

Design and Implementation of Accounting Information System Teaching Experiment Based on REA

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Abstract—In today's increasingly fierce business competition, the problem of information integration between accounting information systems and enterprise business systems has become more and more important. Traditional accounting information systems have abandoned a large amount of non-financial information. A series of problems such as information lag have caused enterprise managers to rely more on other business systems of the enterprise to obtain relevant decision-making information. The status of accounting has been questioned as never before. This paper first proposes under the traditional double-entry bookkeeping method. The accounting information system has been unable to integrate well with the business information system of the enterprise. Next, the existing data integration methods are described, and finally the REA database schema is discussed. It is an inevitable choice to solve the problem of integration of accounting information system and business information system.

Keywords—Design; Implementation; Accounting information system; Teaching experiment; REA

I. INTRODUCTION

The connotation of the REA model is the “resource-event-one participant” accounting model. The REA model is a framework for building an accounting system based on an internal environment database shared between enterprises. The core of the REA model is an objective two-layer semantic mirror cluster model that reflects the input and output of business processes [1-2]. The first formal definition of the REA model appeared in a 1982 The Accounting Review paper. The basic framework of the REA model as an accounting information system was originally derived from Michigan State University and was widely adopted by other universities in the United States. The development of the REA model was developed with the development of relational database systems and semantic models. In 2000, the AAA model was also used in the teaching of accounting information system training of the American Accounting Association. The domestic accounting information system curriculum is set late, and the curriculum name is more set to accounting computerization [3-4]. Since the concept of accounting computerization was proposed in Changchun in 1981, the accounting information system teaching of China's domestic accounting profession is more biased towards Professors use accounting software for accounting, accounting professional training is biased towards cultivating accounting-type

accounting talents, and the management of management-oriented accounting talents occupy a non-dominant position. For the accounting information system teaching which is developed later than the common accounting teaching, it is even less important to cultivate the teaching practice and experience of the enterprise accounting information system from the perspective of enterprise business process and enterprise value chain. However, the rapid development of information technology, the upgrading of internal management information systems and the application of new research results of related research projects require accounting graduates to use the innovative tools of the accounting field to build models and balanced scorecards to develop a comprehensive conceptual database design framework. Furthermore, the management accounting information system can be reconstructed, which can effectively realize the integration of management accounting and company database design. Church (2007) supports the extension of the REA model concept to meet the needs of balanced scorecard information and improve the effectiveness of management decisions. Therefore, learning and mastering the XI recognition accounting model method is one of the sources of accounting majors to establish their own core competitiveness, and it is also an inevitable choice to adapt to the big environment [5]. Applying the REA model to the teaching of accounting information system and using the REA concept to reorganize the accounting information system teaching will be a far-reaching new attempt in China. The author attempts to use the REA modeling method in the teaching of accounting information systems. This paper will explore how to apply the REA data model in the teaching practice of accounting information system, and explore the teaching effect and corresponding experience and lessons, hope to promote the promotion and application of REA modeling method in China's accounting practice and teaching.

II. THE LIMITATIONS OF TRADITIONAL ACCOUNTING INFORMATION SYSTEMS

The traditional accounting information system is based on Lucca Paccioli's accounting cycle and accounting identities. The core idea is the classification system, which converts the objects reflected by the accounting into elements. It is ultimately reflected in the chart of accounts used for classification. The system aggregates the financial measures of the company's assets, liabilities and owner's equity, and

summarizes the financial status data of the enterprise at a specific point in time, the operating result data of a specific period, and the financial changes of the specific period in the balance sheet and profit and loss statement respectively. And in the cash flow statement.

The American Accounting Association, after studying the effectiveness of management decision models and non-financial measures, lists the limitations of traditional accounting information systems that they found in research. Later, some American accounting scholars believed that the traditional accounting system was facing a crisis. They believe that accounting should not simply provide financial statements and services for internal control of the enterprise. It should also provide comprehensive information that is common to both inside and outside the enterprise. Comprehensive research by scholars at home and abroad. It can be summarized that the traditional accounting information system has the following major defects:

A. Traditional Accounting Information Systems Have Abandoned A Large Amount of Non-Financial Information

The traditional accounting information system does not collect all the data of all business events organized by the enterprise. Only pay attention to accounting matters affecting the assets and interests of the company's organization, and record the date of occurrence of the accounting items and the financial impact of the measurement in the accounting system. However, other non-monetary measurement information such as production capacity, performance, reliability, etc., which do not affect the financial statements of the company, are not reflected. The data entry point of traditional accounting is only at the accounting vouchers. Only the classification subject name and amount are recorded for any economic matters, and the report is summarized. So it only includes financial-oriented post-event information that is measured in a single currency. It does not provide the multidimensional, non-financial and forward-looking information needed to manage decisions. Such as performance, location, productivity, etc.

B. Store Data in A Highly Aggregated Manner

In the traditional accounting information system, the original voucher contains detailed data of accounting matters in the business activities, and part of the data of these business activities is recorded in the accounting system. The summary is first credited to the Et book, and then aggregated into each ledger. This processing method causes the same data to be stored multiple times, the only difference being the degree of aggregation. Once the data is aggregated into a journal or ledger, it is difficult to decompose it to reflect the true nature of the business event. The traditional accounting system is to output accounting statements, store and record the data according to the requirements of the accounting report view, and summarize the data according to a standard, which can only meet the needs of some information user groups for accounting statements. It excludes the information needs of other information user groups and other information needs of this part of the information user community. That is to say, accounting is necessary for data aggregation, but the system does not respect the different information needs and

preferences of different information users, and does not provide other corresponding summary criteria.

C. Traditional Accounting Information System is A Relatively Closed System in Management Information System

Because a large number of decision-related information in the business unit cannot be passed to the accounting information system. So different business departments avoid relatively professional accounting procedures. Each has established a so-called sales information system, procurement information system, production information system, and human resources information system. This artificial separation of organic information has gradually made the accounting information system an island. The complementary role of accounting information system and other information systems is only based on the convenience of data processing, and lacks more theoretical basis. Accounting information systems lack an inherent logical connection and cooperation with other information systems.

D. Data is Not Recorded and Processed in Real Time as Business Activities Occur

The traditional accounting information system collects accounting information usually after the business occurs, and collects and processes it by day, week and even month. The financial statement must also undergo a series of accounting cycles such as posting, reconciliation and account adjustment before the report can be output. Obviously, the lack of timeliness of accounting information will inevitably reduce its relevance. In an information age where market demand is changing rapidly. Time delay greatly affects the value of accounting information for real-time decision making. The timeliness of information determines its usefulness, because information users must make decisions on a continuous basis, that is, decisions are made in real time, and are not limited to making decisions once a week or quarterly. When decision makers can quickly find the information they need from other systems. The value of accounting information systems and accounting information has fallen dramatically. The traditional accounting information system follows Luca Paccioli's accounting cycle and accounting identity. Traditional accounting information systems are concerned with highly aggregated financial information. Those valuable non-financial information are often recorded in other business systems, which causes a series of defects in the above accounting information system. Today, with the rapid development of information technology and the integration of corporate finance and business, how to effectively integrate enterprise information and effectively manage the problem of isolated islands has become an unavoidable issue.

III. BASED ON REA MODELING METHOD, ACCOUNTING INFORMATION SYSTEM TEACHING ADVANTAGE ANALYSIS

Resources are assets that companies own and control. Take the production stages as an example. The resources include the raw materials and supplies before the production, the machines, equipment and human resources used in the production, the products produced and the warehouses they store. Compared with the concept of assets in traditional

accounting theory, resource entities in REA are more current, because the designer defines and maintains the attributes of resource entities when the system logic structure is designed. At present, if we look at the definition of traditional accounting assets, we only pay attention to whether we can bring in future economic benefits, and we cannot meet the requirements for real-time information. In the case of accounts receivable, because it can bring in the inflow of future economic benefits, it can be recognized as an asset by traditional accounting, but it does not have the characteristics of REA resource entity. From the business level, it is sales business and collection. The business time difference is not the real enterprise control and assets.

Events are economic activities that have an impact on resource changes and can create value, including the complication of economic transaction events that cause resource changes in corporate value chain activities and commitments to future economic transactions. For example, the sales business and the collection business are transaction events, and the sales contract business is a commitment event. In the information system, it is beneficial to rationally define the classification and apply it to the in-depth analysis of information. In this way, the system can not only subdivide the business process and identify its true appearance, but also help the manager to prepare the production budget to control the cost based on the information in the commitment event. Participants are people or departments involved in economic activities. Regardless of whether it comes from within the enterprise or from outside the enterprise, regardless of the business personnel or departments or suppliers and suppliers that have contacts, it is within the scope defined above. Participant-related information can help managers assess the performance of business personnel and analyze the transactions of current customers, and then provide a basis for formulating employee incentive plans and company development strategies.

REA is an extensible framework that scales from coarse to global supply chains, from fine-grained to corporate workflows. The REA model breaks through the traditional accounting information system and is limited to the economic business level of the enterprise. The enterprise information is integrated from the operation level to the value chain level, and the enterprise information resources are integrated in a dynamic manner. The accounting information system based on the REA accounting model can not only provide accounting for enterprises, but also provide decision support information for a wider range of stakeholders.

IV. BASED ON THE R TEAM'S ACCOUNTING INFORMATION SYSTEM TEACHING EXPERIMENT COURSE DESIGN

A. *REA-based Accounting Information System Course Objectives*

For a long time, the teaching of accounting information systems lacked a unified teaching philosophy. At present, the domestic accounting information system teaching goes to the above two extremes. The actual social demand is: accounting information systems are mostly integrated with the management information system, a subsystem of the

management information system, or a subsystem in the ERP. The purpose of this teaching experiment is to set a unified teaching concept for accounting information system teaching: applying REA model to analyze and handle accounting affairs from the perspective of enterprise business process and value chain, and master the method of semantic modeling from economic affairs to accounting affairs. A more comprehensive understanding of the accounting objects of economic affairs, better serve management decisions. The specific objectives are as follows.

B. *Based on the Design of REA Accounting Information System Course*

The REA-based Accounting Information System (AIS) course teaches and trains students in three steps. These three aspects are system analysis. System design and actual travel, system use.

Through a survey of real-world economic activities, AIS students design a logical framework model for the enterprise to perform semantic modeling. The designed enterprise implementation plan is as follows. The enterprise logical framework must be a mapping of the economic activity logic of the enterprise based on the value chain. Students can truly understand the economic activities of enterprises only by establishing complex and reasonable semantic models of corporate economic activities. In the accounting information system teaching based on REA modeling method, teachers draw a complete enterprise value chain, draw a complete semantic model for each business process and teach students. Then set up similar topics for students to group or complete independently. System analysis capability is the core goal of AIS teaching based on REA model.

System design and facility capacity training method Design system design and implementation include selecting a conceptual model, and implementing the conceptual model according to specific information technology, and then carrying out the actual operation of the system. For the students of the AIS course, the system design ability is mainly to cultivate students' ability to transform the data model into a series of relationships; the system implementation ability is mainly to train students to publish the system designed relationship data table in a certain procedure. Ability. The ability to design and implement the system is very beneficial for students to grasp the enterprise accounting information system. However, in REA-based AIS teaching, its importance is lower than that of system analysis.

System usage capabilities are able to support decision goals with an installed system. This is an ability that AIS students must have. In the teaching of AIs, the use of the popular accounting system can be used to complete the accounting function of the system to cultivate students' system use ability. System use ability is the most basic ability of AIs students. This training goal is relatively easy to achieve compared with the previous two, and has been basically achieved in the teaching of traditional economic accounting information systems.

V. THE IMPLEMENTATION AND EFFECT ANALYSIS OF THE TEACHING EXPERIMENT OF ACCOUNTING INFORMATION SYSTEM BASED ON REA

REA-based accounting information system teaching experiment implementation REA-based accounting information system teaching through two courses, two levels to achieve. According to the teaching objectives of the accounting information system, it is divided into two phases: the basic accounting information system course and the advanced accounting information system course.

The basic accounting information system class is designed for undergraduate accounting students or management students. In this course, the proportion of accounting knowledge is less than that of REA architecture, accounting knowledge accounts for 40%, REA modeling method accounts for 60%, and the proportion of three major skills training is 60% of system analysis ability. System design and The implementation capacity is 30% and the system usage capacity is 10%. The main feature of this level of the course is to set up a series of economic activity semantic modeling problems for students to conduct classroom practice examinations and homework assignments. The economic activity semantic modeling problem is divided into six levels. • The difficulty increases from 1 to 6.

There are 1.3 cases at each level, one for teaching demonstrations, one for classroom exercises or after-school assignments, and one for classroom exams. Through six levels of learning and training, students can gradually and comprehensively understand the real world economic business from the perspective of the value chain.

Another major feature of this level of experimental courses is the computer-aided project. The course enhances students' hands-on ability and practical ability by setting up some computer hands-on projects while cultivating students' semantic modeling ability.

The Advanced Accounting Information System course is designed for senior students in accounting or management information systems. This level of the course consists of three parts: a comprehensive database design course on semantic and grammatical modeling, a definition of various ERP module functions using REA, and an accounting information reporting system design based on xML and XBRL.

The REA-based accounting information system experiment course has been implemented in the Accounting College of Hunan University for two years. We evaluated the effectiveness of this experimental teaching through both teaching and learning. From the teaching aspect, the students of the two types of students of the REA team accounting information system experiment course and the students of the traditional accounting information system are tested. The test method is: setting up a complex business process, requiring students to understand the business process within a limited time (one hour), and designing a system capable of performing this business processing and accounting. The test results show that the students who participated in the REA accounting information system experiment course scored 30 points higher than the average score of the students who participated in the

traditional accounting information system teaching. Therefore, from the teaching aspect, we can conclude that the accounting information system teaching based on the REA modeling method is more Can improve students' understanding of economic accounting business from the value chain level. From the aspect of learning, the questionnaires are mainly distributed to the students to anonymously collect evaluations of teaching methods. Through the statistics of the questionnaire results, the students' satisfaction with the curriculum accounted for 92%, and the overall evaluation was very high. In summary, through the above two aspects of evaluation, it can be seen that the teaching of accounting information system based on REA modeling method is necessary to be used in information system teaching.

VI. CONCLUSION

This study is aimed at the requirement that the traditional accounting information system teaching can not meet the requirements of cultivating management and compound senior accounting information system talents. It proposes to reconstruct the accounting information system teaching concept by REA modeling method, and design the accounting information system course based on REA model. A senior accounting information system talent with a high degree of accounting information system thinking from the overall value chain of the company.

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