Construction of Supply Chain Accounting Information System Based on Knowledge Base and Online Analysis Technology

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Abstract
With the change of enterprise management environment, the demand of information users is also changed, therefore, the accounting information system must constantly adapt to the new operating environment for self change and reconstruction. This paper analyzes the construction of supply chain accounting information system based on knowledge base and online analysis technology. In the supply chain environment, information is no longer one-way, and can be traced back and forward in the whole supply chain. Therefore, the supply chain information system can improve the value of information and the degree of information sharing.

Key words: Supply Chain, Accounting Information System, Knowledge Base, MVC Architecture

1. INTRODUCTION

The accounting information system is one of the business records processing system to produce and provide accounting information to the information users, along with changes in business environment, information users demand for information is also changing, the accounting information system put forward more requirements, so the accounting information system must adapt to the change and reconstruction of the self the new business environment (Lam, 2013; Ramanathan, 2014). Nowadays, the competition between enterprises is the competition between supply chain and supply chain. No matter whether the enterprise realizes that the supply chain is objective, when the enterprise wants to gain the advantage in the competition, it must cooperate with the upstream and downstream enterprises, and gain the profit in the competition advantage of improving the whole supply chain (Parkinson, 2015). Supply chain management coordinates enterprise internal and external resources to achieve enterprise goals. The enterprises in the supply chain are regarded as the virtual departments of enterprises, and they are managed by virtual economic entities (Xiao, 2014; Srinivasan, 2015). At the same time, the composition of this alliance is dynamic and will change as the market demands. Compared with the single enterprise management, supply chain management needs the support of accounting information, and the original accounting information system is not adaptive in the form of accounting information and the content and form of accounting information. Under the environment of supply chain, a single enterprise virtual entity business model makes the accounting measurement model is no longer confined to the traditional, but extended to the whole supply chain management, the traditional accounting measurement model, the measurement object and measurement range have undergone significant changes (Nayak, 2015). But the traditional mode of accounting system can provide multi attribute economic subject hypothesis and accounting classification based on multi objective and meet the demand of financial information, the supply chain management for workflow process reengineering, value stream management, value-added information flow of enterprise resource planning management and cash flow and cash flow management are not truly implemented. The supply chain environment has put forward new demands for the accounting information system.

It is following the information technology innovatingly rapid development. The information technology is changing accountant this traditional occupation, and redefines the accountancy, but the ERP application and the development has accelerated this tendency advancement (Agrawal, 2014; Chung, 2014). The ERP is also based on the enterprise value chain management of one of the modern management model. It is the core of enterprise information and in the ERP environment industrial enterprises are typical of the general industry type while the industrial enterprises as to manufacturing as the main mode of operation (Brandenburg, 2014). Value chain management is the enterprise for the production and marketing business in the activities of the one-stop activities for the object and it is the enterprise logistics, value flow and information flow of integrated management. As shown in the figure, we illustrate the systematic architecture of the AIS, the different organizational needs and information system deployment patterns may affect the information system of actual running effect, specific to the effectiveness of the enterprise management information system (Gong, 2014), should according to the different functions of subsystems to define different meanings. In terms of accounting subsystem, its effectiveness should be shown as the output of accounting information have objective reliability support for enterprise management decision plays an irreplaceable role (Blome, 2014). According to the characteristics of the accounting information system, this paper defines the validity for the credibility of the accounting information system, the accounting information system to objectively reflect the activities of
enterprises independently from the following aspects. The content which tradition financial inventory accounting in the system, enterprise's each functional departments regarding which has the service activity pays attention to be different, records and reported the service activity the angle is different (Gray, 2013; Izakian, 2015).

Although each system has only recorded a related service activity data subset, between each subset difference is very small and this has created the accounting information system to the service data redundant record, the maintenance as well as the report (Dillard, 2013). The financial accounting system to collect and store the data is a subset of the data related to business events, rather than for a possible across several functional departments of a business process to provide overall view. No the other information including the related events, such as events related staff, the location of the incident, and other information can't meet the demand of the information demanders is higher and higher now (Guin, 2014). The decision-making usefulness of managing accounting information depends on the integrity and the correctness of the entry data. As the business system and financial accounting system in the database type, data format data processing mode, there is the big difference in the system data collection at the core stage and the project team is facing enormous challenges: some data to be integrated while no of the data to be added which will lead to the low efficiency. Inspired from the above items, this paper proposes the paradigm for the construction of the accounting information system in supply chain environment (Ludwig, 2015).

2. INFORMATION DESIGN OVERVIEW

2.1 The Theoretical Review of the Information Systems

The ultimate goal of enterprise information is to enhance the competitiveness of enterprises and improve the customer service capabilities. Management information management system on the role of enterprises and institutions is to speed up the collection of information, transmission and the processing speed, the experimental data in the whole unit of sharing in time for all levels of the management personnel to provide the necessary information to assist them to make decisions to improve the unit operational efficiency and effectiveness.

![The Accounting Information System](image)

Figure 1. Accounting Information System

The information system design does not have the mature theory and the method support, does not have the reliable quota measure method. In view of the fact that this kind of situation, researchers proposed applies the case inference technology the information system design domain, reduces the system design as far as possible to the common personnel's experience and ability dependence that causes the software design work no longer to start from the zero, but was in formerly already has processed in the similar question foundation that carried on the revision, the combination, the adjustment in view of the new question demand, thus obtained the new question the solution well to form the new case improves quality and efficiency which the software designed. However, when the number of information system design case, matching efficiency of the coarse-grained CBR new cases decreased greatly at the same time as the new problem based on the attribute importance factor is not immutable and frozen while sometimes appeared only to meet new problems a slightly important attribute demand needs, without considering other demand attributes situation. Based on the review, the modern information systems are generally designed and implemented by the Java, and we take this as the sample for illustration.

Information release system based on the design of the J2EE technology platform is based on the thought of component can fundamentally improve the efficiency of software production and quality and the salt to improve the success rate of developing large-scale software systems, especially the commercial system and can realize the distribution and heterogeneity security, independence, and other functions as follows.
- ODBC is an open database connection that is provided by Microsoft Application Program Interface (API), a separate application through which we can access many different types of databases and files in different formats. ODBC data source, also known as DSN, which the application to use the driver, database, user name and password (if any) and other information combined for users to use. As you can see later, Adodc controls and DataGrid controls are used in the design of this article and to facilitate the use of ODBC, we must configure the appropriate ODBC data source.

- After the query and modify operation, the user interface and set the relevant attributes, but also in accordance with the basic requirements of the query and modify the operation of the Combo1, Combo2 combo box in the drop-down list of the initial settings, we can in the form of the Load event design The code. After the form is loaded, the "OK" button in the query and modification interface should be unusable. The focus is also best placed in the Text1 text box and we can complete the corresponding setting in the program code of the Activate event of the form.

- Generally, after the query operation, the Text1 text box retains the "value" entered before the last click of the "Query" button. If we want to continue the query operation, you want to click the Text1 text box, the original content of this text box (if any) is directly cleared (in order to enter the new text directly in this text box), so the click event (That is, the Click event) to set the Text property of the style box to a blank string and then finalize the whole procedures.

![Image of User Interface](image.png)

**Figure 2. The User Interface of the Mentioned Sample System**

Basic HTML cannot dynamically generate web pages, dynamically change the content of the page and the database processing. ASP in this area has a simple and easy way to learn, as long as some VBScript, JavaScript instructions embedded in your HTML file, we can then from data collected and analyzed in the table. ASP script also provides the operation of the database, so that the realization of the information storage and processing. When the browser requests the .asp file from the Web server, the ASP script starts running. Then the Web server calls the ASP, ASP reads the request, executes all script commands and sends the Web page to the browser according to the characteristics of ASP decided to use ASP to create information management system. Therefore, in the next paragraph we will consider the system through using the PHP.

### 2.2. The PHP based Information Processing Systems

PHP system development at the beginning, to the scientific design application model, planning the overall system architecture and now while the two commonly used application architecture is B/S architecture and C/S architecture, the two architectures have their own advantages.

- In the fixed range of network, which are frequently used C/S architecture, the Servers end and Client end with the help of a special line to exchange data and processing information and B/S architecture do not need to fixed scope of network environment. The Servers send service processing information, the Browser end without conditions with the operating system and browsers can query results.

- C/S architecture needs to customize the Servers and Client side of the program, if the system needs to be modified and we have to modify the two ends of the program. The multiple structure of the B/S architecture of its internal general components are relatively independent high reuse rate an if the system function changes as only the office-side program can be modified that do not need to modify the browsers side which modify the low cost.
Client/Servers architecture program interface is fixed, and the operating environment and the operating system related, and Browser/Servers architecture users scattered for the different user groups, and the operating system has nothing to do with.

The MVC model requires that the model and controller communicate with each other in a cross-page script. However, because the PHP object in the implementation of the page is completed after the recovery, the PHP objects cannot cross the page exists, the traditional MVC architecture in PHP cannot be fully realized. The usual solution is to store objects in the database or SESSION before reclaiming, and rebuild objects from the database or SESSION when needed.

This way is because of the need to frequently read and writes the database, obviously more inefficient based on the PHP object cannot cross the existence of the status of the page, in the PHP framework using the passive MVC model is more reasonable. In passive MVC, the model exists in the form of ordinary objects, and is not associated with the rest of the MVC structure. This will avoid the problem of cross-page objects to avoid the MVC model to bring the efficiency of decline. The figure 3 shows the sample code to avoid reference.

![MVC Architecture in the PHP](image)

**Figure 3.** MVC Architecture in the PHP

For lightweight PHP framework, and with suitable to the operation of the database using more simplified scheme of database access layer, compared with the active record pattern, table data entry mode of data table only implement encapsulation, rather than to wrap each record. Combined with the PHP strong associative array, table data entry can be efficient and flexible operation of the large amounts of data. Since the records are not encapsulated the table data entry operates pure data rather than objects that encapsulate data. Table data entry mode can be directly on the database operation, which determines table data entry mode has high data efficiency.

Between ORM use unit data description object and the database relations and map in the database. Because the procedure object and the relational database mapping is complex, therefore can create the quite serious efficiency to reduce. Starts from the PHP5, the ORM is introduced gradually the PHP development frame in the design. But existed PHP ORM project although all basically has realized the object relations mapping, actually universal existence structure complex and reflecting efficiency low flaw. Smarty is PHP template engine, more accurate saying, it has provided logical and the external content separation, has provided the method which easy to manage, the goal is must cause the PHP programmer same art designing to separate, the programme or changes the procedure the logical content not to be able to affect the art designing page design, the art designing revises the page not to be able to affect procedure logic and this cooperates in the multi-people in the project reveals especially importantly while also is the primary cause which this system selects it to develop.

The program written in Smarty is compiled into a non-template PHP file at run time, which uses a mix of PHP and HTML. Usually after receiving the page request, the system first determine whether the request is the first visit to the URL, if it is the URL required to compile the template file into the PHP script file, and then redirect to the PHP script file; if not, then directly to the Web request to convert to this file, and no longer recompile the template (recompile the conditions can be set to their own fixed time, the default is the source program was changed), eliminating the need for a large number of parse time. In addition, the developer can also edit custom functions and custom the variables, so this template language can be extended. The above two points is also the outstanding advantages of Smarty is our development of the important reasons for the choice.

- Call oracle stored procedure to achieve the way, oracle stored procedures to achieve the data on the storage bill analysis. The data analysis module currently provides the number of changes in the number of daily users of other operators.
• Acquisition and data analysis is through the Linux script programming integrated together. Through the Linux system to provide the timing mechanism to achieve the daily start of the implementation. At present, the whole system basically does not need the maintenance personnel to then carry on the daily operation, realizes the automatic movement.
• Linux provided the reliable system support as server the ability already to obtain the field recognition, the Linux system from the very beginning was for the multiuser design system, but windows started is only for the single user design operating system. Therefore it is inferior to multiuser support windows to use is the user advancement and the system advancement in the memory is separated, and the user advancement abnormal end cannot cause the system advancement to appear exceptionally.

3. THE PROPOSED METHODOLOGY

3.1 The Supply Chain Environment

Supply chain is the core business, through the flow of information, logistics, capital flow control, starting from the procurement of raw materials made of intermediate products and the final product, and finally by the sales network to the product to the consumer will be the supplier, business, distributors, retailers, until the end user into a whole function of the network structure model. Because the achievement supplies on the chain each member, they not only are a coordinated system indispensable part while simultaneously is maintaining own independence. Obtains the biggest production income is its basic goal and also is survives, the development foundation in the intense market competition. These had all decided that they must supply in the chain with the correlation upstream, between the downstream enterprises establish the dynamic cooperation alliance.

Because face supplies the chain the MC planned dispatching system is a complex dynamic process system, its movement environmental effect parameter many also changes quickly that not easy accurate assurance with localization. Therefore, we must process the complex changeable user product and service demand information, the resources supplies information, the cooperation partnership as well as the production process mixes while all needs to have the function more formidable information processing and function operation organization support. Any act in the supply chain that deviates from the overall constraint will harm the overall interests of the supply chain more or less. In this way, the joining enterprises in the supply chain are among the strategic alliances of interests, and they must abide by the common constraints achieve consensus on the target, and form a consistent force in the direction of the scattered forces. As far as possible reduce the conflict between members which is the basic operation of the supply chain security, in the figure 5, we show the trend.

![Figure 4. Supply Chain Environment](image_url)

A supply chain involves numerous enterprises, from the perspective of the implementation of the incentive, each member companies exist between a large number of the relationship between motivation and motivated that look from the type can be summed up in five categories: (1) core enterprise incentives for members of the enterprise; (2) the manufacturer of the supplier of incentives; (3) the manufacturers for sellers of company for the members of the supply chain enterprise's incentives (5) the member enterprises of supply chain incentives.

Supply chain enterprises to implement incentive between the need to establish the following aspects in order to effectively carry out shown in figure 6 which will be adopted in the next section.

• Some set up can be transverse evaluation of the performance evaluation system the system can run of every enterprise in a certain stage performance objective assessment, avoiding interference from human factors and the outer circumstances.
To establish a transparent supply chain profit sharing decision-making mechanism with the relationship of the interests and the overall interests of the supply chain, the local interest is usually the downstream node between the interests from the operating level, the coordination is relatively easy to operate, but the supply chain of the local interests can not to harm the overall interests and the coordination with security interests and overall interests.

To establish incentive policy framework, that is, the node enterprises under what kind of performance and performance can be inspired, and access to what level of incentives, this kind of policy framework agreement usually included in the supply chain.

3.2 The Supply Chain Accounting

Enterprises and so on supplier, manufacturer as distributor relate from business transform the new supply chain partner relations. The supply chain management pattern is precisely produces under this kind of basic background, it mainly through the chain on each enterprise coordination motion, reduces the entire supply chain the operation cost, thus achieves the entire supply chain income maximization goal. Therefore, it supplies the chain achievements the quality mainly to be decided by the supply chain enterprise cooperation quality. But affects one of basic supply chain enterprise cooperation primary factors is the cooperation income assignment problem, however the different risk degree actually to a certain extent is affecting the income assignment by the chance. Logistics activities in the value of the most direct performance will manufacture products and creating value of production activities and the use of product consumption activities organically, through the effective flow of goods, in order to realize the transfer of product from origin to consumption, so as to create the value of the time and space (place) value which can be reflected from the following aspects.

- The faster the shorter the logistics, capital flow, showing high speed of capital appreciation. From the overall logistics, speed up the logistics, shorten logistics time which is also a logistics must follow the economic law. Logistics is a kind of active time value form of exercise that need to adopt technology, management, scientific and the systematic methods, shorten the logistics of the macro and targeted to shorten the logistics of the micro time.
- Supply chain has become increasingly complex, more and more participants, the location is also a lot of rich, and the distribution is more dispersed. The information needed to find the leading edge of the efficiency is growing rapidly. Emerging technical tools and software programs are also an important step forward that allows companies to discover their efficiency ahead faster. In that order to achieve efficiency, a lot of work needs to be done, including the application of optimization technology, which requires high data collection, but also for the company's specific environment for general personalized treatment, the use of the optimization techniques to improve the retailer's warehousing performance while making the service level higher, faster circulation.
- The whole process of implementation of supply chain management on the circulation of commodities, which consists of the production enterprises, and the third party logistics enterprises, sales enterprises, consumers of the supply chain system and system to realize the integration of logistics, to maximize the interests of the whole supply chain, so as to effectively reduce logistics costs. Taking the whole supply chain management mode can effectively shorten the "time distance" from the supplier to the customer, shortened from the demand to meet the customer demand response cycle to reduce inventory, save the cost of logistics and reduce the logistics cost.
4. ACCOUNTING INFORMATION SYSTEM

4.1. Construction path of accounting information system

The accounting information system in the supply chain environment should consider the enterprise itself, and consider how to build a new system from the aspects of software, process, system and so on:

1) integration of internal financial business: In order to change smoothly, the accounting information system adapts to supply chain management. First of all, it is necessary to realize the integration of internal financial business, which is the cooperative foundation of supply chain enterprises. The success of business process reengineering affects the consistency between enterprise management and enterprise goals. Therefore, an important step to construct the supply chain of the accounting information system is to straighten out the internal accounting business process of individual enterprises, only individual enterprises to rationalize the accounting business process, can be between supply chain enterprises to build a smooth business process.

2) common conversion of shared information: In order to achieve the information sharing among supply chain enterprises, the information itself, need general information sharing or easy conversion, so the accounting data transfer between enterprises should be in the same caliber and standard, otherwise, not only affects the real-time sharing of information, but also affect the accuracy of the information. Application of REA accounting can well solve this problem, the basic idea of REA accounting is in the data input link business data for a reasonable collection, is conducive to the follow-up data of different enterprises in the supply chain and processing.

3) change of financial system: Enterprises need to formulate financial policies suitable for the development of their enterprises in accordance with their own development characteristics, and truly make financial work serve the enterprises. If the current financial system hindered the development of enterprises, it will lose the role of the financial system, but also increase the cost and the risk of enterprise management, so the construction of accounting information system under the environment of supply chain to establish the corresponding financial system.

4.2. The Accounting Information System

The information technology achievement restricts one of the accounting information demand conditions, and its technical performance that mainly manifests in the storage medium and the network level two aspects, looking from the storage medium that, the magnetic dielectric and the light medium appearance, has provided a quicker way for the information recording and the dissemination that has facilitated the information recording paperless. Compares with the paper medium, not only the magnetic dielectric and the light medium enhanced the data acquisition and the memory content accuracy, moreover because easier to disseminate that enhanced the information effectiveness enormously. Therefore, it uses the magnetic dielectric and the light dielectric storage...
technology, urges the information user to have the new demand inevitably to the accounting information quality, and brings the profound influence to under the manual pattern information production and the dissemination way which should contain the following components and aspects:

- **Knowledge base.** The knowledge base in the store after the formal accounting experts' knowledge, and the traditional accounting method and the relevant accounting laws and regulations, standards, etc.
- **The database stores the accounting information in the traditional accounting mode,** which is based on the knowledge in the knowledge base, the application of data mining and online analysis technology, the separation of the data in the accounting item database, the extraction and reasoning (Including the number of the certificate that should be borrowed accounts and the amount of the money, etc.), it is the traditional accounting information system accounting processing basis.
- **The library includes financial and non-financial information they exist in the raw data form, so as to generate different information according to the demand of the decision.** In the accounting information database, the preservation of the integrity of economic matters that is the basis of the multidimensional data warehouse provides the basis for the multidimensional measurement of accounting information.
- **Data mining is a new technology for discovering and extracting hidden information from general data warehouses,** with the aim of helping decision makers look for potential correlations between data from a huge repository of information and reveal unknown relationships and patterns. Database, artificial intelligence, machine learning and statistical analysis and other technologies, through a large number of the facts, relationships, trends, patterns, exceptions and abnormal analysis with refining to complete.

Specific for our proposed system, we will be inspired by the following aspects. (1) Operating liquidity. As the subject of accounting for PAIS, the business period of the process is generally short and the process will be completed and cleared in the foreseeable future. Therefore, PAIS does not apply the assumption of continuing operations and more applicable to the premise of mobile business assumptions. (2) Period of continuity. PAIS uses a continuing operating assumption that the firm will continue indefinitely. In order to examine the business performance of the enterprises in a timely manner, we must then artificially divide the business process into equal periods that in order to settle the accounts in phases and prepare the accounting statements on schedule. (3) There is a trade relationship between the process and the rest of the business, and the resources in the process are obtained from the outside of the process in a paid way. PAIS sets a number for each new process and creates a dedicated process set for which all transaction information is recorded. The process set is created with the start of the process and is archived with the end of the process.

### 5. CONCLUSION

This paper proposes the paradigm for the construction of accounting information system in supply chain environment. The information system design does not have the mature theory and the method support, does not have the reliable quota measure method. In view of the fact that this kind of situation, researchers proposed applies the case inference technology the information system design domain, reduces the system design as far as possible to the common personnel's experience and ability dependence. Inspired by this, we integrate the PHP and the supply chain model to construct the novel accounting information system.

### REFERENCES


