and light industry, over 80% enterprises realized computer aided research and design; CAD(computer-aided design) and CAM(computer-aided manufacturing) has covered more than 90% enterprises in machinery and automobile industry; rate of production controlling system is about 75%; in business administration, rate of application of OA_office automation system, finance and personnel management system and inventory management system is above 90%.[9]

Though information technology is really very popular in Chinese enterprises, the application level is still very low. Take an example, many businesses have purchased the hardware and the ERP system, but most of them just use some of the modules as inventory management system, or financial accounting system, but the ERP system as a whole cannot work.

Besides the reasons of conversion cost, imperfect company system, etc, no qualified employee with proper education is one of the main reasons. In most universities, computer is still taught as an ordinary tool of learning. Computerized Accounting is set as a separate course, the integration of information technology and other academic courses has just begun its first step.

4.1 Accounting textbooks not prepared for the coming informatics era

In Chinese accounting textbooks, manual accounting still plays the key role. Except for the book of computerized accounting, few accounting textbooks mentioned about computerized accounting, not to speak of accounting information system. The author has examined the table of contents from 21 accounting textbooks published in the past 5 years , including 9 principle of accounting textbooks and 12 intermediate accounting textbooks, and found only 3 of them mentioned about computerized accounting, the percentage is 14.2%, none of them mentioned about accounting information system.
<table>
<thead>
<tr>
<th>Publications</th>
<th>Publishing House</th>
<th>Publishing Date</th>
<th>First Author</th>
<th>AIS included</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle of Accounting</td>
<td>China Renmin University Press co., LTD</td>
<td>2011/12/1</td>
<td>Li Duansheng</td>
<td></td>
</tr>
<tr>
<td>Principle of Accounting</td>
<td>Lixin Accounting Publishing House co., LTD</td>
<td>2011/3/1</td>
<td>Li Haibo</td>
<td>√</td>
</tr>
<tr>
<td>(15th edition)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principle of Accounting</td>
<td>Shanghai University of Finance &amp; Economics Press co., LTD</td>
<td>2012/3/1</td>
<td>Zhao Hongjing</td>
<td>√</td>
</tr>
<tr>
<td>(2nd edition)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principle of Accounting</td>
<td>China Finance &amp; Economics Press co., LTD</td>
<td>2012/1/1</td>
<td>Yin Meiqing</td>
<td></td>
</tr>
<tr>
<td>Principle of Accounting</td>
<td>Nanjing University Press</td>
<td>2011/12/1</td>
<td>Liu Jiansheng</td>
<td></td>
</tr>
<tr>
<td>Principle of Accounting</td>
<td>Science Press</td>
<td>2011/9/1</td>
<td>Pan Dan</td>
<td>√</td>
</tr>
<tr>
<td>Principle of Accounting</td>
<td>Fudan University Press</td>
<td>2011/7/1</td>
<td>Xu Ye</td>
<td></td>
</tr>
<tr>
<td>(4th edition)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principle of Accounting</td>
<td>China Finance &amp; Economics Press co., LTD</td>
<td>2009/3/1</td>
<td>Zheng Jun</td>
<td></td>
</tr>
<tr>
<td>Principle of Accounting</td>
<td>China Renmin University Press co., LTD</td>
<td>2009/6/1</td>
<td>Zhu Xiaoping</td>
<td></td>
</tr>
<tr>
<td>(5th edition)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Accounting</td>
<td>China Renmin University Press co., LTD</td>
<td>2009/1/1</td>
<td>Dai Deming</td>
<td></td>
</tr>
<tr>
<td>(5th edition)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate Accounting</td>
<td>Tsinghua University Press</td>
<td>2009/3/1</td>
<td>Lu Jiayou</td>
<td></td>
</tr>
<tr>
<td>Intermediate Accounting</td>
<td>Wuhan University of Technology Press</td>
<td>2008/5/1</td>
<td>Li Dewen</td>
<td></td>
</tr>
<tr>
<td>Intermediate Accounting</td>
<td>Lixin Accounting Publishing House co., LTD</td>
<td>2012/8/1</td>
<td>Wang Wenxi</td>
<td></td>
</tr>
<tr>
<td>(4th edition)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate Accounting</td>
<td>Wuhan University Press</td>
<td>2012/1/1</td>
<td>Tang Xiangxi</td>
<td></td>
</tr>
<tr>
<td>(3rd edition)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate Accounting</td>
<td>Dongbei University of Finance &amp; Economics Press co., LTD</td>
<td>2011/9/1</td>
<td>Liu Yongze</td>
<td></td>
</tr>
<tr>
<td>(3rd edition)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate Accounting</td>
<td>Shanghai University of Finance &amp; Economics Press co., LTD</td>
<td>2010/8/1</td>
<td>Han Dongfang</td>
<td></td>
</tr>
<tr>
<td>(3rd edition)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4th edition)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate Accounting</td>
<td>Peking University Press</td>
<td>2009/1/1</td>
<td>Yang Youhong</td>
<td></td>
</tr>
<tr>
<td>(2nd edition)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate Accounting</td>
<td>Science Press</td>
<td>2011/3/1</td>
<td>Pan Yushuang</td>
<td></td>
</tr>
<tr>
<td>Intermediate Accounting</td>
<td>China Machine Press</td>
<td>2012/3/1</td>
<td>Ma Jianwei</td>
<td></td>
</tr>
<tr>
<td>Intermediate Accounting</td>
<td>Higher Education Press</td>
<td>2007/11/1</td>
<td>Du Xingqiang</td>
<td></td>
</tr>
</tbody>
</table>

Compared with western accounting textbooks, in which the application of information technology integrated in main content and practice exercises in almost all academic course books, and computers do much more than just substituting for pen and paper. For instance, spreadsheets that are popularly used in accounting practice are often required in exercises or professional simulations in western accounting books[10,11].
4. 2 Teaching staff not prepared for the coming informatics era

As for academic teaching staff, most of them, especially the young, become accounting teachers just after graduation with master degree or PHD, without any business experiences, thus know little about the accounting practice in real businesses, not to speak of the operation of accounting information system in practice. While some old teachers have practical experiences, they are not very familiar with modern information system except that writing on Microsoft Word or surfing on the internet. Table 2 is the teacher structure in the accounting department of a university in China. We can see that among 25 accounting teachers, only 5 of them, about 20%, have both business experiences and master degree or PHD (the degree can represent the capability of information technology to some degree); among the 16 teachers under the age of 50, 12 of them have no business experiences at all, though 11 of them with a master degree or PHD.

<table>
<thead>
<tr>
<th>Age</th>
<th>Having Business Experiences</th>
<th>No Business Experiences</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Having Master Degree or PHD</td>
<td>No Master Degree or PHD</td>
<td></td>
</tr>
<tr>
<td>&gt;50</td>
<td>2</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>&lt;50</td>
<td>3</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>5</td>
<td>25</td>
</tr>
</tbody>
</table>

The reasons mentioned above, but not all, limits the usage of the system in the academic courses, and this further limits the application capability of accounting information system in businesses.

4. 3 Practice education not prepared for the coming informatics era

Because of the lack of proper textbooks and qualified teachers, manual accounting practice and computerized accounting practice are separated in professional simulation. Though employed computerized accounting practice, the software is relatively old or just for teaching purpose, and is different from what are used in real world, especially from the businesses who adopt ERP system.

5. CONCLUSIONS

With respect of accounting education, information technology has great impact on accounting theory, accounting profession, and also accounting education. Information technology is not only about technology development itself, but also shaping a new business, social and culture environment. With the rapid development of the Internet, the booming e-commerce and relative forces, there rise a greater demand for new accountants, with the knowledge of accounting and laws, mastering the skill of modern information technology, and having excellent self-learning ability. So changes must happen in today’s universities accounting education.

First, accounting textbooks has to be refined to introduce technology-oriented content in academic courses and satisfy the needs of the new era; second, the implementation of information technology in practical education should be stressed by assign more time and more resources on it. Furthermore, teachers’ training is important so that the staff can keep pace with the development of accounting theory and paractice.

ACKNOWLEDGEMENT

This research was supported by the Research Center on Manufacturing Industry Development of Wuhan City Circle.
REFERENCES