

Establishment of continuous business auditing model in XBRL environment

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Abstract

XBRL technology enjoys great application prospect by enterprises and plays an important role in their business development. A deep analysis on the content and application range of XBRL was conducted in this paper. Effect of XBRL on enterprise operation and management was analyzed, mainly including higher operation standardization, higher data normalization, internal information systematization and data sharing. Later, based on characteristics and advantages of XBRL, a continuous business auditing model was established using trend analysis approach from financial and non-financial indexes. Due to the XBRL technology, the established model can acquire related indexes automatically and implement fundamental data computation and analysis. Model results can be reflected quickly. To safeguard flexibility and timeliness of the model, enterprises are suggested to keep indexes updating upon development, update XBRL technology in time, improve audit analysis and evaluation capacities of auditors, as well as enhance mutual dependence between obligation and rights of auditing department and other departments.

Keywords: XBRL technology; business decisions; Continuous Business Auditing Model

1 Introduction

China's related departments made an announcement in September, 2014 which requires 13 central enterprises to submit XBRL instance document of final account report (2013) according to SASAC's XBRL classification criterion for financial regulatory report. This implies that XBRL enters into central enterprises. In fact, XBRL has been widely used in many large-scale enterprises, especially transnational ones. With the Internet development, XBRL is used increasingly in enterprise financial reports. It has achieved great progress around the whole world. Many countries (the United States, retain, German, Canada, Australia, Japan and Singapore) and the IASC have issued their own XBRL Classification Criteria based on GAAP. Based on current application trend and environment of XBRL, its effect on continuous business auditing was analyzed thoroughly and a continuous business auditing model was established in this paper.

2 Content and characteristics of XBRL

2.1 CONCEPT OF XBRL

XBRL, the abbreviation of extensible business reporting language, is a kind of computer language based on Internet and cross-platform operation for the exclusive purpose of compilation, disclose and utilization of financial reports. The elementary implementation of data integration and maximize utilization, accounting information systemization and data sharing are the latest internationally accepted standard and technique to combine accounting standard and computer languages. This is to exchange unstructured data, especially financial information. Through specific unified identification and classification, data can be read and further

processed by users and other software directly, achieving once input and repeated use.

2.2 CONTENT OF XBRL

Compared to traditional financial reports, XBRL-based financial reports have significant features. (1) It lowers information exchange cost, enhances availability of financial information, and increases comparability of financial information indirectly. (2) It provides time-efficient information through Internet, increases information relativity, and strengthens utilization efficiency of financial information. (3) It can exchange and extract financial information automatically without restrictions from some company software and information systems, making it convenient for investors or analyzers to use the financial information. (4) It reduces repeated data inputs to meet different format requirements. (5) It lowers information supply cost and can help to increase financial statement preparation efficiency of information suppliers. XBRL enjoys a wide application prospect in economic activities of enterprise, mainly including the following six fields:

Business management: In XBRL environment, enterprise executives can analyze acquired financial data and specific conditions quickly. Moreover, enterprises can make various and repeated data processing by using the XBRL technology.

Audit: The auditing department not only can retrieve desired data quickly, but also can improve financial statement according to requirements and determine audit procedures. The XBRL technology enables to connect financial data with economic and business data directly, needing no manual data identification. As a result, auditors don't need to make field survey, but only have to make remote operations based on the network, thus increasing

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auditing efficiency and quality.

Credit rating of enterprises: Credit rating of enterprises can be evaluated by XBRL technology according to cooperators of every business activity. Evaluation results are shared on the Internet, so that enterprises and banks are easier to get cooperative enterprises with high credit rating than before.

Securities market: Investors can acquire accurate financial information, credit information and development news of enterprises quickly. Later, they can conduct desired data processing immediately and make decisions. Information on XBRL environment is more open and fair.

Trade and tax payment: Tax returns data of enterprises can be generated directly on XBRL technology, without needing manual entry and transmission, thus increasing work efficiency of both enterprises and tax department. Paper-free operation is one demand of the time.

Financial administration: To study financial trend and risks, financial management department has to know relevant financial data of enterprises and make corresponding data processing. This can be simplified significantly by the XBRL technology.

2.3 EFFECT OF XBRL TECHNOLOGY ON ENTERPRISES

The “Promotion Association of XBRL in China” was founded by many departments in 2006. Application of XBRL technology in China was approved in November, 2008. Currently, there are dozens of listed companies participated in the pilot project of submitting XBRL-based annual reports. Although XBRL application in China is still in its early stage, it brought great shocks to enterprises and enables enterprises to form an organic integrity with the outside world. These shocks mainly include:

Higher operation standardization: Enterprises are asked to follow the setting operation procedure. No change is allowed, just like financial data.

Higher data normalization: Under standard operation, input data will be more normalized. Therefore, enterprises are required to submit data according to setting requirements.

Internal information systematization: The XBRL technology enables departments to update data upon need and share data mutually.

Data sharing: With the XBRL technology, data can be shared and processed within the enterprise and between enterprises through network, realizing data integration.

3 Establishment of business auditing model in XBRL environment

3.1 MODEL OF ESTABLISHMENT

XBRL-based business audit involves both internal data provided by the enterprise and shared data on Internet. It reflects the real objective financial and operation conditions comprehensively. Compared to traditional statistics, XBRL-based business audit is characteristic of simplicity and complexity. Simplicity refers to the direct acquisition of relevant data for analysis, while complexity refers to the involvement of both internal financial data and external data. These two aspects shall be considered when establishing the

auditing model.

Comparative analysis, ratio analysis, account analysis, trend analysis, simulation, forecasting method, decision-making method, control method, factor analysis and cost method are common analytical methods in auditing. All of these methods have certain applicability. Enterprises can choose one or combine several of them according to different demands. In this paper, trend analysis and account analysis were used to establish the auditing model. Account analysis is mainly used to analyze internal financial data of the enterprise, while trend analysis deals with the overall development and external data. Trend analysis needs certain quantitative analysis model.

Based on balance analysis and ratio analysis, trend analysis has to set basic indexes. These indexes vary for different enterprises. In this paper, they are assets changes, liabilities changes, brand value changes and changes in equity. Suppose there are K indexes that have to be measured, including N indexes calculated from internal data and M indexes analyzed from external data. Then, $K = N + M$. One index is the product of interrelated factors. The index of report period is $Y_k = W_1 * W_2 * ... * W_i$. Through this formula, effect of every factor on indexes can be tested. If one index is the result of adding and subtracting of i interrelated factors, $Y_k = W_1 + W_2 + ... + W_i$.

Based on the accounting of a certain period, Y_k ($k=1,2,...K$) of different periods can be gained. Since enterprise is the subject of continuous operation, Y_k ($t \in (T, T+T')$) of several periods can be calculated. Then, a matrix about time and indexes is built. Suppose the time is various indexes from 1990 to 2013, the matrix will turned into:

$$\begin{pmatrix} Y_{1990/1}, & Y_{1990/2}, & \dots & Y_{1990/N} \\ Y_{1991/1}, & Y_{1991/2}, & \dots & Y_{1991/N} \\ & & \dots & \\ Y_{2013/1}, & Y_{2013/2}, & \dots & Y_{2013/N} \end{pmatrix}$$

Meanwhile, a matrix about external data (recorded as Z_k) can be built:

$$\begin{pmatrix} Z_{1990/1}, & Z_{1990/2}, & \dots & Z_{1990/M} \\ Z_{1991/1}, & Z_{1991/2}, & \dots & Z_{1991/M} \\ & & \dots & \\ Z_{2013/1}, & Z_{2013/2}, & \dots & Z_{2013/M} \end{pmatrix}$$

If there are only few indexes, variation trends of every index can be presented by a graph and then the auditing report can be made through simple analysis. However, complicated indexes shall be analyzed by index weighting method rather than graph. The matrix is turned into a time-series data:

$$B_i = \sum_{k=1}^N a_i Y_{ik}, \quad H_i = \sum_{k=1}^M b_i Z_{ik}$$

Then, the matrix can be converted into the following sequence:

$$(B_{1990}, B_{1991}, \dots, B_{2013}), (H_{1990}, H_{1991}, \dots, H_{2013})$$

As a result, the final auditing result is a comprehensive auditing of internal and external indexes of the enterprise.

3.2 MODEL APPLICATION AND ANALYSIS

Since specific factor indexes can be acquired through the XBRL technology, the whole computational process is very

intelligent. The model formula can be set and then gained directly. Therefore, the auditing process is very simple. Actually, trend analysis covers cross-section analysis, standard analysis and comprehensive analysis, which can be reflected by the established model. Cross-section analysis analyzes all indexes in one year, for example, indexes in 2013:

$$Y_{2013/1}, Y_{2013/2}, \dots, Y_{2013/N}$$

$$Z_{2013/1}, Z_{2013/2}, \dots, Z_{2013/M}$$

Since all indexes and data in the XBRL environment are normal data, attentions shall be paid to the following aspects:

Firstly, possible data beyond the business indexes and their additional information shall be implemented when using the established model. Although normal data are easy to be acquired and analyzed, they still have evident disadvantages. Due to the continuous development of enterprises, no comprehensive data can stand long-playing test. The longer the XBRL is used, the more problems the normal data will bring. To avoid these problems, key data beyond the auditing indexes shall be analyzed. Manual statistical analysis is needed because these data couldn't be acquired through the system. This reveals that any intelligent technology has some time defects and needs manual supplement. Furthermore, sudden events (e.g. production accident or product safety issue) will affect financial statements of enterprises.

Secondly, high attention shall be paid to any evident change or abnormal change of a standard during longitudinal trend analysis. Abnormal changes of weighted index couldn't be highlighted and even blurred in other indexes. Therefore, trend changes of indexes shall be concerned even during system-based computation. Causes of the abnormal changes of any index shall be explored thoroughly. This demonstrates that although intelligent technology can implement every step of the model, results of every step still deserve our attentions to avoid problem blurred.

Thirdly, any index abnormality recognized during horizontal trend analysis also shall be analyzed. Although horizontal analysis involves no trend problem, there are multiple relationships among indexes. Hence, financial problems of enterprises can be discovered through comparison of indexes within the same period. Take assets index and liabilities index for example. If assets are less than liabilities, the enterprise is suffering insolvency. The established model couldn't offer independent comprehensive analysis to each index and needs manual comparison of indexes.

In a word, although the continuous business auditing model based on XBRL environment has shortcomings, it still has advantages. Its procedure, different from that of traditional audit, is composed of:

(1) Audit plan. It is very important. Poor audit plan will end in blind implementation of auditing, thus failing to get sufficient and appropriate audit evidences to lower audit risk to acceptable level, wasting limited audit resources, increasing unnecessary audit cost, and lowering audit efficiency. Generally speaking, audit plan mainly includes preliminary business activities at the beginning

of the current audit, making overall audit strategy, make specific audit plans, etc. Instead of an independent stage, audit plan is a continuously amending process and passes through the whole audit.

- (2) Data processing and risk assessment. Data processing includes intelligent processing (model processing) and external data processing. Data processing is the process of discovering problem, the core step of audit. Understanding auditee and its environment is the continuous dynamic information collection, updating and analysis, which runs through the whole audit. Risk assessment mainly includes: 1) understanding auditee and its environment; 2) recognizing and assessing material misstatement risks of financial statements, transactions, account balance and assertion level, including those needing special considerations (special risks) and those couldn't be handled through substantive procedure.
- (3) Control test and substantive procedure. Risk assessment is inadequate to provide sufficient and appropriate audit evidences for issuing audit opinions. Further audit procedure is needed, including control test (upon necessary or decision test) and substantive procedure. To lower audit risk to acceptable level, countermeasures to material misstatement risks of evaluated financial statements shall be determined, and further audit procedure against the material misstatement risks of evaluated assertion level shall be designed and implemented.
- (4) Accomplish audit and write the audit report. After repeated further audit procedure of financial statement, rest audit work shall be fulfilled by following provisions of associated auditing standards. Audit evidences shall be collected and judged professionally to compile audit opinions. This step mainly includes 1) auditing initial balance, data comparison, subsequent events or contingencies; 2) thinking about continuous operation problems and getting management representations; 3) summarizing audit difference and submitting adjustment or disclosure of the auditee; 4) re-checking audit working paper and financial statements; 5) communicating with managers and administrators; 6) evaluating audit evidences and forming audit opinions; 7) writing the audit report.

4. Strategies to improve XBRL-based business audit

Although the XBRL technology can contribute convenient and systematic data input and acquisition, data sharing on Internet and intelligent data processing, no enterprise has perfect internal audit procedure and auditing model. This explains the unceasing business failures in the world. Therefore, XBRL-based business audit also shall be perfected continuously.

Firstly, the XBRL technology shall be updated continuously. Continuous updating is the prerequisite for survival of technologies. Updating of the XBRL technology contains: 1) data normalization updating. Data normalization process is basically designed and set

according to environment of the time, which will become inappropriate with the development of enterprises. Therefore, data normalization shall be updated continuously while maintaining consistency with past data. 2) XBRL technology updating. This is a continuous thorough updating based on external power, just like a piece of financial software.

Secondly, model indexes shall be updated continuously. This is to make data indexes and computation to reflect business performance and basic status of enterprises better. Attentions shall be paid to two problems. (1) If data indexes can be acquired in time through the XBRL technology, they can be added into the model for intelligent processing at any time. (2) If new added indexes couldn't be acquired through the XBRL technology for intelligent processing, feasible manual data statistical analysis shall be implemented and added into the risk assessment.

Thirdly, audit analysis and evaluation capacities shall be improved continuously. Both XBRL technology and model processing are basic data processing and analysis, which couldn't replace the role of people. Manual operation is

necessary in auditing. As a result, enterprises have to improve internal audit capabilities. It is vital to identify risks in time and put forward corresponding countermeasures to potential risks. Audit capabilities of enterprises can be improved by: 1) enhancing training of auditors' auditing capabilities; 2) recruiting auditors with excellent auditing capabilities.

Fourthly, mutual dependence between rights and obligations of the auditing department shall be enhanced. Generally, the auditing department is independent. However, auditors, employees of enterprises, also involve interest problems. (1) Employees of the finance department act in collusion not to report financial problems, resulting in the misappropriation of public funds. (2) They collude with external staff to disclose trade secrets of the enterprise. Either of them is threatening to the enterprise development. Therefore, mutual dependence between rights and obligation of the finance department and internal auditing department is necessary. This is highly appreciated by large groups.

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