



The Benefits and Problems of Online Financial Reporting with XBRL

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Computing and Internet technology have been rapidly developed and applied to every part of our daily life. Online Business Reporting System is another example of this evolution which is just happening in our financial world. Traditional Financial Reporting System has been severed for over 70 years since the first paper forms submitted to the Securities and Exchange Commission in America using paper or electric version of paper documents. Now, this system is bound to experience a significant change with the development of XBRL.

The purpose of this paper is to evaluate the impact of this new type of business reporting to our current finance and accounting system. First of all, as XBRL is still new to many researchers, a full introduction of XBRL (eXtensible Business Reporting Language) is provided at the opening of the article. Previous literatures are mostly too surface or too technical. However, this paper tries to use simplest and shortest words to explain the design concept of XBRL language, operation system of a few existed software and related organizations.

Further more, this paper will explore wide benefits of xbrl, its impact to our financial system, and give an estimated best adopting time and methods to firms from current knowledge. In general, we are expecting a massive but progressive change in our financial life and accounting profession due to this evolution. However, more practically, we also look at the negative parts of online financial reports. Problems arise when adopting XBRL. The Financial Services Authority has even announced against for companies to file their regulatory returns on the grounds of cost. For that reason, we look more deeply into the cost and security factors of XBRL applications. In addition, a few possible negative effects in society, potential future hazard and trend on implementing XBRL are also estimated. To conclude, this paper gives a general review of all aspects of current researches related to XBRL, which wishes to give other researchers and the author himself a fine reference to online financial reporting.

Key Words: XBRL, Online Financial Reporting, Computational Accounting

1. Introduction

The Internet has significantly extended the amount of information available in digital format, therefore making information more accessible and usable. Sharing and exchanging information via the Internet is changing the world we live in. These changes has not only improved global economy but also created new opportunities and new challenges for business¹. Businesses are using digital technology, both hardware and software, to improve the efficiency and effectiveness of their operating processes². The application of html (hyper text mark up language) has made it very efficient for users to search for information on the web, and has been a major impetus behind e-commerce. Similarly, XML (eXtensible Markup Language) has enabled the

¹ Eg. Hartman, et. Al 2000; Patel and McCarthy 2000; and Tapscott, et. Al 2000

² Eg. Ebay is using online customer selling & auction system and Argos is using digital catalog

possibilities to develop business applications that are users friendly and platform independent, and has also contributed to the increasing importance of e-commerce.

Hill³ describes XML as: “enabling data on the Web or any large network to be readily swapped between any kind of device.. any kind of application, regardless of what programming language the application was originally written in.” To accomplish this, XML tags enclose each fact or item of data generated. The data item and tag together constitute a string of plain text that can be digitally transmitted. XML tags provide enabled software with context information to aid interpretation of the data, with multiple-nested tags providing additional context. XML tags allow a firm to gather financial reporting data across its subunits; regardless what types of hardware or software they are using, through the consistent use of like tags for comparable data.

Realizing the values of XML, the AICPA (America Institute of Certified Public Accountants), SEC, and major international firms are supporting the efforts of the XBRL.Org, and international consortium of firms, to develop XBRL⁴, an application of XML intended for use in business reporting. This effort includes development of taxonomy for financial reporting under U.S. GAAP (United States Generally Accepted Accounting Principles). That taxonomy is intended to provide a set of XML-consistent tags that identify various items of financial and non-financial information relevant to business decisions. The goal of the developers of XBRL is to tag (in an XML-based framework) every piece of information relevant to business reporting and decision-making. This would enable not only efficient and effective search and reporting of such information, but also would enable continuous monitoring and auditing of such information.⁵

The SEC issued the first final rule of XBRL in February 2005. The motivation for it was to examine the feasibility and desirability of using XBRL-gagged data on a more wide-spread and even mandatory basis for the near future when XBRL format becomes more common globally. Debreceeny⁶ critically examined the implications

³ Hill, also mentioned: “Other technologies, notably Sun’s Java, do some of what XML does, but only with some painstakingly customized coding.” 2001, p.55,

⁴ XBRL.Org note in FAQ: “XBRL (eXtensible Business Reporting Language), formerly code named XFRML is a freely available electronic language for financial reporting. It is an XML-based framework that provides the financial community a standards-based method to prepare, publish in a variety of formats, reliably extract and automatically exchange financial statement of publicly held companies and the information they contain. XBRL is not about establishing new accounting standards but enhancing the usability of the ones that we have through the digital language of business. ”

⁵ In addition, taxonomies for different purpose are also being developed, such as a taxonomy for management reporting of balanced scorecard information and a taxonomy to be used with IRS tax filings. The EXML (Electronic eXtensible Markup Language) is developing a taxonomy for tagging information at the transaction level, which intends to provide a digital language for continuous monitoring and auditing.

⁶ Debreceeny, R., A. Chandra, J.J. Chen, D.Guithuses-Amrhein, N.J. Hannon, P.D. Hutchison, D. Janvrin, R.A. Jones, B. Lamberton, A. Lymer, M. Mascha, R. Nehmer, S. Roohani, R.P. Srivastava, S. Trabelsi, T. Tribunella, G. Trites, and M.A. Vasarhelyi, 2005, Financial Reporting in XBRL on the SEC’s EDGAR System: A Critique and Evaluation, *Journal of Information System*, 19(2), 191-210

and feasibility of the rule as part of a working party under the aegis of the Information Systems and Artificial Intelligence/Emerging Technologies section of the American Accounting Association. Although, the implication of XBRL into practical business is still in an early process, its trend is very promising.

Regulatory agencies related to XBRL spread rapidly from the U.S. to world wide in just a few years. America SEC already established a voluntary program for registrants to furnish XBRL data in specific EDGAR filings under the Securities Exchange Act of 1934 and the Investment Company Act of 1940. Many American public firms have already begun reporting in the XBRL format and there is a steep increasing trend in the number of firm that will filing their financial statements in the XBRL format in next few years. Specifically, the FDIC's XBRL filing program has also started in October 2005. Globally, UK Inland Revenues Authority, EDGAR Online, KOSDAQ, the Tokyo Stock Exchange, and the National Tax Agency of Japan etc. are all taking pilot projects in XBRL. To date, members of the XBRL international: Australia, Germany, Korea, London, New Zealand and Tokyo. 18 countries have established their own XBRL organizations, including most recently. The taxonomy of XBRL now includes: Canada, China, Germany, IASB, International, Ireland, Korea, New Zealand, and the United States. China has started it's application experiments in XBRL since 2004 and from January 2005 all annual financial report that submitted to Shanghai Futures Exchange have been required to be in XBRL format. The Banco de Espana has stated its desire to use XBRL as a monitoring vehicle to stop tax avoiding activities of local Spanish firms⁷. In addition, all the big four global accounting firms are also members of XBRL international.

Forefeeling this unstoppable trend⁸, more and more financial organizations and researchers start to take concern of and study this global online financial reporting technology. This paper is designed to give a simple, comprehensive but thorough explanation to the extensible business reporting language in online financial reporting technology. The remainder of this paper is divided as follow: Section 2 describes the definition and structure of eXtensible Business Reporting Language and its role in online financial reporting with general definition, simple demonstration and technique explanation. Section 3 lists a number of benefits online business reporting, especially eXtensible Business Reporting Language, will contribute to our financial system. The content of this part will cover the points that xbrl.org itself list on their website, discussions of other researchers and a few other points I was thinking of, with brief conclusion. Section 4 combines information from feed back of existing xbrl users and results of a few previous experiments to formulate a more trustable clinical diagnosis for this new technology, which hope to help new xbrl applied financial organizations to avoid potential hazards. The last section, section 5 provides a summary and conclusion. Current hot researching fields in online business reporting or extensible business reporting language are also discussed here as a prospective future direction.

⁷ CPA Technology Adviser, Software Vendors Unveil A Variety of XBRL Solutions.

⁸ Robert Tie, XBRL: It's Unstoppable, Journal of Accountancy, Aug 2005, page 32

2. What is XBRL?

XBRL (eXtensible Business Reporting Language), in general, is the product of XBRL International (www.wbrl.org), a non-profit consortium of over 450 global financial service, technology, stock exchange, and accounting organizations. XBRL is part of a family of XML language which is becoming a standard means for business to communicate over the Internet. A key attribute of XBRL is an explicit semantic and machine-readable format for the wide variety of information found in business reporting in general and in financial statements in particular⁹. XBRL tags are context-sensitive and their use in XBRL instance documents allows for the specific identification and retrieval of individual items of data from reports such as financial statement. These tags enfold data and “permits the automatic exchange and reliable extraction of financial information across all software formats and technologies, including the Internet”¹⁰. Critical non-financial information which is normally difficult of capture, aggregate and disseminates using current incompatible information system is also included in XBRL tags.

2.1 Development Background

The surge of a need for internet based financial reporting technology already brought people’s attention in the end of 1990’s. Debreceeny is one of the first researches who gave good reasons in their research papers for having a international standardized rules for online business and financial reporting. Latter on, AICPA (American Institute of Certified Public Accountants) offered seed money for the development of this XML related technology. The first prototype was completed in December 1998. Then it was first called eXtensible Financial Reporting Markup Language with a committee formulized in August 1999. Until April 2000, this technology was finally called XBRL and the committee was named as XBRL steering committee. That committee keeps growing, includes representation from a number of national and international accounting bodies, security houses, accounting and related software companies.

The work of this xbrl steering committee is mainly divided into domain work and specification work two parts. The job of first part was to define a standard set of terms for each element of financial reporting. This unifies the format of financial information, hence provides a strong base for online financial information exchanging. In the future, XBRL will also define more sets of standards in wider area of business reporting. Grounded on the first part of the committee’s work, the second part develops the technical sets of xml tags. This shall be well structured, as every small set of xml tags they developed shall fit into the whole structure of information data system which is also has an increasing size by time. Principally, the tags system shapes like a hierarchical database. More specific tag terms are enfolded in more general terms. They currently focus on external financial reporting. (Debreceeny and Gray)

⁹ Debreceeny, R., and G. Gray, 2001, The Production and Use of Semantically Rich Accounting Reports on the Internet: XML and XBRL, *International Journal of Accounting Information System*, 2(1), 47-74

¹⁰ XBRL.Org, 2002, XBRL: Understanding the XML Standard for Business Reporting and finance, white paper, www.xbrl.org

2.2 Simple Demonstration

A simpler explanation of the design of XBRL can be demonstrated from word to XML to XBRL. Initially, Word processing software such as the Microsoft Office Word and Works are the most basic word processing tool we are commonly using today. It provides us an easy but powerful platform to input most information from paper form into digital. Among all word editing functions, there is one for drawing tables and input numerical data. We can draw tables and then define the meaning of columns or/and rows, then input number one by one manually into the table (or paste from original manually input data). If there is any change in the table, such as column and row order of the table information or a simple increase in the same list of numerical data, we have to modify them one by one manually. This is very un-convenient and time costly when we process a big amount of data with bigger chance of change.

Therefore, spread sheet software based on XML such as Microsoft Office Excel and Microsoft Work Spreadsheet are developed to process numerical data information. They specify on numbers or numbers with related data in other format. In spread sheet software we can define and freely arrange groups of data in order. For example, we can easily reorder the presentation style of the table by or order of a selected column or row, mostly commonly date and size of a number group. More powerfully, we can define row and mathematically relationship between deferent groups of date. One group can be the calculated from the result of one or more other groups, so that if there is any change in the data of based group, the related group will change its data accordingly and intelligently. For example, we can define a row follows the calculation result of a mathematic formula from deferent other groups, mostly commonly multiple or add in. This is especially useful and can help us save a lot of time of data procession. Nevertheless, it has limitation too when the relationship or conditions of the relationship between deferent group of data changed. We still need to modify the calculation formula of each changed data relationship. Risks of bigger scale of errors exist when the spread sheet data matrix becomes more complex. In addition, table style presentation of these data may not be desirable for all task purposes. For instance, a bank deposit interest spread sheet data is defined by account, deposit date, withdraw date, interest rate and deposit interest. We can easily arrange the data by order of account name alphabet, deposit date, withdraw date or the amount of deposit interest by one click. However, if the interest rate changed or the definition of deferent deposit account or there is different situation on different child groups of the original date, we have to re-modify the entire database manually. This comes more complex when we deal with a big complex group of data matrix and different business filed has their own rules.

Consequently, different intelligent software are developed to suit for the need of more complex atomized data processing but simpler user interface in deferent application fields based on XML. XBRL is just created to set up a unified rule for this kind of software in business report field. In intelligent software, they integrate different interface for different business need and can set pre-set conditional relations between specified date resources, so that users can simply input original data in the input interface and the software will automatically process, analysis or modify these data upon changes of internal and external factors. Finally the user easily and instantly get the desired analysis results from the out come interface. For

example Microsoft Money can perform most tasks of financial statement on saving, spending budget, tax and balance sheet for individual home or small business. They help normal users to perform financial activities more efficiently. There are a lot of tips and little tools on how to management user's financial account and provider variable of out put function, such as data to diagram, to fit business presentation needs. Big financial organizations and other big internationally forms have their own database processing systems, most of which base on the concept and utility of XML. Their applications are still spreading to wider fields intelligently.

Now, as the internet technology becomes common and powerful, the business world seeks a commonly accepted and unique rule to rearrange all of these XML data, so that when they appear on the internet, types of these information can be quickly recognized internationally both by people and machine. Software can then design to perform more intelligent tasks.

The concept of eXtensible Business Reporting Language is to define a set taxonomy and rules for all existing financial data, by giving a fixed and unique name for each column of XML spread sheet matrix, like a already made form. People can only input numerical data in according blocks. This sound inconvenient, as users can not define the name and property of the data with specification of their own firms or special property of that group of data. Yet, it dose work, because the taxonomy of XBRL definition is so much into details that users can mostly find all needed type of data from it. Then users on need to use the column that they used to form the universal data matrix, called XBRL files.

To ensure the eXtensible Business Reporting Language works in practice, XBRL international organization group huge amount of financial and accounting organizations word wide, achieve agreements on each term of financial reporting requirement, and define specific and universal taxonomies to rule numerical data across business world. It started approximately 450 major companies, organizations and government agencies in the US to more and more participate internationally¹¹. Of course, the effort of XBRL international organization to make this work done must have been and still be huge and there are a few other definition rules and business solutions for similar need, yet it seems that XBRL international has done very well and had became one of the most acceptable, workable, applicable and promising solutions for financial reporting world wide.

From above, we can see that eXtensible Business Reporting Language is not a computer language. XBRL.ORG official website defines it as "a language for the electronic communication of business and financial data which is revolutionizing business reporting around the world". However, it's actually more like a human language or dictionary for the business world rather than a computer language to write software. It sounds tricky because software developers do write software according to this 'literature dictionary' and the power of this XBRL definitions are demonstrated from these intelligent software developed.

Similarly, it is apparent now that eXtensible Business Reporting Language is not computer software. XBRL definitions are mostly applied in partial usage of different busyness software,

¹¹ <http://www.xbrl.org/AboutTheOrganisation/>

It does not work as a software itself. For example, software may provide a whole list of eXtensible Business Reporting taxonomy or guided selection tool for users to input numerical data into set XBRL table sheet and then produce eXtensible Business Reporting format. Afterward, more developed can use this recognizable data easily apply calculation and analysis rules from existing literature theory in finance, accounting etc to product a more comprehensive analysis and even predict results from this data on financial and business behaviors. On the other side, when people search financial data from the internet, all these financial data will be easily and quickly detected by search engines, to provide a much more accurate, powerful and intelligent financial data search system than ever before.

2.3 Technique

The whole XBRL framework splits financial/business information into two components as XBRL taxonomies and XBRL instances¹². XBRL taxonomies are the fixed column definitions that we use in the table which we mentioned previously. On the other hand, XBRL instances are the factual and individual numerical values that we input into the table. The combination of these values and columns presented in a certain style forms an XBRL report.

XBRL taxonomy contains an XML Schema, which is so called a taxonomy schema, and all linkbases that contained or directly be referenced in the schema. The definition of a reporting term, or say the name of the column, is normally a direct added combination of English language terms that we used in accounting or generally financial report. For example, "accountingPoliciesNote" can easily be guessed out as a data group used to add notes of accounting polices and thereby it will have a value of string type to input text information. Similarly, "CashFlow" will be a column related with the amount of cash flow of a business body in a certain period of time and as a result will typically have a value of number digit type to input numerical information related with money. At the same time, because most taxonomy definitions are defined according to real business information element, which have its own relationship between each other. Therefore, the taxonomy itself also contains a link base which indicates the definition, calculation, presentation, label and reference of all taxonomy terms. The first three types of extended link express inter-concept relationships and the last two express relationships between concept and their documentation.

Although XBRL instances are simply numerical values, they can be supported by a multiple number of taxonomies which may also have internal connections between each other. All related taxonomies of an XBRL instance have to be referenced directly or indirectly if they are relevant to the processing activities when being used. This set of related taxonomies is called a Discoverable Taxonomy Set ,starting from a certain set of documents of instance, taxonomy schema and link base followed by Discoverable Taxonomy Set discovery rules. DTS rules can be found in each edition of XBRL specifications. The latest version is XBRL 2.1 which was issued on 7 November 2005.

¹² XBRL 2.1 December 31, 2003, <http://www.xbrl.org/SpecRecommendations/>

Finally, security and validation software will integrate XBRL data into a formal file, then later on Xlink, which specify the relationship between XBRL instances and their supporting DTS etc, will play any important role on XBRL applications. A sample XML schema constrains on the simple links used by XBRL from the official website is shown below¹³:

```
<schema targetNamespace="http://www.xbrl.org/2003/XLink"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:xl="http://www.xbrl.org/2003/XLink"
  xmlns="http://www.w3.org/2001/XMLSchema"
  elementFormDefault="qualified"
  attributeFormDefault="unqualified">

  <complexType name="simpleType">
    <annotation>
      <documentation>
        Type for the simple links defined in XBRL
      </documentation>
    </annotation>
    <complexContent>
      <restriction base="anyType">
        <attributeGroup ref="xlink:simpleType"/>
        <attribute ref="xlink:href" use="required" />
        <attribute ref="xlink:arcrole" use="optional" />
        <attribute ref="xlink:role" use="optional" />
        <attribute ref="xlink:title" use="optional" />
        <attribute ref="xlink:show" use="optional" />
        <attribute ref="xlink:actuate" use="optional" />
        <anyAttribute namespace="http://www.w3.org/XML/1998/namespace"
          processContents="lax" />
      </restriction>
    </complexContent>
  </complexType>
  <element name="simple" type="xl:simpleType" abstract="true">
    <annotation>
      <documentation>
        The abstract element at the head of the simple link substitution group.
      </documentation>
    </annotation>
  </element>
</schema>
```

XPointer is used to point to a particular XML element that URIs used in Xlinks a the end of a fragment identifier. Only element schelme is allowed for secheme-based pointers in Xlinks.

¹³ XBRL 2.1, Specifications, 3.5.1 Simple Links,
http://www.xbrl.org/Specification/XBRL-RECOMMENDATION-2003-12-31+Corrected-Errata-2005-11-07.htm#_3

2.4 Adoption Situation

The adoption situation of eXtensible Business Reporting Language is very promising. Evidences are from both the size of XBRL Organization and the fast spreading XBRL activities and researches. The number of members of XBRL International group has increase to over three times to over 450 companies and agencies world wide in last five years. XBRL implication practice and research has become popular from the US, Europe to Asia countries. For example, in the US more than 8,000 banks have been filling quarterly call reports in XBRL since October 2005; In the UK, Her Majesty's Revenue and Customs has been developing XBRL taxonomies to work in conjunction with the UK Financial Reporting taxonomy, and HMRC already accounted "All companies should be required to file their company tax returns online using XBRL, and make payments electronically for returns due after 31 March 2010¹⁴; In Spain, over 400 banks are filling monthly financial statements in XBRL to the Bank of Spain; In Belgium filling of accounts by companies to National Bank of Belquim will switch to XBRL from April 2007; in Japan, the Tokyo Stock Exchange has launched a pilot system to demonstrates the usage of XBRL in financial statement which aims to introduce this new technology to all financial bodies before 2008¹⁵. The number of research and articles related with XBRL is also increasing in geometrical times every year. More and more companies, financial institutes are aware of XBRL now. In all, as Jon Udell mentioned: "Slowly but surely, XBRL is winning converts among accountants, governments".¹⁶

Although XBRL is still in its early stage, there are already a good number of business software available to apply XBRL format. Most of them has proved or are proving the advantages of eXtensible Business Reporting Language. The firs software that launched by SEC is the Interactive Financial Report Viewer¹⁷. It is majored applied in the banking industry, where the FDIC mandates its use for over 7,000 banks. However, current number of companies that enrolled in the voluntary program which will have their data represented in the Interactive Financial Reoprt View is very small. So far, only 32 companies enrolled in that system.

Comparably and more successfully, Hitachi America has introduced Xinba 2.0 Reader and Analyzer which allow end users to import xbrl 2.0/2.1 compliant financial information directly into Excel by using Web services to access taxonomies and instances that can be stored locally from the internet¹⁸. Xinba 2.0 Reader and Analyzer also support Simple Object Access Protocol and Web Service Description Language etc to enable end users sending request and receive instance data from third party data vendors. Many more features of this software are revealing the potential effective application of eXtensible Business Reporting Language in financial practice.

¹⁴ Eric E. Cohen, Interactive Data and the Tax Executive: Why Tax Standards Setters Are Paying Attention to XBRL (and why you should too!), The Tax Executive, May-June, 2006, Page 200

¹⁵ Case studies in XBRL.Org website and news from general research, <http://www.xbrl.org/CaseStudies/>

¹⁶ STRATEGIC DEVELOPER: XML for business reporting gains momentum - Slowly but surely, XBRL is winning converts among accountants, governments. Jon Udell. InfoWorld 28.34 (August 21, 2006): p21. From Expanded Academic ASAP.

¹⁷ SEC Launches New Financial Reports Application; The Interactive Financial Report Viewer is a Web-based application that reads filings that make use of the Extensible Business Reporting Language, or XBRL. InformationWeek (Dec 5, 2006): pNA. From Expanded Academic ASAP.

¹⁸ Hitachi America Unveils XBRL Solution.(eXtensible Business Reporting Language). eWeek (Dec 4, 2006): pNA. From Expanded Academic ASAP.

Edgar Online currently subscribe to a real-time data feed from that system and has already adopted XBRL and interactive data technologies as a data delivery standard in its I-Metrix products. This lets the EDGAR system accept XBRL documents from companies and let the public view XBRL document with more accurate description information of that company¹⁹. An active participant is Shanghai Stock Exchange in China, who made XBRL mandatory not long ago. They make about 700,000 filings on the SEC's current text-based EDGAR system every year and the public used it for 375 million searches²⁰. EDGAR Online now delivers Chinese company fundamental data from both the Shanghai Stock Exchange and Shenzhen Stock Exchange in eXtensible Business Reporting Language format, which includes current financial filings of all Chinese companies that trade on Shanghai Stock Exchange and the Shenzhen Stock Exchange for data up to past five years²¹. This certainly strengthened the influence of XBRL organization and improved the applicability and usability of XBRL applications with practical data greatly.

3. The Benefits of online business reporting with XBRL

There are huge and various benefits of using eXtensible Business Reporting Language as a universal and online business reporting method. In this section, we collect high lighted beneficial points from the XBRL.Org website and opinions of many other researchers, comprehend their views in a more straightforward and add in a few aspects that might have been omitted.

3.1 Three Features

There are chiefly three main features in eXtensible Business Reporting Language financial report method: Online, Universal Accepted and Real Business Related. They put XBRL onto the frontier of business reporting technology.

XBRL makes it possible to store and retrieve financial information online, which means that everyone can find real time related financial information from the internet quickly and easily. That means the accessibility of financial data information will be opened to a wider range of people at more workplaces more quickly.

XBRL is universal accepted, which means the definition of each financial data will be unique. Not only people but also machines can recognize financial data much more quickly and easily, because machines or computer software can be easily programmed to identify the numerical (mostly) data from a unique tag and use them in related operation. This means we can manipulate financial data into XBRL format and let computer software to find, store and analysis them for practical use automatically.

¹⁹ Edgar Online's I-Metrix delivers XBRL interactive data.(NewsBytes)(Brief article). Information Today 23.10 (Nov 2006): p25(1). From Expanded Academic ASAP.

²⁰ SEC Launches New Financial Reports Application; The Interactive Financial Report Viewer is a Web-based application that reads filings that make use of the Extensible Business Reporting Language, or XBRL. InformationWeek (Dec 5, 2006): pNA. From Expanded Academic ASAP.

²¹ "EDGAR Online, Inc. now delivers Chinese company fundamental data from both the Shanghai Stock Exchange (SSE) and the Shenzhen Stock Exchange (SZSE) in eXtensible Business Reporting Language (XBRL) format.(Business and Finance)(Brief article)." (Business and Finance)(Brief article) 30(3): 8(1) 2006

XBRL is created from real business implies that it has big potentials for practical use. The XBRL International organization is consisting of over 450 international companies and financial institutes. They achieve agreement and define the best taxonomies for international use. More over, all taxonomy definitions are subtracted from real accounting or more generally financial terms. The actually relationship that different financial terms have are also reflected inside XBRL definitions. This facilitates the computer software to recognize and represent relationship of financial data to the end users, and help them enhance financial theory knowledge and signify possible conflict and relationship of different data. Further more, it makes computer software be able to use current finance and accounting theories to help analysis and predict the actual behavior of business activity. On the other hand, financial bodies themselves can easily communicate financial information with each other despite the differences of national language and even financial system.

3.2 The benefits of XBRL on XBRL.Org website

To be more specify, XBRL.Org website pointed out that XBRL can provide a more cost saving, faster, more reliable and more accurate handing of data, improved analysis and in better quality of information and decision making²². They think XBRL can almost offer major benefits to all stages of business reporting and analysis.

Automation: XBRL is ‘computer readable’. Computer Software can search, access, restore and analysis financial data automatically without manual hand input, re-modify or allocate data. Business transaction and accounting information can be instantly product as the action being taken.

Cost Saving: XBRL can reduce manual labor requirement of financial information reporting and analysis, and therefore reduce financial cost in long run. Of course, in short run, financial organizations still need people to do a lot of manual input work for the original data and changing system and educating staff may also increase the cost of first period, which can be described as the setting up cost.

Faster: XBRL financial data can mostly store on a web-server, financial bodies and access XBRL formatted data from the internet instantly, which is much faster than traditional physical work. Analysis time is also reduced by computational support.

Reliable and Accurate: These two aspects of benefits are relatively depends on the situation. XBRL can make financial reporting more reliable and accurate when computer software takes charge of most creating process of financial data report, in terms of less manual cheating or mistake. However, when considering big number of computing bugs, virus and wide scale of software failure, power surcharge etc, over relying on XBRL based computer software can result in a high risk of dysfunctional

²² Benefits and Beneficiaries and XBRL, XBRL.Org Official Website, <http://www.xbrl.org/BenefitsAndUses/>

hazard, which we will discuss in the next part of this paper.

Analytical: Different from previous original XML language, XBRL already defined original meanings of each data instance. Computer software can then know where to input these data for certain programmed financial theory based calculation and output desired analytical result for end users. This is especially useful for un-professionalized financiers and can as well function as a reminder and reference for professional bodies.

Better Quality of information and decision making: This is mostly true, as XBRL formatted financial information is well professionalized structured and computers can improve the accurate and provide a certain level of supportive analysis for financial data. Yet, unavoidably, there will always more or less aspect that the computers can not cover and can not do as intelligent as human. The quality of decision making is improved when considering the availability of more reference information or on the conditions when the end user has far less financial knowledge than the software.

3.3 The benefits of XBRL discussion by researchers

Dr. Somnath Bhattacharya, Ronald F.Premurose and Hodge mentioned that using XBRL helps nonprofessional financial statement users acquire and integrate related financial statement and footnote information when making investment decision.²³ In addition, they mentioned that XBRL allow regulators to future the standardization and harmonization of international business reporting standards. They gave an example of the European stock Exchange. It requires all registrants to prepare consolidated financial statement in accordance with International Financial Reporting Standards as of January 2005, which they hope to improve the transparency, comparability and quality of financial reporting across the European Union and lead to a deepening the EU's capital market. Actually, before that, in 2004, Frank D. Hodge and Jane Jollineau Kennedy already carried out a few experiment to evaluate XBRL's advantage on improving the transparency of Financial Reporting²⁴. They designed two hypothesizes that individuals who use search facilitating technology are more likely to acquire information from various places in the financial statements and footnotes than are individuals who do not use search facilitating technology and individuals who use search facilitating technology will better integrate related information from various places in the financial statements and footnotes than will individuals who do not use search facilitating technology, then organized small groups of people to carry out the experiment, whose results find that XBRL dose help financial statement users by improving the transparency of firms' financial statement information and manager's choices for reporting that information. Lok Tin and Wefield have also indirectly indicated the benefits of a XBRL based search engine for

²³ Dr. Somnath Bhattacharya and Ronald F.Premurose, Do Early Member of XBRL International Signal Superior Corporate Governance and Operating Performance? P5-6

²⁴ Frank D. Hodge and Jane Jollineau Kennedy, Does Search Facilitating Technology improve the transparency of financial reporting? The Accounting Review, July 2004, 79,3; ABI/INFORM Global pg.687

fast financial information access and acquiring in early 2001²⁵.

Cost efficiencies, automated exchange, great scope and reach of business information, frequency, timeliness, accuracy, reliability and accessibility of information are widely discussed by Debreceeny, Gray, Beatties, Pratt, Ettredge, Richardson, Scholz, William, Scifleet and Hardy, etc²⁶. Here, the benefits we didn't mention are great scope and reach of business information and frequency. The first term can be comprehended from the broad international definition and professional complete sets of XBRL taxonomies. Individuals or organizations can reach related XBRL information from across physical space boundary and look the financial data terms with a complete systematic view. The other aspect is refers to the mechanized online database system. It allows as many people and as many times they need to access to stored XBRL data.

A list of benefits that XBRL may give to different financial bodies is also widely discussed. With addition to previous benefits we mention before to Companies, Analysts, Investors and Regulators, XBRL can lead more efficient data collection lowers operating cost associated with custom, idiosyncratic data feeds, reduces errors and facilitates concentrating on adding value to the data and increasing transaction capacity to Financial publishers and data aggregators; and for independent software vendors, it will increase their potential for full-interoperability with other financial and analytical application.²⁷ Current CFO feed back from the introduction of xfy XBRL solution in Madrid confirmed that Enterprises can eliminate human error and increase the accuracy of financial documents by connecting data and figure in documents directly into accounting sources. Further more; they proved that accounting team can develop financial documents more quickly and accurately by using XBRL without having programming ability²⁸.

3.4 summarizing and supplement

From all we discussed above, it can be seen that eXtensible Business Reporting Language as the pioneer of Online Business Reporting technology will have a massive stimulation effect in our financial system internationally. It is expected to improve the efficiency, accuracy of all sectors of financial reporting and analysis work, and make quality financial data more accessible, standardized and usable. The potential of manipulating XBRL financial reporting data with artificial intelligent business software will definitely open a new era for financial activities of our modern life. Therefore, eXtensible Business Reporting Language is a beneficial and powerful technology that shall catch attention of all companies and financial organization.

²⁵ Lok Tin, Y., L. Yue Wefield, et al. (2001). "From unstructured HTML to structured XML: how XML supports financial knowledge management on the Internet." *Library Hi Tech* 19(3): 242 - 256.

²⁶ Susan P. Williams, Paul A. Scifleet, Catherine A. Hardy, Online business reporting: An information management perspective, *International Journal of Information Management* 26 (2006) Page 93

²⁷ Matthew Bovee, Micheal Ettredge, Rajendra P. Srivastava and Miklos Vasarhelyi, Assessing the 07/31/2000 Taxonomy for Digital Financial Reports of Commercial and Industrial Firms, July 20, 2001, Page 6

²⁸ Justsystems to Demonstrate xfy XBRL Solution at the Madrid 2006 XBRL Conference, JCN Newswire-Japan Corporate News Network, Tokyo, May 16, 2006, pg 1

4. Problems when adopting XBRL

As every new technology has its own negative aspects, so does eXtensible Business Reporting Language. Although, currently, there are very few literatures which have mentioned the undesirable circumstances when using XBRL or bad effects it might bring when XBRL be generally applied in business field in the near future. We can analysis the problem with current adopting obstacles and future potential hazards in this paper and provide a prospective solution.

4.1 Current adopting obstacles

- ◆ eXtensible Business Reporting Language is too new that very few people know about it.

If we took a random example of 20 people on the street and ask them whether or not they know about XBRL, there is 95% change that 20 people will say “no”. The reason is that eXtensible Business Reporting Language has just existed for very few years. Even people who are working in financial sectors, very few of them had been introduced to this concept. Only related accountants are guided to know XBRL taxonomies and then try these very few XBRL software and online database system. Other people might not have chance to meet XBRL formatted information yet. Therefore, a huge amount of work needs to be done to make XBRL to be known and used internationally. Time and spend will also arises in this procedure. On the other side, the technology itself might not interest people²⁹. Although XBRL has been marketed for five years, few companies are using the technology and investors are not exactly clamoring for it. Very few people show up at XBRL convention.

- ◆ eXtensible Business Reporting Language is still very young, its definition system is not complete yet, the taxonomies still need to be modified

The first final rule of XBRL has just been announced in 2005. Many small errors might exist in this new concept and definitions according to feasibility may still require to be further modified. First of all, as XBRL is aiming to provide unique rules for financial data terms for all countries worldwide, despite the financial system and economic development stage of each individual country, frictions definitely exists when XBRL tries to fit into local financial system framework. Secondly, the trust of new financial software created by that immature concept need to earn its own reputation by benefits demonstrated with time. Finally, the taxonomy and relationships of XBRL instances needs to be modified between a certain period of time into a more proper and applicable, that includes both the development of XBRL and XBRL based software.

- ◆ The comparable expensive setting up cost

When adopting XBRL, organizations or financial reporting bodies need to reconstruct existing financial data system and re-input a big amount data again in XBRL format. On the other side, costs also take place when educating staffs to use this format and buying XBRL based commercial

²⁹ "Lifting the Lid: New Accounting Technology Gets Cold Shoulder.(Extensible Business Reporting Language)." eWeek (Jan 23, 2006): NA. Expanded Academic ASAP. Thomson Gale.

software. According to the news written by Hadfield, The Financial Service Authority has decided against using eXtensible Business Reporting for companies to file their regulatory returns on the ground of cost³⁰. FAS IS director Darryl Salmons said, the decision was made based on assessment of different technical options with fact-finding discussions with other regulators, which implies that UK regulators do not have to commit to re-adopt XBRL in the future.

◆ Benefits of individual companies

In a micro point of view, individual companies might not like to have all their financial information exposed instantly to public and tax regulators. The interest of individual company is to achieve maximum profit for their own company, which can be achieved through building perfect public image, hiding sensitive information from competitors and even use different accounting rules for internal and external financial report. However, eXtensible Business Reporting Language will make all these impossible. Individual companies are less likely to be able to control the presentation of their financial report as freely as before. Consequently, persuading individual companies to make financial reports using XBRL format and XBRL facilitated software voluntarily³¹ is another hard job for XBRL regulators.

◆ Social factors

There are un-expected social events that defect the implementation of XBRL as well. For example, the accounting departments of American companies have been tied up with the requirement of corporate scandals, as well as new stock option expensing rules. On one side, the event may have delay effect on implementation of XBRL for lack of energy in financial market. On the other hand, it can help the adoption of XBRL, because XBRL is said to be able solve those social problems.

4.2 Future Potential Hazard

◆ Will computer replace human? Will there be a big reduce requirement of employees in accounting profession?

There are plenty of science fiction films fantasizing that the computer may fight with and replace human in the future. Now, as a small abstractor, some people may ask that will XBRL replace our accountants. The answer is 'no'. The same idea is like the tractors won't replace farmers but can make farmers work much easier and more efficient. However, there might be a reduce labor requirement of employees in accounting profession.

After adopting XBRL, intelligent software can do a lot of job which was previously manually done by accountants automatically and instantly. According to Morgan Stanley, financial statements in XBRL can reduce the four or five hours it takes analysts to update financial models

³⁰ Hadfield, W. (2006). "FSA rejects adoption of XBRL on cost grounds.(Financial Services Authority, extensible business reporting language)(Brief article)."

³¹ "Lifting the Lid: New Accounting Technology Gets Cold Shoulder.(Extensible Business Reporting Language)." eWeek (Jan 23, 2006): NA. Expanded Academic ASAP. Thomson Gale. "Cox said the development of XBRL was the top priorities, but under a voluntary filing program, the commission has received only 22 XBRL filings from nice companies"

and copy information to as little as 45 minutes. Therefore, fewer accountants will be needed to the same amount of work the financial bodies have, which means there could be a huge shift of accounting profession unemployment after XBRL being adopted successfully a few years later.

Why would accountants apply XBRL while this technology may lead them losing their job? Well, it is the accounting regulators who decide whether or not to adopt this technology, hardly lose their job and mostly care of the general efficiency of financial system; but it is lower account who are doing traditional accounting operations, very probably lose their job to computers and have to find place in other industry sectors or upgrade to XBRL manageable accountants.

- ◆ Will eXtensible Business Reporting Languages leads to over-relying on computer technologies and result in big risk of financial disorder or financial crisis?

Imaging there is a system failure, which some times un-avoidable, on a database system of a bank, like last winter in Royal Bank of Scotland, huge amount of financial mistakes will occur. All related banks across the country may not even be able to open until the computer system recovered. Similarly, there is chance that international financial bodies over rely on using XBRL based online data system that if any technical problems happened, all related financial bodies may not be able to work all over the world, which may more seriously defect the trust of entire financial system and even lead to cause a global financial crisis. Yet, the chance of it is very low.

- ◆ Security Issues

There are similar security issues on usage of XBRL database system. Some financial information may not necessary to be open to all public bodies. Yet, because this technology is based on internet, intelligent computer user, so called hackers, may still get access to confidential data and disclose it to harmful bodies. Another un-welcomed gust is computer virus, which can cause financial database system failure as the on mentioned in the question above.

- ◆ Debatable Social Issues

Some less economical developed countries may argue that the adoption world-unified financial data taxonomy may not be beneficial or applicable to their own economy. Firstly, a small country can lost their own financial identity of their national economical system when abandoning the old rules to this new one. Secondly, bigger financial nations may have easier access to local data of small financial nations and even take control of their business behaviors. Thirdly, eXtensible Business Reporting Language may be too general for small financial nation's own financial reporting need. Last but not least, smaller countries may not enjoy as much desired benefits of XBRL as much as larger countries. In all, the technology itself may have biases.

4.3 Summary of the negative aspects

To sum up, eXtensible Business Reporting Language has its own limitation and negative effect when applying to real business world. However, most problems that arisen or we can foresee are

typically the conflict and risk of any new technology being introduced into our daily life. More specifically, the development eXtensible Business Reporting Language is a part of the evolution of computing and internet technology into our business life. Risks of causing high level hazards do exist and in some standpoint is unavoidable, still people are less likely to abandon the use of new technology for a bigger range of benefits. The hazard of XBRL itself will disappear when later technology is developed and later technology may have bigger risk of different hazards.

5. Conclusion

Online financial reporting has become an appealing technology for our financial system. EXtensible Business Reporting Language is the first promising breaking new ground solution for today's digital financial reporting needs. This paper detailed explained the definition and design structure of eXtensible Business Reporting Language concept, from both organizational aspect of view, simple design aspect of view and a quickly technique indication, from which we conclude that eXtensible Business Reporting Language provides a strong back ground the enable the possibilities and release the power of online business reporting. XBRL is an international business dictionary for communicating financial information, rather than a software or computer language.

The various benefits of eXtensible Business Reporting Language are huge. XBRL will generally improve the performance of most financial reporting sectors. The three key features of XBRL - Online, Universal Accepted and Real Business Related – determines its modernized benefits like time saving for users, wider accessibility of financial data, possibilities of real time financial reporting, abilities of accuracy, automation and analysis by XBRL concept based intelligent software, etc. The application of eXtensible Business Reporting Language is very likely to surge a new era of financial report system into our business life on many aspects.

The paper also discussed the negative aspect of eXtensible Business Reporting Language particularly. On one side, there are still obstacles when adopting XBRL into financial system of different countries worldwide. On the other hand, after adopting XBRL will bring a period of shrink on the need of employees in accounting profession and high risk causing huge financial disorder may be created if people over relying on XBRL software in computers. For accounts, it is good to learn 'how to drive tractors' rather than scaring of being eliminated from the accounting sector. On all accounts, the side effect of new technology been applied to the society is some times unavoidable. Yet, people can be prepared to encounter those possible disadvantages with benefits.

In conclusion, eXtensible Business Reporting Language is the first unique and most feasible international business reporting language for communication of financial data world wide. It will provide good solutions for problems in our current business world and improve performance of our financial activities. Since financial regulators in many countries had announced agenda to adopt XBRL in all financial reporting sections in a few years, it is expected that by 2010, eXtensible Business Reporting Language will become a mature, commonly applied and powerful technology for financial reporting, online business reporting will have become a basic method to communicate and store financial data efficiently, and people can search, store and analysis financial data in a wider scope and area more proficiently than even before.

6. Further Researches

Researches in XBRL are wide implementing globally, but most of which are in early stage. Frontier researchers are Roger Debreceeny, Glen L.Gray, Asheq Rahman in the U.S. They had been investigating the definition, application and implementation of XBRL at: Financial reporting on the Internet and the external audit (July 1999), The determinants of Internet Financial Reporting (Nov 2004), Firm-specific determinants of continuous corporate disclosures (March 2005). Other researchers, such as Matthew Bovee, Michael Ettredge, Rajendra P. Srivastava and Miklos Vasarhelyi who assessed the earlier XBRL taxonomy; Robert Pinski who has run a survey which indicates that auditors and accountants are willing to accept using XBRL reporting format (2003); J.Efrim Boritz and Won G. No on security technique party of XBRL (2004); Susan P. Williams, Paul A. Scifleet, Catherine A. Hardy from an information management perspective (2005), etc. Research methods used are mostly group sampling which uses existed company financial data on stockade website and then using econometric methods to verify the hypothesized results. Technically research methods are using current XBRL taxonomies, separating group tagging categories and then test the effectiveness of the taxonomy in virtual practice.

In “Production and use of semantically rich accounting reports on the Internet: XML and XBRL”³², Debreceeny and Gray listed an agenda for themselves and other researchers to follow in business reporting field related with XBRL, which are divided into nice part: New Taxonomies, Database Accounting, Financial Statement Assurance, Intelligent Agents, Human/Computer Interface, Standard Development Process, Adoption Incentives, Global Adoption and Formal Ontologies. This provides a good guide for forthcoming researchers. Because eXtensible Business Reporting Language is still young, most fields that just mentioned has not been well explored, and currently most researchers are working on adoption incentives and global adoption as the current lacking motivation situation of XBRL implementation. In the near future, after the definition of XBRL becoming more mature, the industry is likely to focus on the research in Intelligent Agents, which essentially develops intelligent software agents to apply artificial intelligence techniques to audit and accounting to address XBRL report. From then on, the power of eXtensible Business Reporting Language as pioneer online business reporting technology can be fully demonstrated.

³² Roger Devreeceney, Glen L. Gray, The production and use of semantically rich accounting reports on the Internet: XML and XBRL, *International Journal of Accounting Information Systems*, 2 (2001) 47 – 74,

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